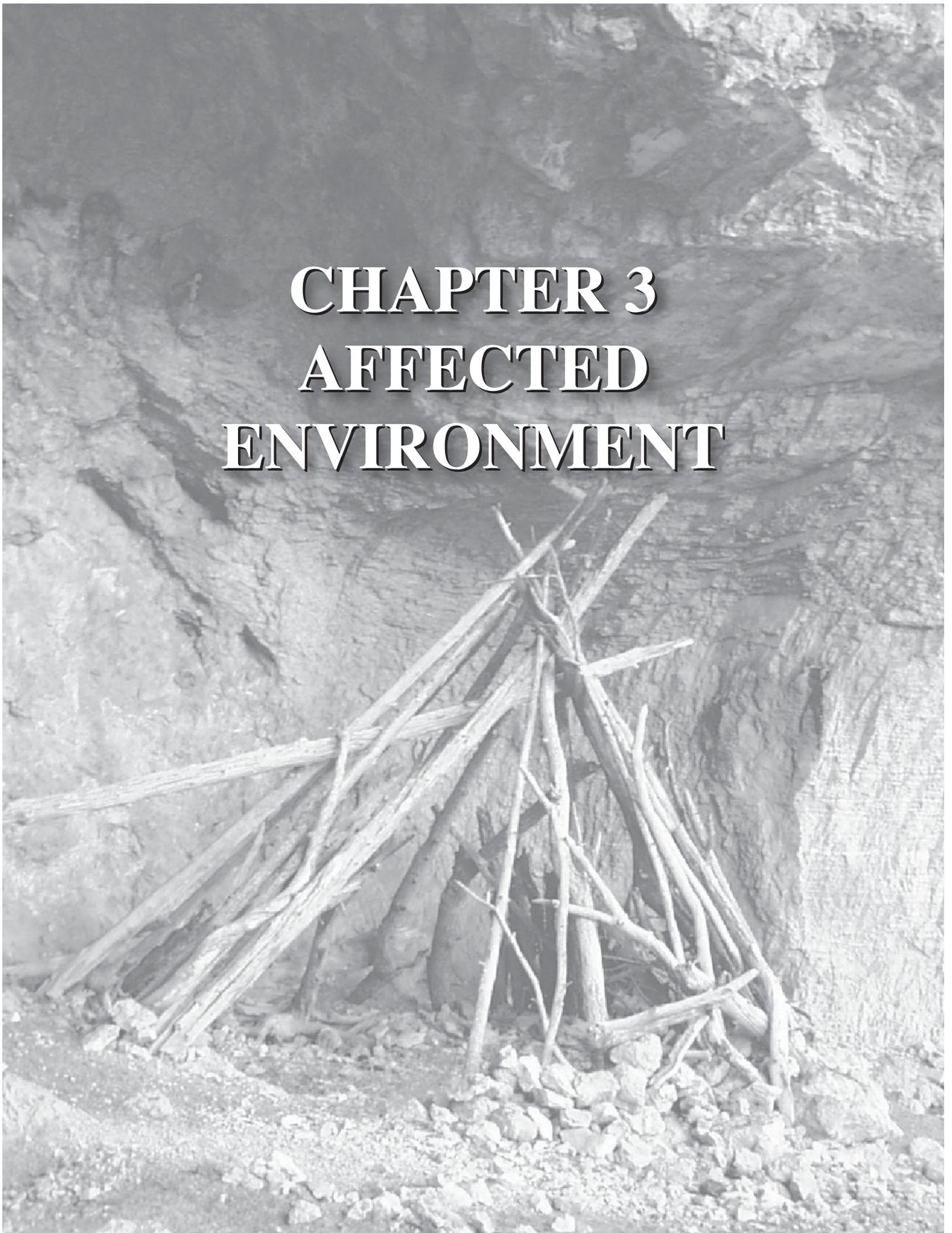


# CHAPTER 3 AFFECTED ENVIRONMENT



## HOW TO READ THIS CHAPTER

Chapter 3 provides background information on the various resources, resource uses, and programs managed by BLM, and describes their condition and trend. Changes made as a result of public comment and internal review are shaded in gray. This chapter is organized into five sections, including Resources, Resource Uses, Fire Ecology, Special Area Designations, and Social and Economic Conditions. Each of these five sections is then split into resources or program areas that are presented in alphabetical order. This organization is based on Bureau-wide guidance to provide a common look and feel to RMP planning documents prepared by the BLM. Each part is introduced by a list of *Laws, Regulations, and Policies* followed by a discussion of the presence, condition and trend of the topic area. The list of laws, regulations, and policies is presented to provide the reader information on the major directives that influence the program; it is not meant to be comprehensive. A synopsis of each of the referenced laws is provided in **Appendix A**.

## RESOURCES

### AIR QUALITY (BLM Critical Element)

#### Laws, Regulations, and Policies

Air quality management on public lands administered by the BLM is directed by the following laws, mandates, and guidance:

- Clean Air Act 42 USC 1857 (1970, 1977)
- Clean Air Act of 1990, as amended, 42 USC, 7418
- Executive Order 12088, Federal Compliance with Applicable Pollution Control Standards, Coordination with the Environmental Protection Agency, State, interstate, and local agencies
- 40 CFR 51 (Regional Haze Regulations)
- 40 CFR 52.1370 (Air Programs Montana)
- 40 CFR 81.327 (Attainment Status Designations)
- Conformity Regulations, Sec 176c of Clean Air Act
- 40 CFR 81.417 (Identification of Mandatory Class I Areas where visibility is an important Value Montana)
- 40 CFR 52.29 (Visibility Requirements)
- EPA 1998 Interim Air Quality Policy for Wildland and Prescribed Fires
- Federal Wildland Fire Management Policy, December 1995, January 2001
- Montana/Dakotas Fire Management Plan
- Montana/Idaho Airshed Group Smoke Management Program
- Wilderness Management Policy, September 1981

- Wildland fire suppression actions are emergency response actions under CERCLA.

### Affected Environment

Air quality in Beaverhead and Madison Counties is excellent. Southwest Montana, which encompasses Beaverhead and Madison County, is in attainment meaning that the air resource meets or exceeds all National Ambient Air Quality Standards. The closest Montana Ambient Air Quality monitoring sites are located north of the Dillon Field Office Area in Butte. Butte is the closest Montana State PM 10 Non-attainment Area.

The 1977 Amendments to the Clean Air Act resulted in the development of three Air Quality Classes under the provisions of Section 160, Prevention of Significant Deterioration. Class I Areas are areas where visibility is an important value. There are strict standards for such areas. Class I Areas are generally national parks or wilderness areas. Red Rocks Lakes National Wildlife Refuge is a Class I Area and is located in the Centennial Valley, in the southern part of the planning area. Several other Class I areas are located in areas surrounding Beaverhead and Madison Counties. These include: Yellowstone National Park to the east, Anaconda Pintlar Wilderness to the northwest and Selway-Bitterroot Wilderness beyond Anaconda Pintlar. The Lee Metcalf Wilderness which includes the Bear Trap Unit administered by BLM is classified as Class II. Areas not specifically designated Class I or Class III are by default Class II Areas, therefore all public lands in the planning area are in Class II.

### AIR QUALITY ISSUES

Air quality issues in the planning area center mainly around smoke. Smoke contributors in the planning area include wildfire, prescribed fires, private debris burning, agricultural burning, slash burning, and wood burning stoves and fireplaces. In southwest Montana, spring and summer seasons usually produce the best smoke dispersal. Spring and summer daytime heating and general wind flows help raise the smoke columns high into the atmosphere and disperse them rapidly. By mid-September, the air quality naturally begins to deteriorate as nighttime inversions often develop.

Wildfire can produce short-term adverse effects on air quality. Air quality and visibility can deteriorate due to temporary air stagnation during wildfire events, which are most common during the months of July, August, and September.

The effects of smoke from prescribed burning is affected by the season of burning, the overall stability of the atmosphere, wind flows, topography, and the time of day during which burning occurs. Management prescribed fires contribute smoke to the airshed, though these fires tend to produce less smoke than wildfires of equal size since fuel consumption is typically lower in prescribed burns. The effects

of prescribed burning on air quality are usually most severe from mid-September through November when smoke dispersal may be poor for much of the time. Air quality is poorest from December through February due to atmospheric conditions trapping pollutants.

### **SMOKE MANAGEMENT AND MONITORING**

The 1998 Interim Air Quality Policy for Wildland and Prescribed Fires requires states to develop smoke management plans. The Montana/Idaho Airshed Group developed the Montana/Idaho Smoke Management Program. There are three airshed units across Idaho and Montana broken into 25 airsheds. Airsheds are geographical areas with similar atmospheric characteristics and the planning area is located in Airshed 7, which encompasses both Beaverhead and Madison Counties. Prescribed burning in the planning area is done in accordance with the Montana/Dakotas Fire Management Plan and is coordinated with MT DEQ and the Montana/Idaho Airshed Group. Prescribed burning is accomplished when dilution, dispersal, and mixing conditions are generally good.

During prescribed fire season, the Smoke Monitoring Unit supports the Montana/Idaho Airshed Group to prevent or reduce the impact of smoke on area communities—especially when that smoke could contribute to a violation of national air quality standards. During the summer wildfire season, the Smoke Monitoring Unit assists state and local governments in monitoring smoke levels and providing information about smoke to the public, firefighters, and land managers. Additional information can be found on the Smoke Monitoring Unit website at [www.smokemu.org](http://www.smokemu.org).

## **CULTURAL RESOURCES (including BLM Critical Elements Cultural Resources and Native American Religious Concerns)**

### **Laws, Regulations, and Policies**

Important legislation and other mandates and direction governing cultural resource management on public lands include the following:

- Antiquities Act of 1906 (P.L. 59-209; 34 Stat. 225; 16 U.S.C. 432, 433)
- Historic Sites Act of 1935 (P.L. 74-292; 49 Stat. 666; 16 U.S.C. 461)
- Reservoir Salvage Act of 1960, as amended by Archeological and Historic Preservation Act of 1974 (P.L. 86-523; 74 Stat. 220, 221; 16 U.S.C. 469; P.L. 93-291; 88 Stat. 174; 16 U.S.C. 469)
- National Historic Preservation Act of 1966 as amended (P.L. 89-665; 80 Stat. 915; 16 U.S.C. 470)
- National Environmental Policy Act of 1969 (P.L. 91-190; 83 Stat. 852; 42 U.S.C. 4321)
- Federal Land Policy and Management Act of 1976 (P.L. 94-579; 90 Stat. 2743; 43 U.S.C. 1701; “FLPMA”)
- American Indian Religious Freedom Act of 1978 (P.L. 95-431; 92 Stat. 469; 42 U.S.C. 1996)
- Archaeological Resources Protection Act of 1979 (P.L. 96-95; 93 Stat. 721; 16 U.S.C. 470aa et seq.) as amended (P.L. 100-555; P.L. 100-588)
- Native American Graves Protection and Repatriation Act of 1990 (P.L. 101-601; 104 Stat. 3048; 25 U.S.C. 3001)
- Executive Order 11593, Protection and Enhancement of the Cultural Environment)
- Executive Order 13007, Providing for American Indian and Alaska Native Religious Freedom and Sacred Land Protections
- Executive Order 13084, Consultation and Coordination with Indian Tribal Governments
- Executive Order 13195, Trails for America in the 21st Century
- 36 CFR Part 800 (Protection of Historic Properties)
- 36 CFR Part 60 (National Register of Historic Places)
- 36 CFR Part 78 (Waiver of Federal Agency Responsibilities under Section 110 of the National Historic Preservation Act )
- 43 CFR Part 7 (Protection of Archaeological Resources)
- BLM policy and program guidance for the management of cultural resources outlined in Manual Sections 8100, 8110, 8120, 8130, and 8160.
- BLM Handbook H-8160-1.
- National Programmatic Agreement with the Advisory Council on Historic Preservation and the National Conference of State Historic Preservation Officers
- State Protocol Agreement between the Montana State Director, Bureau of Land Management (BLM) and the Montana State Historic Preservation Office (SHPO) regarding the manner in which the BLM will meet its responsibilities under the National Historic Preservation Act (NHPA) as provided for in the National Programmatic Agreement (NPA).

### **Affected Environment**

The BLM is responsible for identifying, protecting, managing, and enhancing cultural resources which are located on public lands, or that may be affected by BLM undertakings on non-Federal lands. Cultural resources include archaeological, historic, and architectural properties, as well as traditional lifeway values important to Native American groups (see **Glossary** definitions for cultural resource, archaeological remains, cultural property, historic property, and traditional lifeway values).

### **DESCRIPTION AND SUMMARY**

As of December 2001, BLM lands within the planning area contain approximately 1,061 previously recorded cultural properties representing a wide variety of site types and chronological periods. The known cultural resources include 752

(70.9 percent) prehistoric sites, 256 (24.1 percent) historic sites, and 53 (5 percent) multi-component historic/prehistoric sites. Together, these resources document an almost continuous record of human occupation in the planning area for the past 14,000 years.

In general, cultural resources are identified through field inventories conducted by qualified professionals to comply with Section 106 of the National Historic Preservation Act of 1966 (NHPA). Informant information and historical records are also used to identify archaeological, historical, and traditional lifeway values. Three types of inventories – Class I, Class II, and Class III (see **Glossary** definition cultural resource inventory classes) are conducted to identify and assess these values on BLM public lands. An estimated 104,840 acres (11.5 percent) of the planning area have been inventoried for cultural resources at the Class II level using a variety of methods. Just over 65,000 acres (7 percent) of the planning area have been intensively inventoried at the Class III level. A majority of the Class III inventories were associated with federal undertakings where cultural properties needed to be identified and evaluated in order to protect significant values and minimize effects on these values.

The most common type of prehistoric site in southwestern Montana is the lithic scatter, a site which contains stone tools, and/or flakes of stone left during the process of making or repairing a stone tool, such as a knife, arrow point, spear point, or hide scraper. Lithic scatters may represent the remnants of prehistoric tool manufacturing/maintenance locales, hunting camps, animal butchering sites, or stone quarries. The ubiquitous lithic scatter comprises approximately 70 percent of recorded prehistoric sites in the planning area. Other prehistoric site types in western Montana include bison jumps, game traps, tipi ring encampments, vision quest sites, wickiups, and rock art sites, among others. Two Class I level overviews of prehistoric resources in southwest Montana encompass the planning area and provide a synthesis of available information (Deaver and Deaver 1990; Foor 1996). Comparison of current prehistoric site type frequency and composition, with that provided in early Class I overviews, indicate more recorded sites by essentially the same site type variability, frequency of occurrence, and composition.

The most common type of historic cultural resource relates to the mining of gold, silver, lead, and copper during the latter part of the 19th century and the early part of the 20th century. Such properties include mining camp remnants, ghost towns, miner's cabins, mining shafts, adits, mills, smelters, and an assortment of other mining related buildings, structures, and landscape features. Several comprehensive overviews of historic metal mining in Montana have been produced in recent years, and provide the important context with which to evaluate such properties (Godfrey 2002; Warhank 1999; Herbort 1995a and 1995b). Other his-

toric period sites include transportation networks, lumber mills, homesteads, forgotten cemeteries, irrigation ditches, cow/sheep camps, and trash dumps. Historical overviews and summaries of these types of resources in the planning area may be found in Brown (1975) and Ingram (1976).

Of the 1061 known sites within the planning area, formal determinations of significance or eligibility have been made on only 200 properties (18.9 percent). Of these evaluated properties, 96 have been determined to be eligible for the National Register and 104 have been determined NOT eligible for the National Register. Sites that have been formally listed on the National Register of Historic Places include the Big Sheep Creek Wickiup (24BE601), Union City and the Christenot Mill (24MA1215). Public lands are also included within the boundaries of several additional listed properties/districts, including: Beaverhead Rock (24MA259), Pony Historic District (24MA907), and the Strawberry Mine Historic District (24MA810). Many of the remaining unevaluated sites are likely to be considered eligible to be listed on the National Register of Historic Places (NRHP). There are two designated National Historic Landmarks that incorporate, or are adjacent to, public lands: Bannack National Historic Landmark and Virginia City National Historic Landmark. National Historic Trails traversing the planning area include: the Lewis and Clark National Historic Trail and the Nez Perce (Nee-me-poo) National Historic Trail.

The Dillon Field Office lies at the boundaries of three distinct physiographic and cultural areas: the Great Basin, the Plains, and the Columbia Plateau (see **Appendix O map**). Native Americans groups associated with all three culture areas have lived on, or traversed through, the lands within the Dillon Field Office for thousands of years. They hunted, fished, gathered plant foods, buried their dead, and conducted religious ceremonies. Beliefs, customs, and practices of their culture were passed down through generations and were still in use when Indians were removed from their homelands onto reservations.

The Shoshone-Bannock Tribes of the Fort Hall Reservation and the Confederated Salish and Kootenai Tribes of the Flathead Reservation maintain active interests in the planning area. Individual tribal members occasionally use public lands to gather plants or other native materials, cut tipi poles, and hunt or fish. However, these groups have been removed from the area for so long, they are gradually losing the historical and cultural ties to locations that are distant from their current reservations. Continuing consultation efforts with these groups have yet to identify specific traditional cultural properties or areas of religious significance within the planning area. They have, however, expressed concerns over the preservation and protection of specific archaeological sites (burial locations and pictograph sites) and impacts to prehistoric sites from archaeological excavations.

## PREHISTORIC AND PROTOHISTORIC PERIODS OVERVIEW

A generalized prehistory of western Montana can be categorized into four different time periods, which are distinguished on the basis of differences in material culture traits or artifacts, and subsistence patterns:

### *Paleoindian/Early Prehistoric Period (12,000 B.C. to 5,500 B.C)*

The Paleoindian period is commonly believed to represent the first known cultural tradition in the New World. The people living in this period are thought to have arrived during the end of the last ice age, circa 12,000 to 14,000 years ago, when a land mass extended into the Bering Sea, connecting the Asian continent with Alaska.

The Paleoindian period was characterized by a climate that was cooler and wetter than modern conditions, and by the presence of large Pleistocene or ice-age mammals that would soon become extinct. The Paleoindian lifeway was oriented around the hunting of big game animals (such as the woolly mammoth and ancient bison), which were dispatched by small hunting groups using lances and spears. The most distinctive Paleoindian cultural material traits are large leaf-shaped lance and spear points. The earliest part of the period is recognized by the distinctive Clovis and Folsom points, which have a central flute or channel flake scar that runs up from a concave base. There are 15-recorded Paleoindian period sites/locations on public lands in the Planning Area.

### *Archaic/Middle Prehistoric Period (5,500 B.C. to A.D. 500)*

The early portion of the Archaic Period is characterized by a warm/hot and dry climate, which became desert-like during this period. The surviving remnants of large Pleistocene animals became extinct during this time. Due to the more diverse resources of the mountain foothill areas, and because the remaining populations of large ice age mammals had become extinct, the Archaic immigrants hunted a wider array of animals than their Paleoindian ancestors. Adapting to smaller, modern forms of game animals, Archaic groups replaced the large leaf-shaped lance and spear points with smaller corner and side-notched projectile points, which were used with the “atlatl” or spearthrower. Archaic peoples also relied more upon plant foods as indicated by increased numbers of tools and features associated with the processing of plant foods (e.g., basin-shaped milling stones). Cultural hallmarks of the period include the development of sophisticated communal bison hunting techniques and the use of a wide variety of different projectile point forms. Associated with this economic pursuit was a highly nomadic existence where groups conducted seasonal rounds within a relatively large area. There are 58-recorded Archaic/Middle Period sites located on public lands in the Planning Area.

### *Late Prehistoric Period (A.D. 500 to ca. 1600)*

Cultural groups during this period continued to pursue an increasingly mobile way of life in order to exploit a large variety of seasonally available game and plant resources. Game was pursued with the bow and arrow, and the dog was an important lightweight beast of burden and hunting assistant. Late Prehistoric sites are recognized by arrow points, tipi rings, intrusive pottery left by groups coming in from the south and east, and by the remains of wickiups left by Shoshonean groups coming in from the Great Basin. There are 51-recorded Late Period sites on public lands in the Planning Area.

### *Protohistoric Period (A.D. 1600 to 1805+)*

Protohistoric refers to the time period immediately before written history. The period began in Montana when Plains and Great Basin Indian groups began using the horse, followed by the use of Euro-American goods, notably fire-arms, trade beads, and metal implements, which were fashioned into knives, and other practical tools. These items were traded into the region from other tribal groups long before white men came into the area. The horse, in particular, created a profound change or “cultural revolution” on the Plains. The horse made people on the Plains extremely mobile and highly efficient hunters, especially in regard to bison hunting. Among other effects, this increased mobility led to intensified territorial disputes with neighboring tribes, resulting in shifting tribal boundaries. Federally recognized Indian tribes whose ancestors inhabited western Montana at various times include the Confederated Salish-Kootenai Tribes, the Shoshone-Bannock Tribes, and the Blackfoot Tribe. The Protohistoric Period ended with the arrival of the Lewis and Clark Expedition in 1805, which is generally understood to represent the first written records of the area and beginning of the historic period in southwestern Montana. There are six recorded Protohistoric sites on BLM lands in the planning area.

## HISTORIC PERIOD OVERVIEW

Following in the wake of the Lewis and Clark Expedition, fur traders began to actively trap for beaver and other mammals in tributary streams and rivers of both the Missouri and Columbia River systems. This enterprise ended by the close of the 1830s due to the depletion of beaver and other fur bearing mammals, and because of a decline in demand for pelts as a result of changes in fashion and the rise of the European and American textile industries. As noted below, there are several interpretive opportunities for locations associated with this early historic period.

Gold prospectors and a few early settlers began moving into southwestern Montana following the demise of the fur trapping industry. The first wave of mining began in the early 1860s and lasted for about the next 20 years focusing on the mining of placer gold gravel deposits along larger streams and drainages. This was followed by lode, or hard rock,

mining of bedrock gold, silver, and then copper deposits. There are approximately 20 known historic mining districts that incorporate public lands within the planning area.

By World War I the mining of hard rock gold was essentially over, although some small ventures continued. A revival occurred during the Great Depression era of the 1930s when the price of gold almost doubled. Overnight, the gold mining streams and fields were once again sluiced and mined with pick and shovel. Unlike before though, this was done by out-of-work miners and others who were trying to eke out some sort of livelihood during the harsh economic times of the Great Depression. The Great Depression mining era closed at the outbreak of World War II. Gold mining continues today, generally by large corporations who mine for so-called “flour” gold. The mining of this type of gold requires tons of earth to be removed and the use of highly sophisticated processing techniques in order to retrieve a few ounces of the precious yellow metal.

Though the region continued to support mining endeavors, the economic emphasis shifted to agricultural pursuits along the major river valleys (Madison, Ruby, Jefferson, and Beaverhead). Many of the earliest farming and ranching operations started to supply the needs of early mining camps. As mining and agricultural industries continued to develop, transportation routes were formalized insuring a steady flow of goods and materials into and out of the area. These routes connected southwestern Montana to the railroad hubs at Corrine, Utah and the riverboat port of Ft. Benton. In the 1880s railroads entered the area forging a permanent link with regional, national, and international commerce.

#### **CULTURAL RESOURCES CONDITION AND TREND**

The condition and trend of cultural resources in the planning area varies considerably due to the diversity of terrain, geomorphology, access and visibility, and past and current land use patterns. Because recorded sites are manifest by exposed artifacts, features, and/or structures, they are easily disturbed by elements such as wind and water erosion, animal and human intrusion, natural deterioration and decay, and development and maintenance activities. Based on limited site monitoring, site form documentation, and informant information, the trend of site conditions in the planning area is considered to be downward. Active vandalism or collecting (unauthorized digging and “pothunting”) has been observed in limited instances, but currently is not endemic. Impacts caused by development and maintenance activities (e.g. erosion, grazing, mining, recreation) are known to be affecting certain site locations. Perhaps the most pressing concern is the natural deterioration and decay of standing structures at historic mining and homesteading sites, and prehistoric wickiups. Collectively, these agents have adversely affected and continue to adversely affect many known cultural resources.

Within the planning area, the “demand” for cultural resources is thought to be moderate. This determination is based on the known research interests of area scholars and other professionals, interest expressed by members of the Native American and local communities, documented site conditions, informant information, and site visitation. Many interpretive opportunities are also present to provide both educational as well as recreational benefits.

#### **USE CATEGORIES**

Updated BLM planning and Manual guidance stress the importance of meeting specified goals through the allocation of all cultural properties in the planning area (whether already recorded or projected to occur) into defined “use categories”, based on their nature and relative preservation value.

The identified use categories include:

- a. Scientific Use: sites preserved until research potential is realized
- b. Conservation for Future Use: sites preserved until conditions for use are met
- c. Traditional Use: long-term preservation of sites
- d. Public Use: long-term preservation, on site interpretation
- e. Experimental Use: sites protected until used
- f. Discharged from Management: sites are removed from protective measures.

A detailed description of individual use categories is presented in **Appendix C**.

In order to allocate the numerous known sites and sites “projected to occur” (those yet to be found or recorded) into the identified use categories, criteria must be established which employ a combination of easily recognizable site type and site attribute information that can, for example, differentiate between small, short duration, limited activity sites and large, complex multiple-activity sites. For prehistoric resources the criteria are weighted to emphasize the “information potential”, since the determination significance for such sites are generally related to their scientific value. For historic resources, the criteria are more reflective of site “condition and integrity” characteristics, which play a greater role in the evaluation of historic properties.

It is also important to recognize that it is possible for sites to be placed into more than one use category. As an example, a prehistoric site with little or no scientific value could be placed in a Discharge from Management category, but also be useful in the Experimental Use category. Similarly, an historic site could be placed in the Public Use category, but require stabilization and preservation efforts and therefore warrant placement into the Conserve for Future Use category as well.

## PREHISTORIC RESOURCES

Since over 70 percent of prehistoric sites in the planning area are defined as lithic scatters, it is important to be able to identify potential discriminating elements that can be used to segregate such a large category of prehistoric resources into different use categories. A qualitative assessment of certain aspects of material culture (relative diversity and quantity of artifactual materials) and complexity (spatial patterning of artifacts, presence/absence of features, presence/absence of buried deposits, etc.), coupled with a quantitative measure of site size (in acres) can be utilized to meet the purposes identified. These values will serve as indirect indicators of relative site function, relative duration of occupation, research value and importance.

The important aspects of material culture include: Artifact diversity - variety of cultural materials present such as raw material types, variety of materials present bone, stone, ethno botanical qualitatively measured from low to high. Artifact quantity - relative quantity of material culture present (less than 50 items, hundreds, thousands, etc.) a qualitative measure intended to capture “magnitudes of difference”. Site complexity – as indicated by any spatial patterning in distribution of cultural material, the presence or absence of associated features, the presence of buried deposits and stratigraphy. Site complexity is qualitatively measured from low to high. Site size - a quantitative measure, looking for model patterns in overall site size that may reflect a number of things, site function, duration of occupation, etc. These variables will serve as to distinguish between the small, more redundant and transient, or temporary, limited use lithic scatters, and larger, longer occupied, camps/habitation sites, and/or extractive use locations.

Based on the model presented above, it is expected that use categories to be reflected as follows:

**Scientific Use:** prehistoric sites that exhibit high diversity and large quantity (>50 artifacts) of material culture, high complexity (spatial patterning of artifacts/activities, presence of features, stratified or buried deposits), and relatively larger size properties would be placed into the Scientific Use category.

**Conservation Use:** Sites that are representative of rare, or exceptional examples (functionally or temporally), would be considered for Conservation Use. In the planning area these would include sites such as wickiups (n=7), large quarry sites (Everson Creek/Black Canyon Quarry Complex), or sites with complex stratigraphic sequences (Mammoth Meadow).

**Traditional Use:** In consultation with Native American groups, certain types of prehistoric sites retain particular importance and significance (Deaver 1986). These sites types most commonly include: burial locations (n=6), pictograph/petroglyph sites (n=5), and vi-

sion quest locations (n=12). Medicine wheels, dance grounds and intaglios (e.g., Napi figures) also are in this category, but none are known to occur on public lands in the planning area. In addition, certain tipi ring sites, may also fit this use category but need to be evaluated on a case-by-case basis. Collectively these sites amount to less than 10 percent of recorded cultural resources in the planning area.

**Public Use:** Prehistoric sites could be considered for Public Use (interpretation) in those few instances, where interpretive potential is high and site integrity could be insured through protective measures. Such uses should not be attempted without full consultation with interested Native American groups. Consequently, such prehistoric sites still require evaluation on a case-by-case basis. Current opportunities include the Burma Road Buffalo Jump and Red Mountain Tipi Ring site.

**Experimental Use or Discharge from Use:** sites with low diversity and limited quantity (<50) of artifacts; low or limited complexity; and small size (redundant small surface lithic scatter, information potential is exhausted with initial site recordation). Sites will be individually evaluated prior to placement into Experimental Use or Discharge from Use categories.

## HISTORIC RESOURCES

Unlike prehistoric resources, historic properties are more commonly determined to be significant for reasons other than their “scientific value”. Similarly, condition and integrity also tends to play a more obvious role in the evaluation of historic properties, which contain architectural or structural remains. Historic resources in the planning area also vary greatly in size, function, and complexity; ranging from small trash dumps, isolated prospect pits and claim markers to complex industrial properties such as mines, mills, and smelters; and from isolated trails, line shacks or miners cabins to abandoned wagon roads, railways, and ghost towns.

**Scientific Use:** Historic sites with archaeological and historical values and generally poor, structural integrity (collapsed or deteriorated), would be placed in this category.

**Conservation Use:** Historical sites that are rare or exceptional examples that retain integrity would be considered for Conservation Use. In the planning area these would include well-preserved remnants of historic mines, mills (Alder Gulch Mills), ghost towns (Glen-dale and Rochester), and homesteads (Ney Ranch). It should be noted that the defined use categories are not necessarily mutually exclusive, and that many sites can be placed in both the Conservation Use category (need to stabilize and preserve the architectural features) and the Public Use Category and possibly Scientific Use for example.

**Traditional Use:** Historic sites in this category would potentially include any sacred areas, traditional cultural properties, or plant gathering areas that have been historically utilized by Native American groups that have historically occupied the area. These sites would be determined in consultation with tribal representatives of the following tribes that have demonstrated historical use in the planning area including: the Shoshone-Bannock Tribes of the Fort Hall Reservation, the Confederated Salish and Kootenai Tribes of the Flathead Reservation, the Blackfoot Tribe of the Blackfoot Reservation, and the Crow Tribe of the Crow Reservation. To date, Native American traditional use areas have yet to be identified.

**Public Use:** Historic sites that would be considered for Public Use include those where the interpretive potential is high and site integrity could be insured through protective measures. In addition, consideration is given for those standing structures that could be preserved and maintained for adaptive re-use for administrative or recreational uses. Historical themes that would lend themselves to interpretation include:

#### **Early Exploration**

##### *Lewis and Clark Corps of Discovery*

Clark Campsite at mouth of Gallagher Creek  
Beaverhead Rock with MFWP  
Willards Pass (Bannack Bench)  
Lewis' Lookout (Notch Bottom)  
Lemhi Pass (Highway 324 Rest Stop)

##### *Fur Trade Era*

Ruby Creek Battle - West Madison Campground  
Vanderberg killed by Blackfeet - Ruby Reservoir  
Father DeSmet in Centennial Valley left inscription

#### **Historic Transportation Routes**

Bozeman Trail/Scanlon Toll Bridge at Red Mountain Campground  
Bannack-Corrine Wagon Road along Backcountry Byway  
Virginia City-Corrine Wagon Road (Sweet Water, Blacktail Deer Creek, Sage Creek)  
Road Agent Trail/Road Agent Rock Bannack-Virginia City

#### **Historic Mining/Ghost towns**

Glendale Smelter and town site  
Rochester Cemetery/town site  
Alder Gulch (various mill sites, including Christenot Mill/Union City)

#### **Historic Homesteading/Ranching**

Ney Ranch in the Beaverhead Acquisition Parcel

There are also numerous standing cabin structures and homesteads on public lands across the planning area that may potentially be sufficiently preserved, to be considered for a program of adaptive reuse and utilized as BLM administrative structures and/or in a recreational cabin rental program.

**Experimental Use or Discharge from Use:** Like pre-historic sites, individual sites would be evaluated on a case-by-case basis before assignment to either the Experimental Use or Discharge from Use categories. In general, properties assigned to these categories would have been determined to contain little or no scientific or historical value. Sites in these categories would generally include isolated trash dumps and artifact scatters, isolated features such as prospect pits or claim markers, and collapsed structural remains that no longer retain integrity of design or workmanship. Only those sites that have been formally determined to be Not Eligible for the National Register of Historic Places would be placed into either of these categories.

Cultural properties are evaluated with reference to National Register criteria for the purposes of assessing their historical values and their public significance. Such evaluations are carefully considered when cultural properties are allocated to use categories. Although preservation and nomination priorities must be weighted on a case-by-case basis, **Table 14** serves as a general guide illustrating the relationship between National Register evaluation and allocation to use categories.

## **FISH AND WILDLIFE**

### **Fish**

#### **Laws, Regulations and Policy**

Fisheries management on public lands administered by the BLM is directed by a variety of laws, executive orders, and policies, including memorandums of understanding between state and federal agencies as applied to specific situations. These include but are not limited to:

- Endangered Species Act
- Montana Natural Streambed and Land Preservation Act
- Federal Land Policy and Management Act of 1976
- National Environmental Policy Act of 1969
- Fish and Wildlife Coordination Act of 1958
- Water Quality Act of 1987, as amended from the Federal Water Pollution control Act of 1977
- Public Rangelands Improvements Act of 1978
- Sikes Act of 1974
- Wild and Scenic Rivers Act of 1968

**Table 14**  
**Relationship Among Cultural Resource Use Categories, National Register Eligibility,**  
**and Preservation/National Register Nomination**

<i>Cultural Resource Use Category</i>	<i>National Register Eligibility</i>	<i>Preservation/National Register Nomination</i>	<i>Site Types Generally Included</i>
Scientific Use	Usually Eligible (under Criterion d)	Long-term preservation not critical; medium National Register nomination priority.	<b>Prehistoric:</b> sites with high artifact count and diversity, high complexity, and larger size; <b>Historic:</b> sites with archaeological and historic values, and generally poor structural integrity.
Conservation for Future Use	Always Eligible (generally eligible under Criterion d, a, or c and possibly b for historic sites)	Long-term preservation is required; highest nomination priority.	<b>Prehistoric:</b> sites inherently complex, or rare, or fragile and exhibit exceptional scientific values (e.g. wickiups, deeply stratified deposits, or large quarries); <b>Historic:</b> sites inherently complex, or rare, or fragile, generally significant standing structures (stabilization and preservation required).
Traditional Use	May Be Eligible (generally under Criterion a and d, possibly b and c as well)	Long-term preservation is desirable; nomination priority is determined in consultation with the appropriate cultural group(s).	Sites and locations determined in consultation with Tribal Groups. <b>Prehistoric</b> may include: burial locations, vision quest locations, pictographs and petroglyphs, certain tipi ring sites; <b>Historic/Modern:</b> plant gathering locations, areas considered sacred for religious purposes, etc..
Public Use	Usually Eligible (generally criterion a, b, and c, possibly d as well)	Long-term preservation is desirable; high nomination priority.	<b>Prehistoric:</b> High interpretive potential and can insure protection; <b>Historic:</b> High interpretive potential and can insure stabilization and protection, and/or adaptive reuse.
Experimental Use	May Be Eligible (generally under criterion d if at all)	Long-term preservation is not anticipated; low nomination priority.	<b>Prehistoric:</b> lithic scatters of limited artifact density and complexity; <b>Historic:</b> trash scatters, collapsed structures with no integrity or context
Discharge from Management	Not Eligible	Long-term preservation and management are not considerations; nomination is inappropriate.	<b>Prehistoric:</b> isolated finds, surface lithic scatters <50 items; <b>Historic:</b> isolated prospect pits; trash scatters <50 items, sites <50 years old

- Executive Order 11514, Protection and Enhancement of Environmental Quality
- Executive Order 11988, Floodplain Management
- Executive Order 11990, Protection of Wetlands
- Executive Order 12962, Recreational Fisheries
- Montana Water Quality Act
- Streamside Management Zone Law
- Montana Stream Protection Act
- Fish and Wildlife Conservation Act of 1980
- BLM Manual 1737 Riparian
- Fish and Wildlife 2000 (BLM National, State and District policies)
- Memorandum of Understanding and Conservation Agreement for Westslope Cutthroat Trout in Montana (1999)
- Memorandum of Understanding Concerning Fluvial Arctic Grayling Restoration (2001)
- Bureau of Land Management and Montana Department of Fish, Wildlife and Parks Cooperative Fish Management Plan (1984)
- Forestry Best Management Practices

## Affected Environment

### FISH POPULATIONS: DISTRIBUTION, SIZE, TREND, AND MANAGEMENT

The planning area contains four resident native coldwater game fish—westslope cutthroat trout (*Oncorhynchus clarki lewii*), mountain whitefish (*Prosopium williamsoni*), arctic grayling (*Thymallus arcticus*), and burbot (*Lota lota*), and four introduced resident coldwater game fish, rainbow trout (*Oncorhynchus mykiss*), brown trout (*Salmo trutta*), brook trout (*Salvelinus fontinalis*), and yellowstone cutthroat trout (*Oncorhynchus clarki bouvieri*). Additionally, ten non-game species spend all or part of their life cycle in waters in the planning area. They include the white sucker (*Catostomus commersoni*), longnose sucker (*Catostomus catostomus*), mountain sucker (*Catostomus platyrhynchus*), mottled sculpin (*Cottus bairdi*), stonecat (*Noturus flavus*), longnose dace (*Rhinichthys cataractae*), redbelt shiner (*Richardsonius balteatus*) common carp (*Cyprinus carpio*), flathead chub (*Platygobio gracilis*) and the utah chub (*Gila atraria*).

Resident cold-water species in the planning area are widely distributed and range from low to high abundance.

Current management emphasis in the planning area is on improving the status of WCT by increasing the quantity and quality of occupied WCT habitat. BLM provides funding under a cost share agreement with Montana FWP for WCT inventories and genetic testing and also provides funding to Montana FWP for fluvial arctic grayling recovery efforts. This has assisted in grayling re-introduction efforts in historic grayling habitat such as the Beaverhead, Ruby and Big Hole rivers. Fishery management on BLM lands in Montana is

shared between Montana FWP, which manages fish populations, and BLM, which manages fish habitat.

### FISH HABITAT LOCATION AND CONDITION

The DFO administers over 900 miles of habitat on perennial and intermittent streams. There are approximately 250 miles of fish bearing water within the administration area. The condition of fish habitat is in direct relation to water quality, condition of riparian and upland areas, and current and past land use practices. Habitat condition varies by stream, with the better quality fish habitat found in areas that have use restrictions, are remote, or have better armoring. Most fish habitat is being affected from current and past management. Some areas are improving under new management practices, while others are currently in a downward trend. Based on the most current riparian assessments available, 58 percent of riparian areas in the planning area are rated as Functioning at Risk (FAR), 21 percent are rated as Non-functional (NF), and 21 percent are rated as Proper Functioning Condition (PFC). Current inventories show that many BLM streams in the planning area have problems with excess sedimentation. Substrate embeddedness in surveyed streams ranges from about 20 percent to 75 percent. Substrate embeddedness refers to the infiltration of fine sediments into spawning gravels, diminishing the flow of water and dissolved oxygen through the gravels. Salmonid spawning success begins to decrease when substrate embeddedness exceeds 20 percent. Many areas have been adversely impacted from past mining practices, which changed the natural sinuosity, reduced the number of pool and riffle complexes, and removed spawning gravel. On many streams, bank trampling and width-to-depth ratios are often excessive from long-term livestock use.

### FACTORS AFFECTING FISH HABITAT AND PRODUCTION

The factors limiting or affecting fish habitat include excess siltation, stream dewatering from irrigation, riparian areas that are in less than proper functional condition, livestock impacts and past mining practices.

Factors limiting or affecting native fish production include non-native salmonid competition and predation, stream dewatering, hybridization, fish loss through irrigation diversions, excess siltation, a lack of population connectivity and small populations.

In the Madison River, whirling disease is a significant negative factor in rainbow trout recruitment. In the Big Hole and Beaverhead Rivers, seasonal low flow and warm temperatures have a negative affect on habitat quality and limit trout production.

### SPORT FISHERIES

Several nationally known rivers classified by the state of Montana as class 1 outstanding or "blue ribbon" waters based on their importance as fisheries are located in the planning

area. They include the Big Hole, Beaverhead and Madison rivers. In addition, many smaller, less well known streams such as Big Sheep Creek, Bean Creek, Bear Creek, and other small creek fisheries are included in the “blue ribbon” classification due to high fishery values. The most popular fisheries in the planning area are located on the larger class 1 rivers. The larger rivers such as the Big Hole, Beaverhead and Madison Rivers are some of the most popular fishing destinations in the state. They provide in the neighborhood of 282,000 angler days of use per year (MT FWP 1999), attracting fishermen from around the world. Some of the more popular smaller streams, such as Big Sheep Creek provide up to 1,226 angling days of use per year (1999 data). Of the 18 species of fish found in the planning area, the most sought after are rainbow trout, brown trout, brook trout and mountain whitefish. Many of the small streams support popular recreational fishing for small “pan sized” brook, brown and rainbow trout. There is no recreational fish stocking of the rivers and streams in the planning area. These waters are managed by the state as self-sustaining fisheries.

## **Wildlife**

### **Laws, Regulations, and Policies**

Wildlife habitat management on public lands administered by the BLM is directed by the following laws, mandates, and other guidance:

- Federal Land Policy and Management Act of 1976
- National Environmental Policy Act of 1969
- Fish and Wildlife Coordination act of 1958
- Water Quality Act of 1987, as amended from the Federal Water Pollution control Act of 1977
- Public Rangelands Improvements Act of 1978
- Sikes Act of 1974
- Bald Eagle Protection Act of 1940
- Eagle Protection Act of 1962
- Endangered Species Act of 1973
- Migratory Bird Conservation Act of 1929
- Taylor Grazing Act of 1934
- Emergency Wetland Resources Act of 1986
- Fish And Wildlife Conservation Act of 1980
- Streamside Management Zone Law
- Montana Stream Protection Act
- Executive Order 11514, Protection and Enhancement of Environmental Quality
- Executive Order 11988, Floodplain Management
- Executive Order 11990, Protection of Wetlands
- Executive Order 11987, Exotic Organisms
- Executive Order 11989, Off-Road Vehicles
- Executive Order 13186, Migratory Birds
- Interior Department Manual 520 – riparian habitat
- BLM Manual 1737 – riparian habitat BLM Manual 6500 - wildlife, fish and plant resources
- BLM Manual 6840 – special status species
- IM 98-140 Revised Guidelines for Management of Domestic Sheep and Goats In Native Wild Sheep Habitats
- Fish and Wildlife 2000 - National and state policies
- Memorandum of Understanding July 2000 – WAFWA, USFWS, BLM, and USFS—sage grouse conservation
- Memorandum of Understanding December 1990 - Defenders of Wildlife, Izaak Walton League, National Audubon Society, National Wildlife Federation and BLM—Watchable Wildlife Program
- Memorandum of Understanding October 1977 - Coordination with Montana FWP
- Memorandum of Understanding October 1971 - Coordination with Montana FWP

### **Affected Environment**

The DFO is responsible for the management of a wide variety of wildlife habitat in southwestern Montana. The BLM manages wildlife habitat and FWP manages wildlife populations. These habitats reflect the influence of a variety of past and ongoing human activities and disturbances, resulting in significant increases in some species populations, declines in others, and the modification of large blocks of habitat. These habitats and the wildlife species that rely on them rarely exist solely on BLM lands, and often extend across administrative boundaries to other federal, state, and private lands. The BLM has no compensation program for damage caused by wildlife.

The public lands in the planning area provide mostly mountain foothill habitats that are bounded by National Forest, Agriculture Research Station, and State lands at higher elevations and private lands at lower elevations in the major river valleys. Public land ownership is scattered with intermingled private and state lands although relatively large blocks of public land habitat are present in some areas. In general, this habitat can be segregated into three types: sagebrush shrublands, conifer forest, and riparian/wetland. These habitat types will serve as a basis, to the extent practical, for describing existing conditions, and for developing and comparing management alternatives throughout the planning effort. This will focus on a broader-scale approach as opposed to single species management, although certain individual wildlife species will still be emphasized.

#### **SAGEBRUSH SHRUBLANDS**

Big sagebrush habitat types are the dominant vegetation communities on the majority of public lands in the planning area. This area supports a significant diversity of sagebrush species and communities, and sagebrush-dependent wildlife species. At mid to lower elevations, Wyoming big sagebrush is the dominant habitat type that provides important winter habitat for mobile wildlife species such as mule deer, pronghorn antelope, and sage grouse, and localized yearlong habitat by sagebrush-obligate species such as

pygmy rabbit. Intermingled occurrences of Basin big sagebrush, mountain big sagebrush, tall three-tip sagebrush, and several low sages add to the diversity of vegetation and habitat structure. At higher elevations, moist mountain big sagebrush communities provide elk calving and sage grouse brood-rearing habitat along with dispersed spring, summer and fall habitat for numerous other species, often in association with forested habitat. Mixed sagebrush communities and localized dominance by other sagebrush species on specific sites within the broader sagebrush types often support uniquely dependent wildlife uses, such as pygmy rabbits.

Sagebrush habitats have been manipulated throughout the DFO, primarily to increase forage production for livestock. Diverse habitat conditions are present and are widely interspersed across various ownerships. Aerial spraying in the 1960s and early 1970s reduced sagebrush canopy on large areas of public land. Many of these areas, especially in Horse Prairie, were subsequently reseeded (an estimated 12,315 acres) to non-native herbaceous species that further altered natural communities. Sagebrush canopy has recovered in many of these locations, but it is uncertain if plant species compositions are representative of historic communities. Prescribed fire to control sagebrush and wildland fire that have occurred across all ownerships since the mid-1970s has had similar effects in reducing canopies, with variable levels of subsequent recovery. Some big sagebrush communities have been converted to tall three-tip sagebrush where extensive burning has occurred. In comparison to places outside the planning area (eastern Montana, southeast Idaho, Nevada) few large, extensive stands of sagebrush are present due to natural variation from topography and soils particularly where public land ownership is limited. Roads, rangeland improvement projects, and ongoing sagebrush treatments on other ownerships further fragments this habitat. While satellite imagery shows a slight increase in sagebrush since the late 1970s sagebrush communities that have not been treated or modified are uncommon when considering all ownerships in the planning area and represent reference sites for site potential where they do occur. Due to the regional losses of sagebrush communities, and the dependent wildlife uses, maintenance and improvement of existing sagebrush habitat is important.

### CONIFEROUS FOREST HABITAT

Public land forested habitats in the planning area are on the lower edge of extensive timber areas extending onto Beaverhead-Deerlodge National Forest lands, or are discontinuous islands of habitat found on isolated mountain ranges. This forested habitat represents security habitat for big game species and important linkage corridors for wildlife movement between other seasonal habitats. The close association of much of this forested habitat with adjoining sagebrush and riparian habitats supports a broader array of wildlife species than would occur in larger continuous blocks of forest.

Higher elevation lodgepole/spruce/subalpine fir forest provides summer habitat for mule deer and elk, and yearlong habitat for moose and mountain goat. Most wildlife species utilizing this habitat are seasonally migratory or have adapted to cope with significant winter snowfall accumulations. The most extensive areas of this habitat type are in the Centennial Mountains and Blacktail Ridge where public lands extend above 8,000 feet in elevation. Forest carnivores such as wolverine and lynx are highly dependent on this habitat (see *Special Status Species—Birds and Mammals* section).

Mid-elevation forests dominated by Douglas-fir provide a wider array of habitat that is generally drier and more available throughout the year. These forested areas often provide important security and thermal cover adjacent to big game winter ranges. The dry Douglas-fir habitat type has expanded in recent history, enlarging existing stands, and pioneering into adjacent sagebrush habitats. The lack of recent fire in much of this habitat has created conditions that support wildlife species dependent on these conditions. Enlargement of timber stands has created improved “linkages” between larger forested blocks of habitat. The “encroachment” along the perimeter and within many of these Douglas-fir stands provides a dense, multi-storied security habitat between open sagebrush and tall conifer forest that may be more available now than historically. This allows wildlife species needing denser forest habitat to also expand their distribution. This habitat supports wildlife uses that may not normally occur in close proximity, such as snowshoe hare adjacent to white-tailed jackrabbit. The resulting habitat conversion from sagebrush to forest has reduced forage availability on a localized basis for species that prefer sagebrush habitats. Isolated Douglas-fir stands surrounded by sagebrush habitats provide important habitat islands that increase biological diversity in a specific area, and provide security for migrating wildlife species. On a regional scale, these “islands” are part of linkages for mobile species between seasonal habitats, and ecosystems (Yellowstone and central Idaho).

Low elevation forest/woodland dominated by juniper and limber pine is more widely dispersed and often represents expansion into sagebrush and riparian habitats. This habitat is most available in the Sweetwater Hills and along the southern fringe of the Tobacco Roots Mountains. Although juniper can ultimately out compete sagebrush and grasses thereby reducing forage availability, it also provides structural diversity that is normally lacking in shrubland habitats.

### RIPARIAN/WETLAND HABITAT (BLM CRITICAL ELEMENT)

Stream riparian habitats in the planning area are generally dominated by willow or aspen communities along foothills streams, and often represent stringers of habitat extending below forested areas into sagebrush/grassland habitat. This habitat occurs between higher elevation habitats on National

Forest lands and lower elevation private lands in the major river bottoms. Habitats occur on wetlands and streams throughout the area at elevations from approximately 4500 feet to alpine areas over 9,000 feet. Riparian communities vary significantly from small, sedge dominated wetlands to linear, willow-dominated stream corridors to spruce bogs and alpine wet meadows. Aspen communities are scattered and associated with streams and springs. Riparian vegetation communities found in Montana are described in Hansen et al. (1995) and Cooper et al. (1995, 1999). Riparian and wetland communities around springs, seeps and pothole ponds in sagebrush habitats represent important small islands of habitat diversity as well as crucial water sources. Riparian habitats receive a disproportionate amount of wildlife use with approximately 75 percent of all wildlife species utilizing riparian habitat for at least some portion of their annual life cycle (EPA 1990).

Currently 18 percent of riparian habitats are in proper functioning condition (see *Vegetation—Riparian and Wetlands* section). Wildlife habitat values are degraded on riparian areas with functional-at-risk and nonfunctional conditions due to reduced vertical structure, lack of residual herbaceous cover and unstable streambanks.

Relatively few extensive wetland areas or large river floodplain habitats occur on public land. The most extensive wetland habitat in the planning area is located in the lower Centennial Valley, Big Sheep Creek Basin, and the Axolotl Lakes area. Wetlands at Axolotl Lake are generally in proper functioning condition while the productivity and diversity of wetlands in the Centennial Valley and Big Sheep Basin are currently below potential. Custodial management on isolated wetland habitats is perpetuating less than desirable conditions. Lack of water and residual vegetation are primary factors inhibiting productivity for Centennial wetlands.

### **HABITATS OF CONCERN**

Long-term fire suppression has influenced habitat structure and composition, particularly in forested habitats. However in the absence of fire, other natural disturbances such as drought and insect infestation/disease, and land use practices such as mining, grazing, logging, prescribed fire, and herbicide spraying have altered plant community structure and composition.

Currently rangeland health regulations require management to achieve proper functioning conditions, as a minimum. In general, increasing potential would result from managing vegetation communities and habitats for a desired future condition (DFC) nearer to site potential (potential natural community - PNC) rather than simply meeting proper functioning condition (PFC) criteria. More habitats would be in late-seral condition supporting species with narrower tolerances to disturbance and habitat suitability. Potential for recovery or reintroduction of species such as bighorn sheep, beaver, trumpeter swan, and sage grouse would increase.

Habitats of concern identified in the Pioneer Mountains and Gravelly Mountain Landscape analyses are low-stature sagebrush communities, curlleaf mountain mahogany, and aspen stands. Production and vigor of most of these habitats field-office wide is well below site potential. Low stature sagebrush communities typically are heavily grazed, curlleaf mountain mahogany stands have sustained chronic heavy browsing, and most aspen stands are decadent with little or no reproduction or recruitment.

Sagebrush habitats on private lands in many areas have been converted to agricultural lands, or are being managed in a fashion that may not provide for many sagebrush-dependent wildlife needs. This emphasizes the importance of maintaining the integrity of sagebrush habitats to provide taller, denser stands on public lands, particularly for mule deer, antelope, and sage grouse winter use, and sage grouse breeding use. Big Sheep Creek Basin and Sagebrush Creek are two examples of these diverse sagebrush communities and their dependent wildlife.

One of the highest concentrations of breeding ferruginous hawks in North America occurs along with nine other species of nesting raptors in two key raptor management areas, extending between Lima, Lima Reservoir, and the lower Sweetwater Hills. Maintenance of existing sagebrush steppe and mountain mahogany habitat types and controlling disturbance of nest sites is important to sustain this use (Atkinson 1992; Atkinson, personal communication 2002; Myers 1987a, Olendorf et al. 1989).

Bighorn sheep occur in four primary habitat areas in the planning area – Tendoy Mountains, Melrose/Maiden Rock, Greenhorn Mountains, and the upper Madison Valley, although the latter includes relatively little BLM land. The Tendoy bighorns were reintroduced in the mid-1980s and the Melrose/Maiden Rock herd in the mid-1960s, and the Greenhorn Mountains herd in 2003. Both the Tendoy and Melrose herds have sustained major die-offs and have not recovered to previous population levels. Both herds support significant public values through both hunting and wildlife viewing. Maintaining suitable habitat conditions for bighorn sheep, and controlling disturbance and competing uses, in both these habitat areas is important. Although the Hidden Pasture Bighorn Habitat Management Plan (HMP) has been partially implemented for the Tendoy herd, no such planning direction is in place for the Melrose/Maiden Rock or Greenhorn herds.

Wetland habitat in the lower Centennial Valley between Red Rock Lakes NWR and Lima Dam provides important breeding habitat for trumpeter swan, various waterfowl and numerous wetland-dependent species including two listed and 10 BLM sensitive species. Wetland habitat conditions are less than desirable due to water level fluctuations, irrigation diversion, and livestock grazing practices. The Red Rock Waterfowl HMP provides management objectives and

projects for waterfowl, antelope, sage grouse, nongame, and TES species on this wetland habitat across several grazing and unleased allotments. HMP objectives for residual cover and utilization are not being met because they are not part of most existing grazing allotment plans, where they exist.

Blue Lake in the Axolotl Lakes area southeast of Virginia City supports perhaps the only population of axolotl in Montana, an aquatic form of tiger salamander that matures without shedding gills. Laboratory tests indicate that water temperatures over about 71°F cause axolotls to metamorphose into normal terrestrial salamanders. Axolotl larvae are extremely vulnerable to fish predation. Maintaining the cold, relatively sterile environment in Blue Lake, without fish, is essential to maintaining this biologically unique wildlife population (Rauscher 2000).

Several habitat management plans (HMPs) have been in place for a number of years that contain habitat objectives and projects that address various habitat and wildlife species needs.

- 1 BLACKTAIL HMP - 1976, objectives to optimize forage availability for wintering and calving elk on lands adjoining Blacktail Game Range and Robb-Ledford Game Range, maintain security cover, protect stream channels and aquatic habitat, and control human disturbance.
- 2 RED ROCK WATERFOWL HMP - 1983, objectives and projects for waterfowl, antelope, sage grouse, nongame and TES species habitat in the Centennial Valley between Red Rock Lakes NWR and Lima Dam.
- 3 HIDDEN PASTURE BIGHORN HMP - 1980, objectives and projects to support the reintroduction and maintenance of bighorn sheep in the Dixon Mountain/Hidden Pasture core area.
- 4 SHEEP CREEK AQUATIC HMP - 1981, objectives and projects for riparian and aquatic habitat improvement in the Big Sheep Creek watershed.
- 5 WALL CREEK ALLOTMENT HMP - 1983, establishes an allotment grazing plan with objectives for riparian habitat, streambank trout cover, breeding bird pair density, upland condition improvement.
- 6 AXOLOTL LAKES HMP - 1976, management plan for protection of axolotls in Blue Lake, and ecological values in the Axolotl Lakes area. Acquisition of private land habitat adjacent to this area in 2002 enhances values and management opportunities.

### MANAGEMENT CONCERNS

Habitat requirements cannot be met everywhere for all species. Management focus on habitat condition and composition will have a more widespread effect on wildlife species than a focus on individual species. Habitat manipulation will enhance conditions for some species while limiting opportunities for others. Generally, disturbances may promote use by species that are more mobile or those that are more adapt-

able, and may be detrimental to those with more rigid habitat requirements. Habitat may be only seasonally available due to elevation, aspect, and proximity to disturbances. Seasonal habitat size and availability limits big game population size and distribution. Wildlife social tolerances limit intermingling of species on the same habitat (deer, elk, antelope) and how much human disturbance is tolerated. Learned or traditional behavior limits a species' ability to shift traditional uses to new areas if disturbances make traditional habitats unavailable (leks, calving areas, winter ranges). Some species, such as bighorn sheep, do not readily colonize new habitats. Identifying minimum thresholds for habitat disturbance is most important for small, isolated populations, and sedentary species with very narrow rigid habitat requirements (amphibian/reptiles, small mammals).

### WILDLIFE SPECIES OCCURRENCE

The diversity of wildlife species in southwest Montana is exceptional, and with new rangeland health direction to consider biodiversity and viability of native species, lesser-known nongame species may receive more attention. Numerous high-priority threatened, endangered or sensitive species are present ranging from grizzly bear and bald eagle to pygmy rabbits, loggerhead shrike and Townsend's big-eared bat (see *Special Status Species—Birds and Mammals* section). Public land acres for seasonal wildlife ranges are displayed in **Table 15**.

#### *Big Game*

BLM, Forest Service, and Montana FWP jointly derived seasonal distribution and population estimates for big game species in the late 1980s and early 1990s. This information was used in the 1990s to develop State management plans for elk and mule deer with habitat and population objectives by herd units. These herd units are large, landscape-level areas (Pioneer Mountains, Gravelly Mountains, Lima-Tendoy) that encompass seasonal habitats and movements for discrete populations. However at that scale, it is difficult to derive specific elk or mule deer numbers for a smaller area that may be useful for site specific planning. Seasonal habitats are mapped in GIS, and represent an outside perimeter where a particular seasonal use could be expected to occur by a particular species, but are not intended to be precise because distribution varies annually due to weather, forage availability, and population size and distribution. Areas are included that do not provide for a particular use due to topography, different vegetation, or disturbances but are too small to map at the broad scale, e.g. north slopes on winter ranges, timber patches in sagebrush. Some habitat areas are not designated due to lack of public (BLM) ownership (Big Hole valley, Madison valley). All seasonal habitats for all species have not been identified. Summer and fall habitats are generally not identified since use during those seasons is widely dispersed across many different ownerships. BLM emphasis has been to identify winter habitats, and breeding habitats where they occur on BLM lands.

**Table 15**  
**Seasonal Habitat for Game Species**  
**in the Dillon Field Office**

<i>Species</i>	<i>Yearlong</i>	<i>Summer/Fall</i>	<i>Winter/Spring</i>
Antelope	123,500	375,000	110,000
Bighorn Sheep	33,000		
Elk	67,600	378,000	261,500
Moose	260,000	32,000	
Mountain goat	5,400		
Mule Deer	115,000	365,000	259,000
Sage grouse	647,000**		112,900
Waterfowl	9,000		

\* Mountain Foothills Grazing EIS (USDI-BLM 1980);  
Montana FWP 2002 GIS; BLM 2004 GIS  
\*\* Montana FWP "occupied habitat"

#### Elk, Mule Deer, Antelope

The planning area provides habitat for nearly all the game species recognized in Montana. Elk, mule deer and antelope are widespread and fairly common. Elk numbers have expanded until recently and were generally above Montana FWP Elk Plan population objectives in many herd units. Populations have been reduced, and most units have now stabilized within plan objectives. Mule deer populations have declined and rebounded at least twice since the late 1970s. Current populations appear to be increasing. Antelope numbers have remained generally static during the 1980s and 1990s although current numbers are somewhat lower than average in some areas. These three big game species travel widely throughout the area between seasonal habitats, with major winter habitat occurring on public and private lands. Montana FWP winter game ranges at Wall Creek, Robb Ledford and the East Fork of Blacktail Creek sustain significant numbers of wintering elk, mule deer and to a lesser degree antelope. General migration corridors for these species are fairly well identified. Extensive interchange between elk and mule deer populations in Montana and Idaho occurs across the Continental Divide, with animals using winter habitat in Montana and summer habitat in Idaho, and the reverse.

Habitat condition is generally not a limiting factor for mule deer or elk populations. Forage availability is sufficient on most elk winter habitats although as numbers continue to increase, competition with livestock on the same areas will become more pronounced. Utilization studies on major winter habitats in Dyce Creek, E.F. Blacktail Creek, Price Creek, Ramshorn Creek, E.F. Blacktail Creek, Barton Gulch and

Camp Creek show relatively little competition for forage between elk and cattle. Big sagebrush canopy and condition is sufficient to provide forage and cover on mule deer and antelope winter habitats area-wide, although localized areas (Sweetwater Basin, Centennial Valley) are not meeting the seasonal needs of these species as a result of past sagebrush burning on all ownerships, competing livestock use, or habitat fragmentation. Mule deer have been displaced from some sagebrush winter range where elk have taken advantage of increased herbaceous forage availability resulting from prescribed fire. Big game security in forested areas is considered in all forestry projects. Relatively small timber stands that are surrounded by or adjacent to open habitats with high open road densities inherently cannot meet most recognized big game security cover standards. However, the availability of dense cover in many Douglas-fir habitats (encroachment) is currently sufficient to provide some degree of effective hiding cover during hunting seasons.

Pronghorn antelope distribution has changed relatively little since the early 1980s, but numbers have fluctuated substantially. Habitat suitability is adequate to provide seasonal antelope needs in most areas, although localized areas with reduced sagebrush canopy and composition limit antelope use, particularly for winter habitat (Big Sheep Creek Basin, Sweetwater Basin). Barrier fences that inhibit or prevent free movement to all big game but particularly antelope are a concern area-wide. Fence modification has occurred in some areas but has not addressed all known barrier fences.

#### White-Tailed Deer

White-tailed deer have increased in the planning area since the late 1970s partially as a result of changes in agricultural practices in the major river valleys, and population expansion. Significant numbers occur throughout the Ruby River watershed, below Divide in the Big Hole River corridor, along the Beaverhead River below Clark Canyon dam, and all along the Jefferson River. White-tails have expanded into nearly all surrounding habitat from these areas in varying numbers, with occurrences documented in the upper Centennial Valley on Red Rock Lakes NWR, in Lima Peaks, and Big Sheep Creek Basin, upper Horse Prairie and Blacktail Creek. This expansion has intruded into seasonal and yearlong mule deer habitat, particularly lower elevation winter and spring habitats, and represents direct competition for food and space with mule deer, and in some areas displacing mule deer from previously preferred habitat. The majority of this overlap occurs on private lands and has not been well quantified on public lands.

#### Moose

Moose have also increased in numbers and distribution since the late 1970s. Moose currently occur at least seasonally and in small numbers in all major river valleys and drainages throughout the planning area wherever dense riparian vegetation is present. Greatest concentrations occur in the

Big Hole Valley and Centennial Valley. Most moose habitat is associated with riparian corridors that extend from the major drainages upward in elevation into conifer forests. In some localized areas browsing by moose in riparian areas is limiting willow and aspen recovery. At higher elevation in moist forest types, moose use expands out of riparian areas and can occur yearlong and area-wide. Mountain mahogany is supporting substantial winter moose use where that habitat type is available adjacent to forested cover. Localized heavy browsing is occurring in some riparian areas at current moose population levels. Overall distribution and specific seasonal uses, when identified (mostly winter), are mapped in GIS and described in **Table 15**. Population estimates are not available in all areas.

#### Bighorn Sheep and Mountain Goat

Bighorn sheep occur on historic habitat in three areas in the DFO - Melrose/Maiden Rock, Tendoy Mountains, and in the Madison Range east of the Madison River (**Table 15**). Bighorns in the Madison are widespread and occur on only a few small tracts of public land adjacent to Forest Service lands. All of these populations have been reestablished after being extirpated in the 1930s, and all suffered die-offs in the 1990s. Periodic supplemental reintroductions have sustained all three populations. When numbers were high, bighorn sheep from the Melrose/Maiden Rock population were transplanted to other historic habitat outside the DFO. FWP and BLM-Dillon released bighorns into the Greenhorn Mountains in 2003. Bighorn sheep are a high priority species that receive significant local, state and national attention and interest. Substantial historic bighorn sheep habitat is present in the planning area but some is unavailable due to conflicting domestic sheep grazing. National BLM bighorn sheep guidelines provide direction for managing populations and habitat (USDI-BLM 1998). GIS coverages map the extent of bighorn sheep habitat when populations were high and do not reflect current distribution. Current population numbers are unknown.

Most mountain goat habitat in this area occurs on Forest Service lands but goats do occur in Bear Trap Canyon on the Madison River, around Jeff Davis Peak in Horse Prairie and in the E.F. Blacktail Creek. Isolated use occurs adjacent to the southwest Tobacco Root Mountains, western Highland Mountains, Tendoy Mountains and Lima Peaks. Mountain goat habitat is seldom affected by BLM public land management activities and has not been an issue, although motorized recreation (4-wheelers) is encroaching into mountain goat habitat in some areas.

#### Upland Game Birds

Mapping of game bird distribution identifies habitat that may be occupied by game birds some time during the year, or in the case of gray partridge, is based on limited observations. Identification of specific seasonal habitats is incomplete, and for blue grouse is based primarily on the presence of suitable habitat rather than a presence of bird popu-

lations. Radio telemetry work on sage grouse in 1999-2002 has provided information about specific seasonal habitat areas in Horse Prairie, Big Sheep Creek Basin and Sweetwater Basin.

#### Sage Grouse

Sage grouse populations and sagebrush habitat are issues for public land management due to significant habitat losses range-wide from wildfire and prescribed fire, habitat conversion for agricultural needs, livestock grazing, energy/mineral exploration and development, and expanding human populations. Pending petitions for listing the sage grouse under the Endangered Species Act emphasize the need for region-wide assessments addressing habitat conditions and population stability. Potential vegetation manipulation, particularly through fuels and fire management, also emphasizes the need to better understand sage grouse ecology. Conservation planning is underway in Montana to potentially minimize the impacts of a potential listing and initiate actions to sustain viable populations of sage grouse. Local conservation planning specifically for southwest Montana has not been implemented.

Long-term sage grouse population declines in southwest Montana have been documented for some time, but habitat quality and composition have not been adequately investigated. Crowley and Connelly (1996) documented declining numbers of male sage grouse on nearly all leks in southwest Montana since the early 1970s, although some numbers have stabilized or increased slightly since then. Substantial sage grouse research information has been collected in southeast Idaho that is pertinent to southwest Montana, including some evidence that migratory sage grouse are moving between southwestern Montana and southeastern Idaho (Connelly et. al 1988; Connelly et al. 1991; J.W. Connelly, personal communication, 2001) In 1999, the Dillon Field Office initiated a cooperative study of sage grouse movements, distribution, and habitat inventory that could serve as the basis for expanded research and habitat conservation. Four years of study located key habitats in Horse Prairie, Big Sheep Basin and the Tendoy Mountains, and in Sweetwater Basin. Sage grouse using given lek complexes appear to act as discrete population units, at least during the breeding season, with little interchange between groups. However, seasonal movements - distance and duration - vary significantly between groups of sage grouse. Large areas of sagebrush appear to provide suitable habitat for sage grouse but are unoccupied. The area centering on Reservoir Creek/Badger Gulch southwest of Bannack appears to be a relatively intact core habitat supporting the largest concentration of sage grouse leks and winter habitat on public lands in the planning area (Roscoe 2002). This area is supporting several hundred sage grouse yearlong.

Lek monitoring has occurred sporadically in planning area since the mid-1970s and is used as an index to population size and trend. Montana FWP maintains a database docu-

menting lek occupancy and male attendance. Currently, 40 leks are identified in the planning area, with 35 active in 2002, with at least 22 of these occurring on public land. Important seasonal habitats are centered on breeding and winter complexes (**Table 15**). Brood rearing habitats have not been adequately determined, but are locally confined.

Blue Grouse, Ruffed Grouse, Grey Partridge, Columbian Sharp-tailed Grouse, Turkey

Blue grouse are typically found in Douglas-fir habitat year-long, focusing on aspen/willow riparian habitats during breeding and brood rearing. Ruffed grouse occur locally in major riparian habitats in the Big Hole Valley and the south Centennial Valley. Grey partridge have expanded their range in the planning area since the early 1970s and are generally found in low to moderate numbers in mixed sagebrush-grasslands at low- to mid-elevations. Small groups of Columbian sharp-tailed grouse have moved into the Centennial Valley and upper Madison River Valley from southeast Idaho since the mid-1990s. Turkeys were released in Timber Canyon on the southwest flank of McCartney Mountain in the mid-1960s but did not establish a stable population. Turkeys are currently found along the Big Hole River downstream from Glen, and north of Dillon along the Beaverhead River. These birds are most likely feral and are not a result of the early release. Turkeys were released on private lands along the Jefferson River east of Whitehall in the late 1990s. These birds could eventually occupy public land habitat around the north end of the Tobacco Root Mountains. All of these species use at least a small amount of public land, but specific seasonal habitats and population numbers have not been determined.

***Furbearers***

The occurrence of large carnivores has not been quantified for the DFO. Black bear occur area-wide and their distribution most closely follows the occurrence of spring and summer elk habitat. Mountain lion numbers have increased in recent years but increased hunting quotas and hunter interest have apparently controlled this increase. Bobcats are relatively rare. Pine marten utilize suitable lodgepole habitat at dispersed locations. Coyote and red fox are found area-wide and numbers are relatively high, particularly since fur prices are low and private trapping and hunting has essentially ended. Coyote predation on young big game animals, and upland game birds, has become an issue. Control efforts by Wildlife Services, USDA-APHIS using aerial gunning, trapping and M-44s are primarily targeting coyotes and are mostly confined to domestic sheep allotments and adjoining areas. Muskrat and mink are present in small numbers in riparian/wetland areas where sufficient residual vegetation is present to provide forage, cover and sustain a prey base. River otter are present in small numbers on public land, mostly on the lower Madison River and Big Hole River.

Extensive willow and aspen habitats that historically supported beavers have been reduced, and many watersheds

are no longer sustaining stable beaver activity. While there are existing populations of beaver, local biologists have observed that stable colonies have declined substantially since the 1970s and long-term recolonization is not occurring.

***Waterfowl***

Twenty-two species of ducks, geese, swans, and mergansers have been documented on public lands in the DFO. Breeding habitat is available on or adjacent to Lima Reservoir, Ruby Reservoir and Clark Canyon Reservoir, along all major rivers, scattered wetlands in the Centennial Valley, and on widely scattered wetlands, streams, and beaver ponds area-wide. Major migratory corridors and winter concentrations occur along the Madison and Beaverhead Rivers. One of the largest molting populations of Canada geese in the northern Rocky Mountains annually occupies Lima Reservoir in the Centennial Valley during summer months. The Centennial Valley provides some of the few public land wetlands in the United States that support trumpeter swans. In association with habitat on Red Rock Lakes NWR, these wetlands support one-third to one-half of the breeding trumpeter swans in the tri-state population in Montana, Idaho and Wyoming. Cooperative waterfowl/wetland enhancement projects are being implemented in the planning area through the Intermountain Joint Venture and Ducks Unlimited, Inc. partnerships.

***Protected Non-game Species***

Migratory Birds

There are at least 175 species of migratory birds that occur on the planning area during part of the year. These birds are as diverse as the Calliope hummingbird, brown creeper, Brewer's sparrow, red-tailed hawk, mallard and sandhill crane. Most of these birds are summer residents that use habitats ranging from lower elevation wetlands to high elevation forests for breeding and raising young. Some species such as American robin and mallard are migratory but small populations may be present yearlong depending on seasonal conditions. Winter residents such as rough-legged hawk, snow buntings and rosy-crowned gray finches arrive from arctic breeding grounds, or high elevation, alpine areas to utilize winter habitats in lower elevation foothills and major river valleys, seasonally replacing summer residents. Major migration corridors follow the Beaverhead and Madison River valleys, passing literally millions of waterfowl, shorebirds, raptors and songbirds in spring and fall (Harmata et al. 1997).

The 1988 amendment to the Fish and Wildlife Conservation Act mandates the U.S. Fish and Wildlife Service to "identify species, sub species, and populations of all migratory nongame birds that, without additional conservation actions, are likely to become candidates for listing under the Endangered Act of 1973." *Birds of Conservation Concern 2002* (USDI-FWS 2002) is the most recent effort to

carry out that mandate and identifies those species in greatest need of conservation action in specific geographic bird conservation regions (BCR). The list of species for the Northern Rocky Mountain BCR 10, which includes the Dillon Field Office, is found in **Appendix D**. This mandate was emphasized with the issuance of EO 13186 directing federal land management agencies to develop cooperative plans to protect and manage habitat for all migratory birds. Expansion of funding opportunities under the North American Wetlands Conservation Act and other partnership opportunities through the North American Bird Conservation Initiative will support increased management consideration for these species.

#### Raptors, Eagles, Hawks and Owls

Overall, 21 species of raptors (five broad-winged hawks, two eagles, four falcons, three accipiters, seven owls) occur at least seasonally on public lands in DFO. One of the highest concentrations of breeding ferruginous hawks in North America occurs along with nine other species of nesting raptors in two key raptor management areas in the DFO. Monitoring of ferruginous hawk and golden eagle breeding territories since the mid-1980s indicates declines in occupancy and production have occurred while no changes in habitat are apparent. These changes may be related to drought, declines in prey availability, and off-site population impacts (losses on winter habitats).

#### *Other Non-Game Species*

Information on small mammals, bats, reptiles and amphibians is lacking. Databases maintained by the Montana Natural Heritage Program document general occurrences and potential for many of these groups of wildlife but site specific inventories have not been conducted for most of the Dillon Field Office. However as inventories are conducted, new occurrences and range extensions are being discovered which emphasizes the need for more comprehensive work. Localized bat inventories are being conducted as part of abandoned mine land rehabilitation projects. A faunal inventory of the Centennial Valley sandhills in 1999 documented new occurrences of Preble's shrew and Great Basin pocket mouse (Hendricks and Roedel 2001).

#### Amphibians and Reptiles

Amphibians have been recognized as important indicators of ecosystem health as many are declining in the western US and worldwide due to a wide variety of influences. Northern leopard frog has disappeared over much of its range in western Montana, including the DFO, and is declining in at least some areas in eastern Montana. No extant Northern leopard frog populations were identified in 2001-2003 surveys (Maxell 2004). Recent boreal (western) toad declines are a concern in some areas, and distribution of this toad, and many other species in the planning area, is largely unknown (Roedel and Hendricks 1998). Maxell's 2004 inventories found western toads were still widespread but rare in the region. Only approximately 35 clusters of breeding ac-

tivity were detected in the region and only a few of these breeding clusters appeared to support large populations of breeding adults (Maxell 2004). Livestock grazing may be the greatest impact to amphibians and reptiles in areas where riparian and wetland conditions are degraded (Maxell 2000).

Blue Lake in the Axolotl Lakes area southeast of Virginia City supports perhaps the only population of axolotl in Montana, an aquatic form of tiger salamander that matures without shedding gills. Laboratory tests indicate that water temperatures over about 71°F cause axolotls to metamorphose into normal terrestrial salamanders. Axolotl larvae are extremely vulnerable to fish predation. Maintaining the cold, relatively sterile environment in Blue Lake, without fish, is essential to maintaining this biologically unique wild-life population (Rauscher 2000).

The MNHP documents 446 records for seven species of amphibians and 262 records for seven reptile species in the Dillon and Butte Field Offices up to 1998. Inventory by MNHP between 1994 and 1998 revisited locations for historic records of amphibians and reptiles, and other high-probability habitats to determine presence of various species (Roedel and Hendricks 1998). Species occurrences are listed in **Table 16**. This inventory did not establish area-wide distributions, occurrence or population sizes. The short-horned lizard was the only species with a historical record from the portions of the planning area (Beaverhead County) that was not relocated between 1994 and 1998. A broad scale inventory of reptiles and amphibians in specific watersheds was conducted in 2002, and provides the most recent and comprehensive determination of species occurrences and distribution in specific watersheds.

#### Insects

Insect occurrences and distribution are not considered in land management activities. An inventory of fauna in the Centennial Valley sandhills documented the presence of four species of tiger beetles and 14 species of butterflies. All tiger beetles are typical on early seral, unstable sites, and their site-specific distribution displays some unique inter-specific habitat competition. The common presence of *Cicindela formosa* is noteworthy since this location is well beyond the range limit east of the Rocky Mountains. It has not been described in Idaho (Hendricks and Roedel 2001). This inventory emphasizes the likelihood of potential area-wide species occurrences and habitat inter-relationships that have not been described through lack of inventory.

#### **WILDLIFE REINTRODUCTIONS**

Various wildlife introductions have been made in the planning area since the early 1960s. Most have been implemented by Montana FWP and involved game species, both native and non-native. Bighorn sheep have been reintroduced in the Highland (Melrose/Maiden Rock), Tendoy Mountains, the Madison Range, and the Greenhorn Mountains. Suitable, historic habitat is available in many other areas that could support future reintroductions.

**Table 16**  
**Amphibian and Reptile Occurrence in the Planning Area**

<i>Species</i>	<i>#MNHP records*</i>	<i># records</i>	<i># sites</i>	<i>Preferred Habitat</i>
		<i>1994-1998</i>	<i>1996-1998</i>	
Long-toed salamander ( <i>Ambystoma macrodactylum</i> )	31	20	0	Wetlands in low elevation sagebrush to alpine
Tiger salamander ( <i>Ambystoma tigrinum</i> )	21	3	2	Ponds, lakes, springs, rodent burrows during daytime
Tailed frog ( <i>Ascaphus truei</i> )	46	28	0	Small, swift, cold mountain streams
Western (Boreal) toad ( <i>Bufo boreas</i> )	65	37	7	Terrestrial with wide range of elevation, breed in shallow water with mud bottom
Western chorus frog ( <i>Pseudacris triseriata</i> )	40	37	5	Terrestrial except during breeding, grasslands and open forest
Northern leopard frog ( <i>Rana pipiens</i> )	21	7	0	Dense vegetation in non-forested habitat
Columbia spotted frog ( <i>Rana luteiventris</i> )	222	152	32	Water bodies within openings in forest habitat
Painted turtle ( <i>Chrysemys picta</i> )	14	10	1	Lower elevation ponds, lakes, slow moving streams
Rubber boa ( <i>Charina bottae</i> )	32	5		Around logs and rocks in moist or dry forest types
Racer ( <i>Coluber constrictor</i> )	13	3		Open habitat in shortgrass, shrublands or forest
Gopher (Bull) snake ( <i>Pituophis catenifer</i> )	22	11		Dry arid areas in grassland, shrubland or open pine forest
Western rattlesnake ( <i>Crotalus viridis</i> )	39	17	2	Open, arid areas, rock outcrops
Common garter snake ( <i>Thamnophis sirtalis</i> )	21	8		Forest habitats, low elevation wetlands
Western garter snake ( <i>Thamnophis elegans</i> )	121	75	17	Most habitats but most common around wetlands

\*combined records for Dillon and Butte Field Offices

Non-native game birds occur locally in the DFO, mostly on private lands, through Montana FWP and private releases. Montana FWP and BLM released turkeys on McCartney Mountain in the 1960s but these birds did not become established. A recent release along the Jefferson River near Whitehall in the late 1990s established turkeys on private lands. A small amount of su public land habitat is available in that area. Chukar and ring-necked pheasant have been released in small numbers on private lands primarily in major

river bottoms with relatively short-term success, and no effect on public lands.

Proposed reintroductions are coordinated and/or implemented by Montana FWP on a case-by-case basis. Only native species can be reintroduced in BLM wilderness areas and WSAs. Non-native species can be released on other public lands through an approved habitat management plan.

## GEOLOGIC RESOURCES

### Laws, Regulations, and Policies

- Antiquities Act of 1906 (P.L. 59-209; 34 Stat. 225; 16 U.S.C. 432, 433)
- Federal Cave Resources Protection Act of 1988 (P.L. 100-691)
- National Environmental Policy Act of 1969 (P.L. 91-190; 83 Stat. 852; 42 U.S.C. 4321) the act is implemented by regulations of the Council on Environmental Quality, 40 CFR 1500-1508.
- Federal Land Policy and Management Act of 1976 (P.L. 94-579; 90 Stat. 2743; 43 U.S.C. 1701; "FLPMA")

### Affected Environment

Much of the following information was adapted from portions of the Beaverhead-Deerlodge National Forest FEIS for oil and gas leasing (USDA-FS 1995).

#### GEOLOGIC FEATURES IN THE PLANNING AREA

The planning area contains an extremely diverse and wide range of geology and geologic features. This area is very popular among students of geology, research geologists, mineral collectors, hobbyists and others seeking a variety of unique geologic formations within a close proximity.

Examples of some of the more interesting geologic features or areas in the planning area include Block Mountain and the surrounding area, the Hogback, the Big Hole River valley, the Madison River Valley and any one of the many mountain ranges. Many of these features draw professors, students and research scientists from all over the United States and the world to study these formations. There are a number of colleges that make visiting these unique formations part of their regular field camp exercise.

The planning area contains numerous abandoned mines that provide opportunity to study and collect minerals from the associated waste dumps. There are also numerous areas that provide opportunities to collect a wide variety of different surface rocks and minerals. Many of these rocks and minerals are sought after as collector items, for decorative purposes, for manufacturing of jewelry and lapidary applications. People who use this resource range from commercial collectors to occasional weekend rock hunters. The planning area also contains some limited cave resources, though none are considered spectacular in comparison with caves and caverns located outside of Montana. Campbell (1978) reports eight cave locations in Beaverhead County.

#### GEOLOGIC HISTORY

The oldest known rocks in southwest Montana, the Archean basement rocks, were laid down as sediments and volcanic flows more than three billion years ago. These rocks were

subjected to repeated episodes of metamorphism (intense heat and pressure) over the next one and a half billion years. Much of the area subsided during a period extending from 1,500 to approximately 850 million years ago, causing a thick accumulation of sediments that over time solidified into the rocks of what is known as the Belt Series. The Belt Series includes quartzites, argillites, and limey-to-dolomitic argillites, which are metamorphosed sandstones and shales. The combined thickness of these formations exceeds 50,000 feet in some places.

For the next 750 million years, an ancient sea repeatedly advanced and retreated over much of Montana. Some areas were almost continually submerged; accumulating thick layers of sediment, while others periodically rose above sea level and were subjected to erosion. In some places, these marine sediments accumulated to a depth of several thousand feet overlying the older Belt Series rocks.

Approximately 100 million years ago the ancestral Rocky Mountains began to rise, causing the inland sea to retreat eastward. The mountain building process included folding and uplifting of the older sedimentary rocks, creating intense heat and pressure deep within the earth's crust. Molten masses of rock, known as magma began to form and rise through the overlying layers. Where fissures opened to the surface, volcanoes formed. In some areas, the rising magma may not have reached the surface, only causing the crust to bulge over the molten rock that eventually cooled to form huge granitic batholiths.

Magmatic activity, including intrusion of granites and volcanic eruptions, has continued into recent times, evidenced by the fresh volcanic flows and active thermal features of Yellowstone National Park. The most intense period of volcanism occurred from 70 to 50 million years ago. Associated with this volcanism is an enormous swarm of dikes that trends northeast from central Idaho into west-central Montana. Deep accumulations of volcanic ash in southwestern Montana are also a result of this volcanic activity.

From 60 to 40 million years ago, Montana's climate was warm and moist. This was followed by a 20 million-year period of a cool, dry climate. Another period of a tropical climate followed, accompanied by dense jungle-like vegetation and formation of deep, lateritic soils.

The last dry spell began approximately 15 million years ago. The evidence suggests Montana's climate was very much like Death Valley and remained so until the first ice age began 2.5 million years ago. There is abundant evidence of glaciation during the ice ages in southwestern Montana. The last ice age ended about 12,000 years ago, very recent in geologic time.

The mountain ranges of southwest Montana are bounded by active faults that continue to generate earthquakes. There

is a region of high seismic activity stretching from Helena to Salt Lake City and beyond, indicating continued mountain building and movement.

The planning area is partially within the Rocky Mountain Overthrust Belt and partially within what is known as the Central Rocky Mountain Foreland Province. Both areas are considered highly prospective for oil and gas. Most of the drilling activity in southwest Montana in the past has been focused in the Foreland Province. The Rocky Mountain Overthrust Belt, also known as the Sevier Thrust Belt, is characterized by low angle thrust faulting. Huge slabs of older rocks were thrust eastward and ramped up and over younger rocks, burying the younger rocks underneath. East of this line, in the Central Rocky Mountain Foreland Province, thrust faults still occur, but they are at a much higher angle and involve basement rock (granite and Precambrian cores of mountains).

### MINERAL DEPOSITION

Structural features within the earth's crust are some of the determining factors for mineral deposition. Montana's distinct geologic history has created a state with numerous diverse mineral-rich districts. Fissures caused by folding and faulting in the mountain building process served as pathways for the movement of mineralizing solutions upward from great depth. In and near these pathways valuable ores of copper, zinc, lead, gold, and silver were deposited. Other deposits are associated with granitic type intrusions where the valuable minerals are disseminated in small particles throughout the rock, located in contacts between the intrusions and the country rock, replace the country rock, or are present in associated veins. In many deposits, several different valuable minerals may be present. Erosion of mineralized areas has concentrated valuable minerals such as gold, sapphires, and rubies into economic placer deposits.

All the deposits in Montana yielding commercial quantities of metals lie in or near the mountain areas, particularly in southwestern Montana where igneous activity was most prevalent. The geologic age of nearly all the western Montana mineral deposits is about 50 to 60 million years, corresponding with the age of intense igneous activity.

## PALEONTOLOGICAL RESOURCES

### Laws, Regulations, and Policies

Paleontological (fossil) resources are natural resources that occur on public lands and are therefore managed in accordance with the requirements of several Federal laws, primarily the FLPMA and NEPA. Additional requirements for the use, management, and protection of paleontological resources on public lands are addressed in a series of Federal Regulations and Secretarial Orders, as well as by specific

BLM manual guidance. Other guidance has resulted from key court decisions and Solicitor's Opinions.

Important legislation and other mandates and direction governing paleontological resource management on public lands include the following:

- Federal Cave Resources Protection Act of 1988 (P.L. 100-691)
- Federal Land Policy and Management Act of 1976 (P.L. 94-579)
- National Environmental Policy Act of 1969 (P.L. 91-190)
- Secretarial Order 3104 grants to BLM the authority to issue paleontological resource use permits for lands under its jurisdiction
- BLM policy for the management of paleontological resources is outlined in Manual Sections 8270.
- Title 43 CFR, Subpart 37 addresses protection of significant caves and cave
- resources, including paleontological resources
- Title 43 CFR, Subpart 8365 addresses the collection of invertebrate fossils and, by administrative extension, fossil plants.
- Title 43 CFR, Subpart 3622 addresses the free use collection of petrified wood as a mineral material for non-commercial purposes.
- Title 43 CFR Subpart 3621 addresses collection of petrified wood for specimens exceeding 250 pounds in weight.
- Title 43 CFR, Subpart 3610 addresses the sale of petrified wood as a mineral material for commercial purposes.
- Title 43 CFR, Subparts 3802 and 3809 address protection of paleontological resources from operations authorized under the mining laws.
- Title 43 CFR, Subpart 8200 addresses procedures and practices for the management of lands that have outstanding natural history values, such as fossils, which are of scientific interest.
- Title 43 CFR Subpart 8365.1-5 addresses the willful disturbance, removal and destruction of scientific resources or natural objects and 8360.0-7 identifies the penalties for such violations.

### Affected Environment

The existing regulations, and policies address collecting of fossils on public lands. Hobbyists or "rock hounds" may collect invertebrate or plant fossils in reasonable quantities for noncommercial purposes without a permit, and up to 25 lbs. of petrified wood plus one piece per person per day, up to 250 pounds in a calendar year for personal use. Some areas may be closed for hobby collecting to protect scientifically significant invertebrate or plant fossils, or prevent other resource damage. Qualified paleontologists may ob-

tain permits for collecting vertebrate fossils and other scientifically significant specimens. Specimens collected under the auspices of a permit remain the property of the federal government, and must be properly kept in qualified museum or university collections.

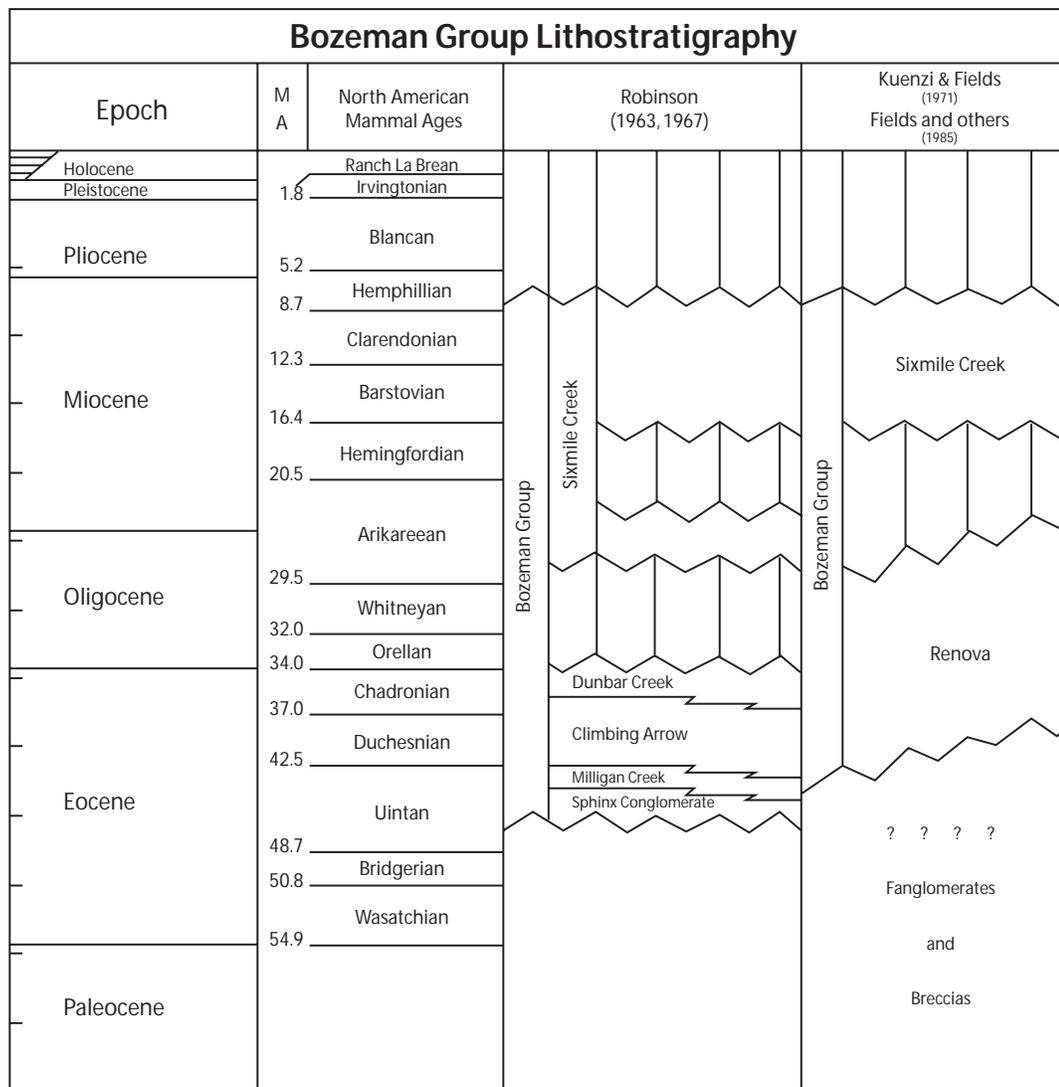
**DESCRIPTION AND SUMMARY**

A recently completed Class I overview of paleontological resources listed 110 known vertebrate fossil localities on public lands in the planning area, clustered within five main areas (Nichols and Hanneman 2000). Other Tertiary vertebrate fossil sites no doubt remain to be discovered. Most localities produce only small fossils consisting of teeth and jaws, fragments of limb bones, and other small parts. Teeth are the hardest parts of a skeleton and therefore are the most commonly fossilized elements of an animal. Other dense bone portions, such as ends of limb bones and wrist and ankle-bones are also commonly preserved. Entire fossilized

skeletons are extremely rare. Teeth and skulls are the most useful in identification and research since they are the most diagnostic.

Fossil materials in the planning area are within the Cenozoic Era, or the Age of Mammals, based on the ages of the geologic formations. More specifically, these formations, containing mammalian fossils, range in age from the mid Eocene to the late Miocene epochs of the Tertiary Period. This represents a span of time from approximately 50 million years to 7 million years before the present. Paleontologists have created a system to classify major evolutionary stages of mammals, referred to as North American Land Mammal Ages (NALMAs), which are typically named for geographic areas producing the benchmark faunas. Using this system, the mammal fossils found in the planning area indicate a range from the Bridgerian to the Hemphillian NALMAs (see **Figure 2**).

**Figure 2**  
**North American Land Mammal Ages Correlated with Lithostratigraphy**  
 (from Hanneman and Wideman, 1991).



These fossil-bearing formations in the planning area are significant for a couple reasons. They represent some of the most northerly and westerly exposures of these deposits in North America. That helps to provide researchers with important information about variability of animal groups, as well as timing of extinctions and appearances, over large regions of the country. The stratigraphic and fossil record within the planning area also represents a long period of time within the Cenozoic. Although other areas contain many more fossils and exposures, and provide a broader research potential for a particular NALMA, this area is one of the few that offers an illustration of 50 million years of mammalian evolution (Tabrum, Prothero, and Garcia 1996). That is useful because it allows for comparisons between different ages without having to consider the other effects of different regional environments, such as Central Plains vs. Rocky Mountains vs. Pacific Northwest.

Overall, mammalian fossils are found from most of the Cenozoic NALMAs in the planning area, with the exception of the earliest and latest periods. Presently, fossils are known from all intermediate ages except the Clarendonian, but that particular NALMA is relatively restricted elsewhere, so the lack of representation in the planning area is a minor point.

The mammal fossils and the enclosing geologic formations of this area document the slow climatic change from the warm, almost tropical environment present during the Bridgerian times to the more familiar cool temperate and dry environment of the Hemphillian. The fossils and sediments also illustrate the development of grasslands and the corresponding evolution among herbivores from primarily browsers to primarily grazers. This is evident by the development of generally higher tooth crowns and thicker enamel to withstand the wear caused by grazing on tough grasses.

The earlier NALMAs, such as the Bridgerian and Uintan, were characterized by mammals long extinct or quite foreign to the present North America fauna, such as brontotheres, rhinos, tapirs, oreodonts, tiny deer-like leptotragulids, and small three and four-toed horses. More familiar groups were also present, such as rodents and rabbits, although relatively primitive. The brontotheres, and a similar group, called amynodonts, were medium-sized mammals somewhat resembling modern rhinos or hippos. Some brontotheres developed spectacular slingshot-like nasal horns.

The mid-Cenozoic NALMAs saw the slow rise in relative numbers of the artiodactyls (even-toed ungulates) and decline of the perissodactyls (odd-toed ungulates), until the artiodactyls became the prominent group, as is the case today. A variety of artiodactyls developed, or diversified from earlier times, including oreodonts, camels, and leptotragulids. A number of primitive carnivores and insectivores were also present.

The Miocene NALMAs represented in the planning area (Hemingfordian, Barstovian, and Hemphillian) are relatively restricted in extent, but still provide important information about the changing mammal faunas. These groups are characterized by animals more familiar, although still forerunners of the modern representatives. Horses, camels, wolf-like carnivores, large cats, peccaries, rodents, rabbits, rhinos, and even primitive elephants were all represented.

Localities within the Sage Creek Basin probably contain the most abundant and varied deposits of fossils and certainly represent the greatest span of time. The Ruby Valley and Horse Prairie areas are also important with localities from several NALMAs present. Localities of various ages are also known from the Muddy Creek, Melrose, Beaverhead West, Jefferson, Grasshopper, and Blacktail drainages. Although patchy and restricted in overall size, these Cenozoic localities in the planning area produce significant fossils over a long range of time.

#### **PALEONTOLOGICAL RESOURCES CONDITION AND TREND**

Interest in vertebrate fossils and the demand fueled by the high prices obtained for some fossil specimens have brought many people into the field wanting to collect. Specimens collected for sale to the public often lose their scientific value as the important associated data about location and context is not recorded or preserved. Additionally, the specimens are often not known by or available to the scientific community. Individuals untrained in proper paleontologic collecting techniques inadvertently destroy many significant fossils. Dirt bikes and ATVs have damaged some fossil localities (Nichols and Hanneman 2000). Lands administered by the BLM often have badlands topography or exposed bedrock, resulting in a higher potential for fossil localities to be discovered.

The condition and trend of paleontological resources in the planning area varies considerably due to the diversity of terrain, geomorphology, access and visibility, coupled with past and current land use patterns. Exposed fossil elements can be easily damaged by factors such as wind and water erosion, animal and human intrusion, natural deterioration, and development and maintenance activities. Evidence of vandalism or illegal collecting has been observed in limited instances in the planning area, but currently is not a major problem. Impacts caused by development and maintenance activities (e.g. accelerated erosion attributable to some grazing, mining, and recreation activities) are known to be affecting certain localities.

Within the planning area, the “demand” for paleontological resources is thought to be low to moderate. This determination is based on the known research interests of professional paleontologists. The Montana State Office issues approximately two to three Paleontological Resources Use Permits to qualified researchers on an annual basis for the planning area.

## SOILS

### Laws, Regulations, and Policies

The BLM's Soil Resource Management Program is conducted under the following major authorities:

- The Federal Land Policy and Management Act of 1976(43 U.S.C. 1701 et seq.)
- Desert Land Act of 1877, as amended (43 U. S.C. 321 et seq.)
- Soil Conservation and Domestic Allotment Act of 1935, as amended (49 Stat. 163)
- Soil Info. Assistance for Community Planning and Resource Development Act of 1996 (42 U.S.C. 3271et. seq.)
- Soil and Water Resources Conservation Act of 1977 (16 U.S.C. 1901et. seq.)
- Public Rangelands Improvement Act of 1978 (43 U.S.C. 1901 et. seq.).

### Affected Environment

Soils and site capability are the foundations for ecological production assessment and response. Renewable resources depend upon the soil and climate, which provides the required nutrients and soil moisture for plant growth. This vegetation in turn provides for wildlife habitat, forage for grazing and browsing animals, and forests for recreation and wood products. Soils and their associated landscapes provide a place for trails and roads and provide the setting for riparian and wetland areas. The extent to which soil dynamics are understood is directly related to the ability to manage and protect this basic resource.

Soil at or near the surface has the highest organic matter and nutrient content, which generally controls the maximum rate of water infiltration. Soil surface loss (erosion) or degradation of part or all of the soil surface layer or horizon results in a loss of site potential (Dormaar and Willms 1998; Davenport et al. 1998). Two types of erosion affect the soils in the planning area—natural and accelerated. Natural erosion (geologic erosion) results from the wearing away of the earth's surface by water, ice, or other natural agents without human disturbance. Accelerated erosion occurs more rapidly than natural (geologic) erosion as a result of the activities of humans, and in some instances, animals. In general, vegetative cover helps reduce the rates of both natural and accelerated erosion.

### SOILS INVENTORY

A detailed soil survey is currently available for the lands in Madison County, published by National Resource Conservation Service (NRCS) in 1989 (Boast and Shelito 1989). Soils in the Beaverhead County portion of the planning area are currently being inventoried and classified by the NRCS,

but this information is not yet complete or published. The BLM has provided funding to complete this effort. Only general soil information derived from the The State Soil Geographic Database (STATSGO) is available for planning purposes in Beaverhead County (USDA-NRCS 1994). STATSGO data are not sufficiently detailed to make interpretations at the county level.

### GENERAL DESCRIPTION

The planning area is generally characterized by broad valleys bounded by rolling foothills, which rise into steep mountain ranges. Soils across the planning area vary with local geology, topographic relief, and climate. Soils on flood plains and terraces are more than 60 inches deep and formed in loamy material deposited by water. All other soils vary in depth from less than 20 inches to more than 60 inches. Soils on lower elevation uplands and terraces were transported by wind or water or were formed from igneous and metamorphic rocks. Soils on higher elevation uplands formed in water deposited materials or from metamorphic rock. Soils on mountains are formed mainly from, glacial till or bedrock.

NRCS provides erosion hazard information in the mapping unit descriptions in the Madison County Soil Survey; these are not available for Beaverhead County. Erosion is one of the indicators of rangeland health that is examined while determining whether rangelands are healthy or functioning. Erosion indicators such as: rills, water flow patterns, pedestals and/ or terracettes, bare ground, gullies, litter movement, soil resistance to erosion and soil surface loss or degradation are reviewed. Generally soils on steeper slopes with longer slope length and less vegetative cover erode more rapidly than soils with flatter slopes, shorter slope length and more vegetative cover.

Mass movement has occurred in the past on public land throughout the planning area. The Madison County Soil Survey has limited information about mass movement. Special symbols shown as slips and slides can be found on some map sheets in this published soil survey. These symbols note where areas of mass movement have been observed by NRCS field soil scientists. The Beaverhead County portion of the planning area has no similar information about mass movement.

Hydric soils do exist in the planning area, though they are not extensive. Hydric soils are those that are saturated, flooded, or ponded long enough during the growing season to develop anaerobic conditions in the upper part.

There are few if any prime farmlands in the planning area. Based on definitions provided by NRCS, prime farmlands constitute the best combination of physical and chemical characteristics for producing food, feed, forage, fiber and oilseed crops. In general prime farmlands have an adequate and dependable supply of water, a favorable temperature

and growing season, acceptable acidity or alkalinity, acceptable salt and sodium content, and few or no rocks. They are permeable to water and air and are not excessively erodible or saturated with water for long period of time, and they either do not flood or are protected from flooding (USDA-Soil Conservation Service 1993).

### MANAGEMENT CONCERNS

Soil management problems may arise in the planning area depending on a combination of factors including soil type, climate, geologic setting, and vegetative cover. Vegetation is sparse in much of the planning area due to the short growing season and distribution of effective moisture in some soils. Erosion and compaction are two important factors of concern in the planning area.

Overland flow and sediment transport into streams can be pronounced during intense precipitation events or during periods of severe runoff or snowmelt events. In areas of limited vegetative cover, this transport is exacerbated. Soil compaction can occur due to repeated impact or disturbance of the soil surface over a period of time. Farm machinery, herbivore trampling (Willat and Pullar 1983, Warren et al. 1986, Chanasyk and Naeth 1995), recreation and military vehicles (Webb and Wilshire 1983, Thurow et al. 1988), foot traffic (Cole 1985), or any activity that repeatedly causes an impact on the soil surface can cause a compaction layer. Compaction becomes a problem when it begins to limit plant growth, water infiltration, or nutrient cycling processes (Wallace 1987; Willat and Pullar 1983, Thurow et al 1988; Hassink et al. 1993). Moist soil is more easily compacted than dry or saturated soil (Hillel 1998). However, some studies indicate recovery processes (e.g., earthworm activity and frost heaving) are generally sufficient to limit compaction by livestock in many upland systems. (Thurow et al. 1988).

The physical condition of soil is assessed as part of the range-land health evaluation process and during other activity and implementation level planning.

### SPECIAL STATUS SPECIES (including BLM Critical Element Threatened and Endangered Species)

Special status species are plants and animals that require particular management attention due to population or habitat concerns. There are five categories:

- Federally Listed Threatened and Endangered Species and Designated Critical Habitats
- Federally Proposed Species and Proposed Critical Habitats
- Candidate Species
- State of Montana Listed Species
- BLM Species of Special Concern (Sensitive Species)

Species management is reflected by individual species' designations and, except for state-listed and BLM sensitive, is directed by the mandates of the Endangered Species Act (ESA).

It is BLM policy to conserve threatened or endangered (listed) species and the ecosystems upon which they depend, to ensure that all actions authorized, funded or carried out by BLM are in compliance with the ESA, and to cooperate with the USFWS in planning and providing for the recovery of listed species. Proposed species will be managed essentially the same as listed species except that formal consultations are not required unless there is the potential to jeopardize the existence of the species (BLM Manual 6840 Section.06.A,B). BLM will implement management plans that conserve candidate species and their habitats, and ensure that actions authorized, funded or carried out by BLM do not contribute to the need for the species to become listed (BLM Manual 6840.06 C). The protection provided for candidate species will be the minimum level of protection provided for BLM sensitive species (BLM Manual 6840.06.E).

Petitions for listing a species under ESA are filed with the USFWS where species information and status are reviewed, with a significant amount of public and agency involvement. The findings of that review are published as rulings in the *Federal Register* that may list a species as threatened or endangered. Candidate species are those for which FWS has sufficient information on species status that warrants listing the species as endangered or threatened but issuance of a final rule is currently precluded by higher priority listing actions. Proposed species have been officially proposed for listing as endangered or threatened but a final determination on listing has not been made. State-listed species are established by state legislation or regulation.

The BLM State Director designates Sensitive Species in coordination with State agencies responsible for fish, wildlife and plant resources, and State Natural Heritage Programs. These are species that:

- Could become endangered in or extirpated from a State, or within a significant portion of its distribution;
- are under status review by USFWS;
- are undergoing significant current or predicted downward trend in habitat capability that would reduce a species' existing distribution;
- are undergoing significant current or predicted downward trend in population or density;
- typically have small and widely dispersed populations;
- inhabit ecological refugia or other specialized or unique habitats; or
- are State-listed but could be better conserved through BLM sensitive species status (BLM Manual 6840).

## SPECIAL STATUS SPECIES—BIRDS AND MAMMALS (including BLM Critical Element Threatened and Endangered Species)

### Laws, Regulations and Policy

Special status species management in the planning area is authorized under and/or directed by the following laws, mandates, and guidance:

- Bald Eagle Protection Act of 1940
- Eagle Protection Act of 1962
- Endangered Species Act of 1973
- Federal Land Policy and Management Act of 1976
- Fish And Wildlife Coordination Act of 1958
- Migratory Bird Conservation Act of 1929
- Public Rangelands Improvement Act of 1978
- Sikes Act of 1974, As Amended
- Taylor Grazing Act of 1934
- Clean Water Act of 1977
- Water Quality Act of 1987
- National Environmental Policy Act of 1969
- Emergency Wetland Resources Act of 1986
- Fish And Wildlife Conservation Act of 1980
- EO 11990, Protection of Wetlands
- EO 11988, Floodplain Management
- EO 11987, Exotic Organism
- EO 11989, Off-Road Vehicles
- EO 13186, Migratory Birds
- Interior Department Manual 520
- BLM Manual 1737 Riparian
- BLM Manual 6500 General Wildlife
- BLM Manual 6840 Special Status Species
- Pacific Bald Eagle Recovery Plan (USDI-FWS 1986)
- Montana Bald Eagle Management Plan (USDI-BOR 1994)
- Grizzly Bear Recovery Plan (USFWS 1993)
- Northern Rocky Mountain Wolf Recovery Plan (USDI-FWS 1987)
- Grey Wolf Experimental Reintroduction Ruling (USDI-FWS 1994b)
- Whooping Crane Recovery Plan (USDI-FWS 1994a)
- Peregrine Falcon Recovery Plan (USDI-FWS 1977)
- Canada Lynx Conservation Agreement (June 2001)
- Canada Lynx Conservation Assessment and Strategy (USDI-FWS 2000)
- Sage Grouse Conservation Memorandum of Understanding (July 2000)
- Memorandum of Understanding, September 1994, implementing the Endangered Species Act.
- Memorandum of Understanding, January 1994, Candidate Species Conservation
- Memorandum of Understanding, August 2000, Stream-

lining Programmatic Section 7 Consultation and Coordination

### Affected Environment

All projects are reviewed for potential effect to any Special Status Species. A biological evaluation is completed to document those effects. If an effect might occur to a listed, proposed, or candidate species, consultation with FWS is required to document, avoid or mitigate those effects.

Numerous high-priority Special Status Species are present in the planning area, ranging from grizzly bear and bald eagle to pygmy rabbits, loggerhead shrike and Townsend's big-eared bat. Habitats that support these species span most of the planning area but occupancy within those habitats may be very limited. MTNHP maintains a comprehensive list of these species in coordination with FWP, BLM, and Forest Service. This list however does not include species distribution within the state. Comprehensive species distribution for many sensitive species is lacking. The most current BLM sensitive species list is found in Appendix G of the Rangeland Health EIS (USDI-BLM1996a) and is currently being revised. Although sage grouse are now formally on the Montana BLM list as a sensitive species, sage grouse habitat management is addressed under the *Wildlife* section of this document. Special status species of wildlife in the planning area and their occurrences are listed in **Table 17**. This list is the basis for the short-form biological evaluation that provides documentation and determinations for proposed projects that may influence any special status species.

BLM lands in the planning area generally represent a minor portion of occupied and suitable habitat for currently-listed species but may provide important linkages through intermingled ownerships, particularly for Canada lynx, gray wolves and grizzly. Management of listed species has had little impact on authorized actions in the planning area. Where constraints have occurred, they have been localized and seasonal. Grizzly bear, lynx, and wolverine are dependent on large blocks of forested habitat and isolation that generally do not occur on BLM lands outside of the Centennial Mountains. However, where larger BLM forested areas adjoin Forest Service lands, potential occupancy by either species increases substantially as does potential constraints on authorized actions.

Recovery plans have been prepared by USFWS for listed species that provide guidelines and standards that would be implemented to enhance species recovery. These guidelines most often apply within recovery zones or site-specific locations that are critically important to a species' reproduction and survival. More recent listings have developed conservation strategies rather than recovery plans. Information

**Table 17**  
**Montana Special Status Wildlife Species in the Dillon Planning Area**

<i>List of All Special Status Species that are known or suspected to occur on the DFO</i>	<i>Current BLM-DFO Management Status of the Species</i>	<i>Beaverhead-Deerlodge NF Management Status of the Species*</i>	<i>Occurrence on public lands in the planning area*</i>	<i>Preferred Habitat</i>
Grizzly Bear ( <i>Ursus arctos horribilus</i> )	Threatened	Threatened & MIS	T	Forest
Gray Wolf ( <i>Canis lupus irremotus</i> )	Proposed threatened in experimental area. Proposed for delisting	Proposed threatened in experimental area.	T	All
Lynx ( <i>Felis lynx</i> )	Threatened	Threatened	T	Forest
Bald Eagle ( <i>Haliaeetus leucocephalus</i> )	Threatened. Proposed for delisting	Threatened. Proposed for delisting & MIS	R	Riparian/wetland, Forest
Townsend's Big-eared Bat ( <i>Corynorhinus townsendii</i> )	Sensitive	Sensitive	R	Forest, caves, tunnels, shafts
Fringed myotis ( <i>Myotis thysanodes</i> )	Sensitive		R	
Long-legged myotis ( <i>Myotis volans</i> )	Sensitive		R	
Western long-eared myotis ( <i>Myotis evotis</i> )	Sensitive			
Northern long-eared myotis ( <i>Myotis septentrionalis</i> )	Sensitive		R	
Fisher ( <i>Martes pennanti</i> )	Sensitive	Sensitive	T	Forest
Great Basin pocket mouse ( <i>Perognathus parvus</i> )	Sensitive	Sensitive	R	Sagebrush shrubland
North American Wolverine ( <i>Gulo gulo luscus</i> )	Sensitive	Sensitive	R	Forest
Pygmy Rabbit ( <i>Brachylagus idahoensis</i> )	Sensitive (petitioned for listing)	Sensitive	R	Sagebrush shrubland
Black-backed Woodpecker ( <i>Picoides arcticus</i> )	Sensitive	Sensitive	R	Forest (recently burned)
Black Tern ( <i>Chlidonias niger</i> )	Sensitive	None	R	Wetland
Brewer's Sparrow ( <i>Spizella breweri</i> )	Sensitive		R	Sagebrush shrubland
Burrowing Owl ( <i>Athene cunicularia</i> )	Sensitive	Sensitive	T	Grassland
Common Loon ( <i>Gavia immer</i> )	Sensitive	Sensitive	R	Wetland
Ferruginous Hawk ( <i>Buteo regalis</i> )	Sensitive	None	R	Sagebrush shrubland
Flammulated Owl ( <i>Otus flammeolus</i> )	Sensitive	Sensitive		Open Douglas-fir forest
Franklin's Gull ( <i>Larus pipixcan</i> )	Sensitive		T	Wetland
Golden Eagle ( <i>Aquila chrysaetos</i> )	Sensitive		R	Sagebrush shrubland
Great Gray Owl ( <i>Strix nebulosa</i> )	Sensitive	None	R	Forest
Greater Sage Grouse ( <i>Centrocercus urophasianus</i> )	Sensitive	Sensitive	R	Sagebrush shrubland
Harlequin Duck ( <i>Histrionicus histrionicus</i> )	Sensitive	Sensitive	R	Riparian/wetland

Loggerhead Shrike ( <i>Lanius ludovicianus</i> )	Sensitive	None	R	Sagebrush shrubland
Long-billed Curlew ( <i>Numenius americanus</i> )	Sensitive	None	R	Grassland
McCown's longspur ( <i>Calcarius mccownii</i> )	Sensitive		R	Grassland
Marbled godwit ( <i>Limosa fedoa</i> )	Sensitive		T	Wetland
Mountain Plover ( <i>Charadrius montanus</i> )	Sensitive	None	R	Grassland
Northern Goshawk ( <i>Accipiter gentilis</i> )	Sensitive	None	R	Forest
Peregrine Falcon ( <i>Falco peregrinus anatum</i> )	Delisted; Treated as sensitive	Sensitive & MIS	R	Riparian/wetland, cliffs
Sage Thrasher ( <i>Oreoscoptes montanus</i> )	Sensitive		R	Sagebrush shrubland
Sage Sparrow ( <i>Amphispiza belli</i> )	Sensitive	None	R	Sagebrush shrubland
Sedge Wren ( <i>Cistothorus platensis</i> )	Sensitive		T	Sedge wetland
Swainson's Hawk ( <i>Buteo swainsoni</i> )	Sensitive	None	R	Riparian/Sagebrush
Three-toed Woodpecker ( <i>Picoides tridactylus</i> )	Sensitive	None	R	Forest (recently burned)
Trumpeter Swan ( <i>Cygnus buccinator</i> )	Sensitive	Sensitive	R	Wetland
White-faced Ibis ( <i>Plegadis chihi</i> )	Sensitive	None	R	Wetland
Willet ( <i>Cataprophoris semipalmatus</i> )	Sensitive		R	Wetland
Wilson's Phalarope ( <i>Phalaropus tricolor</i> )	Sensitive		R	Wetland
Boreal/Western Toad ( <i>Bufo boreas</i> )	Sensitive	Sensitive	R	Forested wetland
Northern Leopard Frog ( <i>Rana pipiens</i> )	Sensitive	Sensitive	T	
* R=resident for some part of annual life cycle, documented on or immediately adjacent to public lands. T=transient, only occasional occurrence on BLM lands MIS=Forest Plan Management indicator species				

and guidance in these plans serve as the basis for biological evaluations and Section 7 consultations.

As new species are proposed or listed under the Endangered Species Act, very specific management consideration is required through a prolonged process. New emphasis focuses on conservation actions prior to or during the petition review process that could preclude the need for listing. Increased management emphasis for sensitive species can preclude the need for potential listings as well as addressing habitats where conservation actions could serve multiple species needs rather than implement single-species management.

## SPECIAL STATUS ANIMALS IN THE PLANNING AREA

### Listed Species

#### Bald Eagle

Approximately 35-40 breeding territories are present in the DFO, primarily in the major river valleys. Breeding pairs utilize cottonwood habitat at lower elevations and Douglas-fir at higher elevations, in association with a permanent body of water. Approximately half of these territories include public land. Major winter concentrations occur in the same areas where open water and prey is available.

Cooperative interagency monitoring is occurring through the Montana Bald Eagle Management Plan. Recovery efforts for bald eagle and restrictions around nests have had little effect on current land use authorizations. Bald eagles are currently proposed for delisting.

Current breeding population densities are probably approaching optimum, with little vacant habitat present in river bottom cottonwood types. Long-term stability of cottonwood habitat, and dependent bald eagle use, is uncertain as flood control on the Beaverhead, Red Rock and Madison Rivers, and other land uses, reduce the amount of cottonwood reproduction recruitment available. Most expansion of new breeding territories would be into conifer forested areas with relatively minor riparian/wetland habitats supporting them.

#### Grizzly Bear

Grizzly bear observations on public lands in the planning area have been rare until the mid 1990s, and were confined to the Centennial Mountains and areas adjacent to the Gravelly range as an extension of bear habitat in the Yellowstone ecosystem. The planning area is outside the Yellowstone grizzly bear recovery zone, and no critical habitat has been designated. The Conservation Strategy for Grizzly Bear in the Yellowstone ecosystem and the Grizzly Bear Management Plan for Southwestern Montana (MT FWP 2002) address management needs for bears that are occurring outside the Yellowstone recovery zone (primary conservation area. The Montana plan will be implemented if grizzly bears are delisted. Information from the Conservation Strategy and Montana state plan are included in **Appendix D**.

The greatest benefit that public lands in the planning area provide for grizzly bear may be secure habitat and protection for animals moving between the Yellowstone, central Idaho and Northern Continental Divide ecosystems. Recent grizzly observations have been made in the Centennial Mountains, Medicine Lodge and upper Horse Prairie. Although a female and cubs have reportedly been present in the Centennial Mountains, no resident occupancy has been established. Observations are associated with transient, short-term use that is usually limited by conflicts with existing land uses. Although these occurrences appear to be increasing, the likelihood of these areas being permanently occupied by grizzlies is slim. Expansion outside recovery zones would continue but if these bears are not considered as essential to recovery, the occupancy of much otherwise suitable habitat would be temporary.

#### Gray Wolf

Prior to the reintroduction of nonessential, experimental wolf populations in Yellowstone and central Idaho ecosystems in 1994, gray wolves were classified as endangered with the full protection of ESA. Under the reintroduction rules, wolves that are within the reintroduction area but are not within a national park or national wildlife refuge are treated as “species proposed for listing” or “threatened”, rather than

endangered, for Section 7 consultation purposes. Within the planning area, Interstate 15 serves as the boundary between the Central Idaho Experimental Wolf Population and the Yellowstone Experimental Wolf Population.

Long-term sporadic wolf observations had occurred in the Tendoy Mountains, Centennial Valley and Horse Prairie prior to Yellowstone reintroduction. Establishment of wolf populations in Yellowstone and central Idaho ecosystems increased wolf distribution, and at least five packs, and numerous individuals, have temporarily occupied public lands in the planning area. However none of these have been sustained due to livestock depredations and resulting control actions by APHIS-Wildlife Services in coordination with USFW&S. Widespread occurrences outside of primary recovery zones will continue to increase, as will wolf-livestock conflicts. Those conflicts will generally result in removal or relocation of offending wolves that precludes the potential establishment of stable packs in many areas. Gray wolf expansion and occupancy into extensive suitable habitat beyond existing recovery zones will be totally dependent on social acceptance. The Montana Gray Wolf Conservation and Management Plan will direct wolf management after delisting.

The only formal Section 7 consultation process completed in the planning area was for wolf occurrence in a timber sale area in the west Big Hole in 1986.

#### Canada Lynx

No occupied lynx habitat has been identified in the planning area, and there have been no recent observations on public lands. No inventory efforts have been conducted on public lands while inventory efforts on FS lands in the Pioneer Mountains and the Gravelly Range have not documented lynx occurrence. Historic lynx observations have been made in the Centennial Mountains. Limited regional distribution of lynx reduces the likelihood that available, suitable habitat will be occupied. Potential Canada lynx habitat has been identified cooperatively with Beaverhead-Deerlodge NF using existing vegetation data and moist forest habitat types, and has been segregated into individual lynx analysis units (LAUs) based on 6<sup>th</sup> level hydrologic units that extend across all land ownerships. Potential lynx habitat on public lands is generally peripheral to more extensive habitat areas on Forest Service lands, with the only extensive habitat available on BLM lands occurring in the Centennial Mountains. Although some potential habitat is identified in the Ruby Mountains, McCartney Mountain area, and the Sweetwater Hills, these areas are not considered as manageable lynx habitat due to their isolation from other potential habitat. Similarly, many small stands of forested habitat that meet vegetation criteria are mapped as potential lynx habitat but are too small to support anything other than temporary transient use. As habitat information is refined or conditions change, LAUs with insufficient potential to support a home range of a breeding female lynx

will be dropped. The Lynx Conservation Assessment and Strategy (Ruediger et al. 2000) provides programmatic and project-level management guidelines for lynx conservation and is the basis for consultation determinations for all proposed projects. See the Lynx Conservation Assessment Strategy in **Appendix D**.

### ***Petitioned Species***

#### Pygmy Rabbit

Pygmy rabbit was petitioned in April 2003. Pygmy rabbit distribution in Montana is an extension of the Great Basin ecosystem. Local occurrence is patchy, primarily in areas dominated by Basin big sagebrush (*Artemisia tridentata tridentata*) and Wyoming big sagebrush (*A.t. wyomingensis*) where plants occur in tall and dense clumps, and soils are relatively deep and friable (Orr 1940; Green and Flinders 1980a,b; Weiss and Verts 1984). Pygmy rabbits are widespread in low numbers on public lands in southwestern Beaverhead County with greatest concentrations in the Bannack/Badger Gulch area (Rauscher 1997)

#### Sage Grouse

Several petitions for threatened listing were submitted to USFWS in 2002, citing significant habitat and population declines range-wide. Sage grouse population and habitat discussions are found in the *Wildlife* section of Chapter 3 and **Appendix D** provides additional information on conservation measures and guidelines. The Greater sage grouse was added to the Montana/Dakotas BLM sensitive species list in 2004.

### ***BLM Sensitive Species***

#### Black-Backed Woodpecker

This woodpecker is a resident of mature and old-growth boreal and montane coniferous forests with decadent trees, snags, and fallen logs. It is closely associated with recently-burned forest habitats and depends heavily on the larvae of wood-boring beetles (e.g., *Monochamus* spp.). In Montana, it is more abundant in lower elevation pine and Douglas-fir forests than in high-elevation subalpine spruce forests. This woodpecker is an uncommon resident in the DFO.

#### Black Tern

Black terns nest on floating plant matter, typically located in shallow water, close to open water or openings in stands of emergent vegetation. The instability of nests leaves them vulnerable to storms, wave action, and rapid water level changes. Black tern reproductive success fluctuates widely from year to year, depending on weather and water levels. Their success depends on relatively long lives, and flexibility in choice of nesting area. This makes protection difficult, because terns may use a particular marsh only occasionally, but when they do, it may be their only chance of success. Managed wetlands, where water levels and veg-

etative cover can be manipulated, are therefore the easiest places to reliably protect nesting habitat. In general, protection of remaining wetlands is the most important protective action necessary to maintain this inland tern (Novak 1992). This species occurs on perennial wetlands in Centennial Valley.

#### Boreal/Western Toad

This toad occupies wetland/willow habitats adjoining Engelmann spruce in Beaverhead County. They normally remain close to ponds and streams, but may range widely during the night. Adult and juvenile toads dig burrows in loose soils, or use burrows of small mammals, or occupy shallow water under rocks or logs. At least some toads hibernates.

#### Brewer's Sparrow

This sparrow is a common associate of the sage thrasher and sage sparrow, utilizing the same sagebrush habitats. Brewer's sparrows nest only in sagebrush plants, placing the nest 6-12 inches above ground, and so are totally dependent on taller, healthy sagebrush for nesting success. In Central Montana, insects represented a large percentage of the diet, so any treatments that reduce the abundance and availability of that food source will negatively affect Brewer's sparrow. These birds are common throughout suitable sagebrush habitats in the western half of the DFO.

#### Burrowing Owl

Burrowing owls are residents of open grasslands and prairies, occasionally using open areas such as vacant lots near human habitation or airports. Nesting and roosting occurs in burrows dug by mammals, most notably in prairie dog towns. Burrowing owls have been documented in the planning area in the Centennial Valley, East Fork of Blacktail Deer Creek, and east of McCartney Mountain during migration. Breeding habitat may be available in areas of dense ground squirrel activity at lower elevation but is unquantified.

#### Common Loon

Common loons occur on public lands in the planning area primarily during migrations, primarily on Lima Reservoir in the Centennial Valley. Nesting generally occurs on marshy portions of lakes with overhead cover to conceal nests, relatively clear water, adequate fish and amphibian forage base, and relatively free of human disturbance. Although several small, higher elevation lakes in the planning area may meet these criteria, they may not be available for breeding use by loons due to lingering ice cover late in the spring.

#### Ferruginous Hawk

Ferruginous hawks are relatively common summer residents of sagebrush/grasslands in the southern half of the DFO. Habitat in Lima Sweetwater Breaks area north and east of Lima supports one of the highest density breeding populations of ferruginous hawks in North America. Nesting oc-

curs on steep slopes, rock outcrops and low trees, often in close association with other raptors. Exposure of these nests makes them particularly vulnerable to disturbance and predation.

#### Fisher

Fisher occur primarily in dense coniferous or mixed forests, including early successional forest with dense overhead cover (Thomas et al. 1993). Optimal conditions for this species are in large, interconnected forest tracts. A dense understory of young conifers, shrubs, and herbaceous cover is important in summer. Fisher are documented only on public lands in the Big Hole Valley but recent Forest Service inventory of lodgepole and spruce/fir forest in the Pioneer Mountains indicates more common occurrences of fisher that previously known.

#### Flammulated Owl

This owl occurs in western Montana in mature and old-growth ponderosa/Douglas-fir habitats with relatively open under-story. Foraging often occurs along the forest/grassland ecotone with an abundance of flying insects for prey. Flammulated owls may be present in southwestern Montana where mature Douglas-fir forest provides suitable habitat.

#### Franklin's Gull

This gull occurs in southwestern Montana primarily as a seasonal migrant although a breeding colony is present on Red Rock Lakes NWR. It prefers large, permanent wetlands for breeding but occurs along river bottoms and extensively over cultivated fields and pastures during migration.

#### Fringed Myotis

This bat species is widespread in western states, including southwestern Montana. It is generally associated with open semi-desert to dry ponderosa pine forest up to approximately 6500 feet in elevation. This species roosts in caves, mines, rock crevices, buildings, and other protected sites. It forages along watercourses or over standing water. Distribution and status of this bat need to be studied to identify and protect roost sites and hibernacula. Winter habitats for this species are unknown (Genter and Jurist 1995).

#### Golden Eagle

Golden eagles are yearlong residents throughout Beaverhead and Madison County, with numerous breeding territories. Although the population appears to be stable, monitoring of nest territories during the late 1990's indicated a significant 10-year decline in territory occupancy and productivity. Suitable habitat is sagebrush/grassland and shrubland/forest interface. Nesting occurs on rock outcrops, cliffs, and occasionally in tall trees. Major migration corridors are present in the eastern half of the DFO along the Snowcrest Mountains and through the Madison River valley. Hundreds golden eagles and other raptors move through

this area with greatest numbers occurring during the fall migration. Golden eagles prey primarily on rabbits and ground squirrels, but also use a wide variety of other birds and mammals when available. Numerous migrating golden eagles were trapped and transplanted from the Rock Creek area adjacent to the Blacktail Game Range during the late 1970's and 1980's due to domestic sheep depredations.

#### Great Basin Pocket Mouse

The Great Basin pocket mouse is restricted in Montana to the extreme southwestern portion of the state in Beaverhead County. Occupied habitats are generally arid, sometimes with very sparse vegetative cover, but are usually found in sites with greater than 40% ground cover. These include grassland/shrubland, stabilized sandhills, and sagebrush habitats, with light-textured or sandy soils. This pocket mouse is primarily a seed-eater, but also seasonally feeds on insects and green vegetation (MNHP NRIS animal guide).

#### Great Gray Owl

Great gray owls occupy dense coniferous forest adjacent to small openings, meadows, and clearcut areas especially near water and wet meadows. Nests are usually placed in the top of large broken-off tree trunk, in old nests of other large birds (e.g., hawk nest), or in debris platforms from dwarf mistletoe, near bogs or clearings. Nests are frequently re-used with the same pair returning to the same area in successive years. Great gray owls are common summer residents in moist forest habitat throughout the DFO, most commonly along the Continental Divide.

#### Harlequin Duck

This duck nests along fast-moving rivers and mountain streams on rocky islands or banks (Cassirer et al. 1993). It requires relatively undisturbed, low gradient, meandering mountain streams with dense shrubby riparian areas (greater than 50% streamside shrub cover), and woody debris for nesting and brood rearing, and mid-stream boulders or log jams and overhanging vegetation for cover and loafing. The presence of this species is an indicator of high water quality (Spahr et al. 1991). Harlequin ducks tend to breed in the same area in successive years. This species is a rare summer resident in the Centennial Valley but has not been inventoried area-wide.

#### Loggerhead Shrike

This shrike is a summer resident in sagebrush grassland habitats in DFO. Shrub structure is a key component to reproductive success but has not been adequately described in Montana (Rauscher 1999). Northern shrike generally replaces this species during winter months.

#### Long-Billed Curlew

This species occupies prairies and grassy meadows, generally near water. It nests in dry prairies and moist meadows. Nests are on the ground usually in flat area with short grass, sometimes on more irregular terrain, often near rock or other

conspicuous object. In Wyoming, it often nests near a manure pile if available (Cochran and Anderson 1987). This species is a common summer resident in the DFO.

#### Long-legged Myotis

This bat probably occurs in mountain forests throughout Montana over a broad range of elevations. It generally roosts in trees, rock crevices, cracks, crevices in streambanks, and in buildings. Foraging occurs over woodlands, meadows, and watercourses. Caves and mines serve as night roosts and hibernacula. This species is nonmigratory (Genter and Jurist 1995).

#### McCown's Longspur

This longspur is a grassland bird that uses areas of very sparse and low-growing vegetation, including cultivated fields, heavily utilized pasture and bare areas. Nesting is on the ground next to some type of vertical cover. Breeding occurrence in the DFO is limited, but substantial flocks of wintering birds are occasionally present.

#### Marbled Godwit

This shorebird is present in the DFO only briefly during migration in May and September. It is generally associated with mudflats and shallow-water shorelines along permanent or semi-permanent wetlands and lakes, but may also be seen in irrigated meadows during the spring.

#### Mountain Plover

Mountain plovers are usually found in association with prairie dog colonies, but also utilize short-grass habitat that has been heavily grazed. Mountain plover in the planning area utilize grassland areas on ridgetops and alluvial fans adjacent to the Jefferson River valley. Breeding plovers were confirmed from one site on private lands near Twin Bridges in 1992, 1994, and 1995, with some potential public land habitat between Twin Bridges and Melrose. Nearly all suitable habitat in planning area is on private lands (FaunaWest1991, Knowles and Knowles 1993, 1997). USFWS issued a Federal Register Notice in September 2003 withdrawing the proposal for listing the mountain plover under ESA based on evidence of increased population stability and implementation of effective conservation measures.

#### Northern Goshawk

Goshawks are fairly common in the planning area with breeding territories widespread throughout the area in Douglas-fir and lodgepole forest adjacent to openings and riparian areas. A multi-year Challenge Cost Share project using radio telemetry indicated that long-range dispersal and seasonal movements occur for both adult and juvenile goshawk. A pattern of depressed nesting activity and low nest success indicates a need for more intensive, long term study to better evaluate the causes of the observed reproductive fluctuations (Kirkley 2001).

#### Northern Leopard Frog

This frog typically occupies mid to lower elevation ponds, wetlands and streams that provide a mosaic of habitats. Generally separate sites are used for breeding and overwintering but these may occur in different portions of the same water body. Rooted emergent vegetation is needed for breeding and foraging along shorelines and adjacent uplands. Although widespread throughout the eastern two-thirds of Montana, populations near the Rocky Mountains have declined significantly, and have been locally extirpated. No records exist for the DFO.

#### Northern long-eared Myotis

Distribution of this bat is generally peripheral to eastern Montana, but it has been documented from southwest Montana (D. Kampwerth, personal communication, 2004) using mixed and coniferous forests. It roosts singly under loose bark of trees and occasionally behind window shutters on buildings. Foraging occurs over small woodland pools and streams, and along roads and clearings within and under the forest canopy. Hibernacula are in caves. The species is non-migratory (Genter and Jurist 1995).

#### Peregrine Falcon

This falcon utilizes various open habitats where there are suitable nesting cliffs. When not breeding, it occurs in areas where prey concentrate, including farmlands, marshes, lakeshores, river mouths, tidal flats, dunes and beaches, broad river valleys, cities, and airports. The peregrine falcon was delisted under the ESA in 1998. Hacking activities in the Centennial Valley were conducted with the Peregrine Fund from 1981 through 1987. This effort released over 100 fledgling peregrine falcons that expanded throughout the region, and were instrumental in the eventual reoccupancy of many historic habitats in western Montana. Three hack towers and two natural sites in the Centennial Valley are currently occupied. Hack sites in the Valley bottom are relatively accessible while wild sites in the Centennial Mountains are remote and inaccessible.

#### Sage Sparrow

The sage sparrow prefers semi-open habitats with shrubs 1-2 meters tall. Habitat structure (vertical structure, shrub density, and habitat patchiness) is important to habitat selection (Martin and Carlson 1998). Habitat use is positively correlated with big sagebrush (*Artemisia tridentata*) cover, bare ground, above-average shrub height, and horizontal patchiness, and negatively correlated with grass cover (Rotenberry and Wiens 1980; Wiens and Rotenberry 1981). Population declines in some regions, and the degradation and loss of breeding and wintering habitats are concerns. This species is vulnerable to loss and fragmentation of sagebrush habitat, and may require large patches for breeding. This sparrow is documented in western Beaverhead County but lacks a comprehensive inventory.

Sage Thrasher

This thrasher is a sagebrush obligate species that is positively associated with taller, denser stands of sagebrush in larger patches across the landscape. It is commonly found in the same habitat as Brewer's sparrow, sage sparrow, sage grouse, and grey flycatcher. This species is common throughout sagebrush habitat in the western half of the DFO.

Sedge Wren

This wren occupies wetland and wet meadow habitats with short but dense herbaceous vegetation, such the various taller sedge species. They are highly sensitive to habitat conditions, and will abandon sites that become either too dry or wet, or do not provide adequate vegetative cover. Nesting areas may change opportunistically from year to year as conditions change. There are no documented occurrences for sedge wren in the DFO, although substantial amounts of suitable habitat are present.

Swainson's Hawk

Swainson's hawks typically nests in tall riparian shrubs in sagebrush grassland habitats in the DFO. Interspecific territoriality may occur with red-tailed hawk and ferruginous hawk in some areas and may be limited by presence of and predation by great horned owl (Palmer 1988). Swainson's hawks have been relatively common summer residents but have shown declines in occurrence during recent years. This raptor is a long-range migrant, traveling to southern South American during the northern winter.

Three-Toed Woodpecker

The three-toed woodpecker inhabits boreal forests. In some areas (Colorado, Montana, and British Columbia), there is enough potential habitat available for this species. This species is documented in the DFO but lacks comprehensive inventory.

Townsend's Big Eared Bat

This bat commonly occurs in mesic coniferous and deciduous forests (Kunz and Martin 1982), but occupies a broad range of habitats. Only localized occurrences are documented in planning area but a comprehensive inventory is lacking.

Trumpeter Swan

The trumpeter swan is North America's largest waterfowl that survived near extirpation in the contiguous United States with the establishment of Red Rock Lakes NWR in the Centennial Valley in 1935. The tri-state resident breeding population in southwestern Montana, southeast Idaho and northwest Wyoming is the remnant of the historic breeding population. These swans are isolated from other Canadian and Alaskan breeding populations, and are dependent on the wetland habitat and isolation afforded by Red Rock Lakes NWR, Yellowstone NP and adjoining areas. This area supports a major portion of wintering birds from interior Canada.

Breeding swans are dependent on perennial wetland areas with tall emergent vegetation. Preferred nest sites are typically on muskrat or beaver lodges, and are utilized every year. Winter habitat in the planning area is confined to portions of the Madison River, Odell Creek (Madison River tributary), and warm springs on Red Rock Lakes NWR. Public land wetlands in the Centennial Valley below Red Rock Lakes NWR have provided a significant portion of Montana breeding territories for the tri-state population. These wetlands are vulnerable to degradation and loss due to irrigation diversions, livestock grazing, and human disturbance, particularly during periods of drought. Current trumpeter swan occupancy and production on these sites are well below long-term averages. Although the swan population trend has been slightly upward over the past ten years, a significant decline occurred during 2001.

The petitioned listing of the tri-state trumpeter swan population was found to be unwarranted in October 2003.

Western Long-eared Myotis

This species of bat is widespread and probably found throughout Montana, most commonly in coniferous forests. It utilizes forested areas, river valley, and coulees where rock outcrops provide shelter. Day roosts are under loose bark, in hollow trees, and rock crevices or fissures in clay banks. Night roosts include caves and mines. Foraging occurs between treetops and over woodland ponds. This bat is nonmigratory (Genter and Jurist 1995).

White-Face Ibis

This species occurs in freshwater wetlands with tall emergent vegetation or floating mats of vegetation. Ibis are uncommon summer resident in the planning area on wetlands in the Centennial Valley, Beaverhead River and Madison River Valleys, but is common in southeast Idaho.

Willet

The willet is a relatively large sandpiper that is common around wetland/wet meadow areas in the Centennial Valley and along the shorelines of larger lakes and wetlands in the DFO. They prefer shallow-water areas with short, sparse shoreline vegetation. Suitable wetlands vary widely in size and permanence. Breeding requires large expanses of short, sparse vegetation adjoining wetland complexes for foraging. Nests are placed on the ground around the perimeter of wet areas.

Wilson's Phalarope

This small sandpiper occupies wetlands and small ponds throughout the DFO. They use shallow wetlands and adjoining wet areas during breeding, with nests being well-concealed in shallow grass-lined depression. Suitable wetlands provide open water, emergent vegetation, and open shoreline. The presence of deep more permanent wetlands for use later in the summer enhances reproductive success.

### Wolverine

Recent inventories indicate that wolverines may occur in small numbers on most of the larger forested areas in Beaverhead and Madison County on both Forest Service and BLM lands. Around larger blocks of habitat on Forest Service lands, BLM lands are peripheral and may only be occupied by wolverine intermittently. The Centennial Mountains and Blacktail Ridge provide yearlong habitat. Wolverines travel widely through subalpine forest areas, but are seasonally using some lower elevation, dry Douglas-fir habitat that previously was considered unsuitable for wolverine (Heinemeyer et al. 2001, Kelly personal communication 1992, Copeland personal communication 2000, 2002). Petitions for threatened listing were submitted in October 2002, but petition was determined to be unwarranted in 2003.

### CONSULTATION AND COORDINATION

Section 7 of the ESA emphasizes interagency cooperation to implement conservation actions for listed species, prohibits federal agencies from jeopardizing continued existence of a species or its critical habitat, and require federal agencies to confer with FWS on any actions that may jeopardize a proposed species or adversely modify its critical habitat. The need to initiate a consultation is usually determined by BLM and is based on a biological evaluation of whether a listed species or its habitat may be affected by the proposed action. Informal consultation with FWS is required to evaluate the level of impacts and whether suitable alternatives are available, and determine if formal consultation is necessary. If BLM determines that a proposed action may affect but is not likely to adversely affect a listed species, BLM may conclude consultation with written concurrence from FWS. If adverse effects to a listed species/critical habitat are anticipated, formal consultation will be initiated by BLM. BLM policy requires that formal conferencing will occur with FWS for actions that may adversely affect a proposed species/critical habitat although this step is not required by ESA (BLM Manual 6840 .21E4). Formal consultation with FWS is initiated by BLM with a written request and submission of a Biological Assessment that describes the proposed action and anticipated direct and cumulative impacts. FWS reviews this documentation to determine if the action will jeopardize the continued existence of a species or its critical habitat, result in an incidental take (loss) of animals, and if appropriate conservation recommendations or alternatives are available. These conclusions are then submitted to the BLM in a Biological Opinion. BLM's final decision then implements or modifies the proposed action as necessary, based on FWS recommendations. This consultation process can take place at any BLM planning level (Resource Management Plan, activity plan, site-specific plan) using programmatic, batched, or project-specific strategies.

Formal consultations have been rare for the planning area due to limited occurrence of listed species or their habitat on public lands, and limited impacts from management ac-

tivities. A biological evaluation format was jointly developed with Beaverhead-Deerlodge NF in 2001 that provides minimum documentation of impacts to Special Status Species from proposed actions.

The Dillon MFP is not in conformance with the lynx conservation strategy, and will be replaced by the ongoing Dillon RMP that will include formal Section 7 consultation. Listing of the Canada lynx as threatened in 2000 required the evaluation of all existing land use plans and current authorizations for compliance with the lynx conservation strategy, in consultation with FWS. Informal consultation on current authorizations occurred through the Level 1 Biologist Team with all other federal agencies. The effects determinations for DFO authorizations using a series of screens developed by the Level 1 Team received FWS concurrence. The lynx conservation strategy and these screens provide guidance for assessing potential impacts to lynx habitat from all future actions. However, under a 2002 court order, all projects with a May Affect (both "May Affect, Not Likely to Adversely Affect" and "May Affect, Likely to Adversely Affect") determination must currently undergo formal consultation.

A new procedure for streamlining Section 7 consultations with FWS has been developed under the national fire/fuels management initiative, and has been expanded to include some other activities. This process utilizes a set of screens, that identify specific project activities and impacts for each listed species (see **Appendix D**). It assures programmatic concurrence from FWS on "No Effect" and "Not Likely to Adversely Affect" projects, if they are designed and implemented consistent with screening criteria. Review of low impact federal actions through this process can meet informal consultation requirements and programmatic concurrence from FWS with a minimum of project-specific detail and documentation.

### MONITORING

Bald eagle and peregrine falcon territories and nests have been monitored annually through state management plan implementation. Grizzly bear observations have been documented when available but no area-wide monitoring or inventory has been conducted. Wolf observations were documented and submitted to FWS prior to the experimental reintroduction. Since the reintroduction, wolves have been intensively monitored by FWS. No inventory work has been conducted on public lands administered by BLM in the planning area for Canada lynx or whooping crane.

Comprehensive sensitive species inventories have not been conducted for most species. Habitat availability and occupancy has been documented on an area-by-area, and species-specific basis rather than mapping overall distribution. Occurrence records from Montana Natural Heritage Program provide the only data for the presence of some sensitive species.

Sage grouse leks and some sage grouse winter habitat have been well-defined. Population trends have been based on male attendance on leks, although this monitoring was intermittent until recently. An ongoing radio telemetry project has identified sage grouse movements and key habitat areas in part of the planning area.

Three raptor transects have been monitored with Montana FWP for over twenty years. Raptor nest occupancy and production, primarily for ferruginous hawks, has been monitored in portions of the Lima/Sweetwater key raptor area.

Trumpeter swan distribution and production monitoring is conducted by Red Rock Lakes NWR.

Localized information on sage grouse, pygmy rabbits, loggerhead shrike, ferruginous hawk, northern goshawk, wolf-ferine, Townsend's big-eared bat, and amphibian/reptiles has been collected through Challenge Cost Share partnership projects.

## **SPECIAL STATUS SPECIES—FISH (including BLM Critical Element Threatened and Endangered Species)**

### **Laws, Regulations, and Policies**

- Montana Natural Streambed and Land Preservation Act
- Federal Land Policy and Management Act of 1976
- National Environmental Policy Act of 1969
- Fish and Wildlife Coordination act of 1958
- Water Quality Act of 1987, as amended from the Federal Water Pollution control Act of 1977
- Public Rangelands Improvements Act of 1978
- Sikes Act of 1974
- Wild and Scenic Rivers Act of 1968
- Executive Order 11514, Protection and Enhancement of Environmental Quality
- Executive Order 11988, Floodplain Management
- Executive Order 11990, Protection of Wetlands
- Executive Order 12962, Recreational Fisheries
- Montana Water Quality Act
- Streamside Management Zone Law
- Montana Stream Protection Act
- Fish And Wildlife Conservation Act of 1980
- BLM Manual 6840
- Memorandum of Understanding and Conservation Agreement for Westslope Cutthroat Trout in Montana (1999)
- Memorandum of Understanding Concerning Fluvial Arctic Grayling Restoration (2001)

## **Affected Environment**

The westslope cutthroat trout and Montana arctic grayling are listed by the State of Montana as species of special concern and by BLM as sensitive species. The fluvial form of the arctic grayling is a federal candidate species. These two species are classified as special status species by state and federal agencies due to population size, amount of quality habitat available to them, and their current distribution within their native range.

### **SPECIAL STATUS FISH IN THE PLANNING AREA**

#### ***BLM Sensitive Species***

##### Westslope Cutthroat Trout

The westslope cutthroat trout (*Oncorhynchus clarki lewisi*) historically was wide spread throughout streams in western Montana. Due to hybridization and competition with non-native salmonids, habitat degradation and over fishing, genetically pure populations of this native trout have been reduced to about 1 percent of their historic range (USDA-FS and USDI-BLM 1996). The DFO currently administers 99 miles of streams containing westslope cutthroat trout (WCT) populations with known genetic purity greater than 90 percent. Additionally, there are 123 miles of streams containing populations with unknown or less than 90 percent purity within the planning area. To date, 32 pure (100 percent) populations are currently found on BLM lands in the planning area. BLM manages the headwaters or significant portions of the habitat for 15 of these populations and smaller habitat segments for the remaining 17 populations. Currently the greatest threats to pure westslope cutthroat populations are hybridization by and competition with non-native trout species, and habitat degradation.

#### ***Candidate Species***

##### Montana Arctic Grayling (Fluvial Population)

There are two life history forms of the Montana arctic grayling (*Thymallus articus montanus*) native to the planning area, the adfluvial and the fluvial form. Both forms are listed as a species of special concern by the state of Montana. The fluvial form is listed as a BLM sensitive species and as a candidate species by the USFWS. BLM currently has no special designation for the adfluvial form.

The fluvial form of arctic grayling is native only to the upper Missouri River drainage. It was once found in all three major tributaries of the Missouri River. It has since disappeared from approximately 95 percent of its historic range (Kaya 1990). Today, the Big Hole River contains the last strictly fluvial native population in the continental United States (Magee 2002). It is suspected that the major factors in the decline of this species are habitat alterations such as dams and de-watering of streams for irrigation, and introduction of non-native species (Vincent 1962; Kaya 1990).

BLM currently has an assistance agreement with Montana FWP for fluvial grayling recovery.

### *State of Montana Species of Special Concern*

#### Montana Arctic Grayling (Adfluvial Population)

The adfluvial form of arctic grayling is native only to the Upper Red Rock Lakes drainage. This is comprised of Upper and Lower Red Rock Lakes and Elk Lake. It has since been successfully introduced to lakes throughout the state of Montana. Historically, grayling in the Red Rock drainage used many of the tributaries entering the lakes for spawning. Today, they are confirmed in only three tributaries. Habitat degradation is thought to be the biggest contributor to their decline.

## **SPECIAL STATUS SPECIES— PLANTS (including BLM Critical Element Threatened and Endangered Species)**

### **Laws, Regulations, and Policies**

Special status plant species management on public lands administered by the BLM is authorized under and/or directed by the following laws, mandates, and guidance:

- Federal Land Policy and Management Act of 1976 (43 U.S.C.1701 *et seq.*), as amended
- Endangered Species Act of 1973 (16 U.S.C.1531 *et seq.*), as amended
- National Environmental Policy Act of 1969 (42 U.S.C. 4321 *et seq.*), as amended
- Title 43, Code of Federal Regulations, Parts 24, 1610 and 4180
- BLM Manual 6500 and 6840
- National and Montana BLM Policy

### **Affected Environment**

#### **BACKGROUND**

The Montana Natural Heritage Program (MTNHP) serves as the state's clearinghouse and principal source of information on species of concern, including those that are at-risk or potentially at-risk due to rarity, restricted distribution, habitat loss, and/or other factors. From the early 1990s through the present, the Dillon Field Office has partnered with the Montana Natural Heritage Program through challenge cost share projects to inventory, monitor, and conduct limited research on select populations of special status plants.

Areas within the Beaverhead Mountains Section (which includes most of the Dillon Field Office) have been the center of many plant surveys since the start of the Montana Natural Heritage Program and the start of the botany program in the Bureau of Land Management – Montana Office. Re-

sults from these studies have already been processed as element occurrence data, and synthesized as species status and biology information in the Biological and Conservation Data System, as well as cross-referenced in a supporting bibliographic database (Cooper, Jean and Heidel 1999). While certainly not exhaustive, the botanical surveys conducted by the MTNHP provide a sensitive species baseline for the Dillon Field Office. These surveys will aid in identifying conservation priorities and developing protection and compatible management strategies for these species.

#### **THREATENED AND ENDANGERED PLANTS**

Regulatory aspects of the Endangered Species Act affect plants only when they occur on federal lands or are affected by federal actions. No plants in Montana are currently listed endangered, while three plants are listed as threatened. None of the listed plants are known from BLM lands in Montana, however one of them, Ute Ladies' Tresses (*Spiranthes diluvialis*) is known from private and state lands in Beaverhead, Madison, Gallatin, and Jefferson counties.

#### **SPECIAL STATUS PLANTS**

Special status or rare plants may be important indicators of change. They can also provide clues to past environments. In 1992 there were more than 1100 special status plants known or suspected to occur on BLM lands nationwide. As of 1996, there are 372 special status plant species listed for Montana BLM, 74 of these plants are listed for the Dillon Field Office, sixteen of which are designated as sensitive. In addition to the 16 BLM designated sensitive species, the Montana Natural Heritage Program tracks 23 Montana plant species of concern known to occur on BLM lands managed by the Dillon Field Office.

The Dillon Field Office currently maintains three lists of special status plants - sensitive species, watch species and dropped species. In order to be designated as sensitive, a plant or plant community must:

- Be proven to be rare by proper study(s).
- Be proven to be imperiled by proper study(s).
- Be documented on BLM surface.

The watch list includes plants or communities that are either:

- Known to be imperiled and is suspected to occur on BLM surface or,
- Suspected to be imperiled and has been documented on BLM surface or,
- Needs further study for other reasons.

Reasons for maintaining the dropped list are to document the fact that a species has already been studied and to retain the option of uplisting that species to the sensitive or watch list. Dropped species will not be discussed further in this document.

The thirty-one species considered by BLM to be special status plant species and known to occur on public land administered by the Dillon Field Office are displayed in **Table 18**. Only species considered special status by BLM are listed. The species status given by BLM, Montana Natural Heritage Program (MTNHP 2003), and the Forest Service is also disclosed in the table. Status Codes include:

- S = Sensitive
- W = Watch,
- S1 = Critically imperiled in Montana because of extreme rarity &/or other factors making it highly vulnerable to extinction
- S2 = Imperiled in Montana because of rarity &/or other factors making it vulnerable to extinction
- SH = Historical, known only from records over 50 years ago; may be rediscovered.

The majority of the special status plant populations found on public lands administered by the Dillon Field Office are located in southern Beaverhead County. The highest concentrations of special status plants are found in three primary locations.

- Tendoy Mountains/Big Sheep Creek Basin
- Sage Creek/Centennial Valley/Centennial Mountains
- Bannack Bench/Badger Pass/Rocky Hills

The general location of special status plant populations is shown on **Map 6**.

### **CURRENT SITUATION AND HABITAT CONDITIONS**

Special status plants are found on a variety of habitats in the Dillon Field Office from the valley bottom riparian areas to the alpine tundra on top of the Centennial Mountains. While threats to some plant species may remain low due to the inaccessibility of the habitat they occupy, threats to other species will remain or increase due to unresolved resource conflicts.

Habitat and occurrence information for special status plants found on land managed by the Dillon Field Office is presented in **Table 18**. A brief description of habitat condition or the major perceived threats to these habitats and the rare plant species they support follows.

#### **All Habitats**

Invasion of native habitats by noxious weeds and exotic species arguably poses the greatest threat to native plant species and communities. Eradication and/or controlling the spread of invasive plants is essential for the preservation/conservation of special status plant species; however, indiscriminate or broad scale application of chemical herbicides also threatens sensitive plant species.

#### **Sagebrush Steppe and Grasslands**

Invasion of this habitat by noxious weeds such as spotted knapweed (*Centaurea maculosa*), leafy spurge (*Euphorbia esula*), and houndstoung (*Cynoglossum officinale*) pose a serious threat to all native plant species. Other exotic species that compete for habitat with sensitive species include Kentucky bluegrass (*Poa pratensis*), which is invading mesic upland sites, and cheatgrass (*Bromus tectorum*), which is increasingly common on south facing slopes.

Palatable species of the sagebrush steppe, such as milkvetches (*Astragalus spp.*) remain at risk in heavily grazed areas especially in areas that are grazed in the spring. Grazing begins on 50 percent of the allotments in the planning area during the month of May or earlier. The two largest populations of bitterroot milkvetch in Montana are located on lands administered by the BLM that are grazed only during the non-growing season.

#### **Sand Dunes**

Natural processes (fire and grazing of both large and diminutive herbivores) are responsible for maintaining the seral conditions necessary for the perpetuation of various rare plant species and communities present in the sand dunes. The greatest threats to this landscape would be landscape fragmentation and the cessation of fire or mechanical disturbance (trampling and burrowing) that would allow successional processes to proceed to their endpoint and eliminate the sensitive seral species and communities (Cooper, Jean and Heidel 1999). Noxious weeds and other invasive exotics are not currently a problem in the sand dunes.

#### **Limber pine, juniper and mountain mahogany woodlands including shallow, gravelly sites and talus slopes**

Sensitive plants that inhabit shallow, gravelly soils, limestone talus, and steep slopes typically have low growth habits and/or are resistant to grazing. The current practice of placing livestock mineral or supplement on ridgetops may impact these species. Off-highway vehicle use, road construction, mining activities and invasion of exotic species such as spotted knapweed, cheatgrass, and sweetclover (*Melilotus spp.*) pose the major threats to sensitive species occupying these habitats.

#### **Riparian areas and wetlands including alkaline and moist meadows**

Rare plant species that inhabit riparian and wetland habitats are the most vulnerable under existing management since more than 80 percent of riparian habitats and 70 percent of wetland habitats in the DFO are functional—at risk or non-functional, based on BLM riparian inventory information. Under current livestock authorizations many of these habitats are heavily grazed.

While moderate grazing may enhance habitat for some rare riparian species, especially those that occupy relatively open

**Table 18**  
**Habitat and Occurrence Information**  
**for Known BLM Special Status Plant Species in the Planning Area**

<i>Genus Species/(Common Name)</i>	<i>Habitat</i>	<i>BLM</i>	<i>MTNHP</i>	<i>FS</i>	<i># Of Occurrences in MT/DFO*</i>
Cusick's Horse-mint ( <i>Agastache cusickii</i> )	Dry, open, limestone talus slopes, often with sagebrush or mountain mahogany	S	S1	S	5/2
Sitka Columbine ( <i>Aquilegia Formosa</i> )	Open woods and stream banks at mid-elevations		S1		7/1
Sapphire Rockcress ( <i>Arabis fecunda</i> )	Open, rocky, slopes developed from calcareous parent material restricted to the contact zone with igneous rock	S	S2	S	21/2
Painted Milkvetch ( <i>Astragalus ceramicus var apus</i> )	Sparsely vegetated sand dunes	S	S1		1/1
Lesser Rushy Milkvetch ( <i>Astragalus convallarius var convallarius</i> )	Grasslands and open pine woodlands	W	S2		11/1
Bitterroot Milkvetch ( <i>Astragalus scaphoides</i> )	Silty, often stony soil in sagebrush grasslands	S	S2	S	19/14
Railhead Milkvetch ( <i>Astragalus terminalis</i> )	Sagebrush steppe and sparsely-vegetated grasslands	S	S2		14/9
Large-leafed Balsamroot ( <i>Balsamorhiza macrophylla</i> )	Sagebrush steppe and grasslands	W	S1	S	6/1
Idaho Sedge ( <i>Carex idahoensis</i> )**	Moist meadows around seeps, ponds, or streams, usually associated with calcareous parent materials	S	S2	S	40/24
Fendler Cat's-eye ( <i>Cryptantha fendleri</i> )	Open areas of sand dunes	W	S2		3/1
Round-fruited Draba ( <i>Draba globosa</i> )	Moist, open, gravelly, often limestone-derived soil in the alpine zone	W	S1		4/1
Sand Wildrye ( <i>Elymus flavescens</i> )	Sparsely-vegetated sand dunes	S	S1		1/1
Hutchinsia ( <i>Hutchinsia procumbens</i> )	Vernally moist, alkaline soil of sagebrush steppe	W	S1		5/1
Beautiful Bladderpod ( <i>Lesquerella pulchella</i> )	Gravelly, calcareous soils in sparsely vegetated mountain mahogany and limber pine woodlands	S	S2	S	14/7
Taper-tip Desert-parsley ( <i>Lomatium attenuatum</i> )	Gravelly, limestone-derived slopes of sparsely vegetated sagebrush steppe or Douglas fir, limber pine, juniper, or mountain mahogany woodlands	S	S2		11/10

Felwort ( <i>Lomatogonium rotatum</i> )	Alkaline meadows and fens	W	S1	S	2/2
Pale Evening-primrose ( <i>Oenothera pallida</i> var <i>idahoensis</i> )***	Sparsely vegetated sand dunes	S	S1		1/1
Lemhi Beardtongue <i>Penstemon lemhiensis</i>	Open sagebrush and woodland slopes	S	S2	S	82/10
Whipple's Beardtongue <i>Penstemon whippleanus</i>	Open, often rocky soil of dry meadows in the subalpine and alpine zones	S	S1		2/1
Hoary Phacelia <i>Phacelia incana</i>	Gravelly, limestone-derived slopes of mountain mahogany woodlands and sagebrush steppe	W	S2		7/7
Alkali Primrose ( <i>Primula alcalina</i> )	Moist alkaline meadows	W	S1		3/1
Mealy Primrose ( <i>Primula incana</i> )	Alkaline meadows	W	S2		22/6
Chicken Sage ( <i>Sphaeromeria argentea</i> )	Shallow limestone-derived soil in sagebrush steppe	S	S2		17/12
James Stitchwort ( <i>Stellaria jamesiana</i> )	Woodland slopes	W	S1		2/2
Spiny Skeletonweed ( <i>Stephanomeria spinosa</i> )	Dry grasslands	W	S1		6/3
Rocky Mountain Dandelion ( <i>Taraxacum eriophorum</i> )	Grasslands, sagebrush steppe, and open riparian areas and wetlands	S	S2		7/2
Alpine Meadowrue ( <i>Thalictrum alpinum</i> )	Moist, alkaline meadows	S	S2		11/4
Northwestern Thelypody ( <i>Thelypodium paniculatum</i> )	Wet, often alkaline meadows	S	SH		1 / 1
Cushion Townsendia ( <i>Townsendia condensata</i> )	Open, rocky, often limestone-derived soil of exposed slopes and ridgetops in the alpine and subalpine zones.	W	S2		9/1
Showy Townsendia ( <i>Townsendia florifer</i> )	Open soil on flats and eroding slopes of grassland and sagebrush steppe	W	S1		3/2
<p>* The MTNHP database serves as the primary source of information for special status plant species locations in the Dillon Filed Office. The number of occurrences within Montana and the Dillon Field Office record were obtained from the web-based Montana Rare Plant Field Guide (MTNHP 2004).</p> <p>**This species has been previously treated as <i>Carex parryana</i> spp. <i>idaho</i>.</p> <p>***This taxon was dropped from Species of Concern to Potential Concern status in 2003 by the Montana Natural Heritage Program because this variety has not been recognized as distinct from <i>Oenothera. pallida</i> var. <i>pallida</i> in recent literature, and is no longer treated as a separate taxon in Idaho.</p>					

soil on hummocks, heavy grazing and trampling can destroy habitat (Lesica and Vanderhorst 1995).

Heavy grazing also favors disturbance species such as exotics Kentucky bluegrass, dandelion (*Taraxacum laevigatum* and *T. officinale*) and redbud (*Agrostis alba*,) that compete with rare native species. Seventy percent of stream reaches inventoried for the Dillon Field Office by the Montana Riparian Wetland Research Program recorded canopies of “Disturbance-increaser Undesirable Herbaceous Species” greater than 25 percent (Bitterroot Restoration 2002).

There is not any evidence that indicates that individual populations of special status plants found in riparian and meadow habitat are increasing in size while several populations are in apparent decline under the influence of livestock grazing (Vanderhorst and Lesica 1994; Lesica and Vanderhorst 1995; Heidel and Vanderhorst 1996; Lesica 1998).

Private irrigation diversion and channel dewatering affects the hydrologic regime of some riparian and wetland habitats in the Centennial Valley and Big Sheep Creek Basin which in turn affects habitat suitability for some species.

#### *Alpine, subalpine, and tundra*

Rare plant species found in these high elevation habitats are not especially threatened, though some species may be susceptible to domestic sheep grazing, through their preference for forbs.

## VEGETATION—FORESTS AND WOODLANDS

### Laws, Regulations and Policy

The management of BLM forests and woodlands is directed by the following laws, regulations and policies:

- National Environmental Policy Act of 1969
- Federal Land Policy and Management Act of 1976
- Water Quality Act of 1987
- Clean Air Act
- State of Montana Streamside Management Zone Law of July 1991
- 43 CFR Group 5000 (Forest Management, General)
- 43 CFR Group 5400 (Sales of Forest Products)
- 43 CFR Group 5500 (Non-Sale Disposals)
- Public Domain Forest Management Policy of 1989
- Total Forest Management Initiative of June 1992

### Affected Environment

Forests are directly influenced by the physiographic effects of having the Continental Divide on three sides of the planning area. Precipitation in the planning area is greatest along

the Continental Divide with average annual precipitations of 30 inches. Precipitation decreases proportionally with distance from the Divide to 10 inches or less in the area around Dillon. It begins to increase again in the vicinity of the Madison Valley.

The forest/woodlands communities generally begin from 5,500 feet elevation on north facing slopes and extend upwards to 9,500 feet where timber line habitats replace the upper limits of conifer forests. As moisture increases with elevation, forest stocking and biomass productivity increases up to 8,000 feet- 8,500 feet. Above approximately 8,500 feet, biomass begins to decrease due to colder average temperatures.

The forests are typical of the drier, intermountain region of the Northern Rockies. The forested communities from lower (or drier aspects) to higher (or more moist aspects) elevations are Limber pine/Rocky Mountain juniper, Douglas-fir, lodgepole pine, subalpine fir/ Engelmann spruce/ whitebark pine. Distribution is also affected by aspect. South facing slopes are often non-forested to sparsely stocked woodlands up to 8,000 feet depending upon soil type and the effects of predominant south to southwest winds during the growing season. Aspen communities are relatively minor in area but an important component on the landscape for wildlife values. They are generally found where past disturbances and sufficient soil moisture occur.

### FOREST COMMUNITIES AND STRUCTURES

**Table 19** is a generalized display of the acres of forest communities from lower to higher elevations, the percentage of each community and the amount of each type located both inside Wilderness Study Areas (WSAs) and outside WSAs. This distinction is made as acreage within WSAs is managed under BLM’s Interim Management Policy for lands under wilderness review and treatments must be limited to those that will not impair the wilderness characteristic.

Approximately 83 percent of forested lands are predominantly Douglas-fir or a mix of Douglas-fir and lodgepole pine. These communities are primarily found in the lower to mid elevation forested lands in the planning area. Upper elevation forested lands are primarily managed by the Forest Service. Depending upon aspect, elevation, and soil types some mid elevation species groups will normally have an unclassified mix of subalpine fir and Engelmann spruce. This is especially noticeable in stands that have not undergone some disturbance in the past 50 years or more. Douglas-fir and lodgepole pine are also found in some upper elevation communities that have undergone some type of disturbance in the past century.

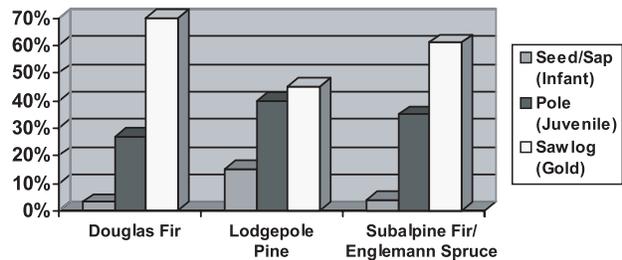
**Figure 3** shows the approximate structure distribution of the major species groups in the DFO. The largest proportion is sawlog (mature) or “Gold” size classes. The “Gold” size class includes some younger, more uniform stands but

**Table 19  
Acres and Percentages of Forest Communities in the Planning Area**

<i>Primary Forest Species</i>	<i>Acres/% of Forest Type Relative to All Forest Acres*</i>	<i>Acres/% of Forest Type in Wilderness or WSAs</i>	<i>Acres/% of Forest Type Outside of WSAs</i>
Lowest Elevation/ Warmest & Driest (Limber pine, Rocky Mountain Juniper, DF and DF encroachment)	2,699 acres/ 1.81%	618 acres/ 22.90%	2,081 acres/ 77.10%
Lower Elevation/Warm and More Moist (Primarily Douglas-fir)	78,497 acres/ 52.60%	32,131 acres/ 40.93%	46,366 acres/ 59.07%
Low to Mid Elevation/Cool and Increasing Moisture (Primarily Douglas-fir and lodgepole pine)	37,601 acres/ 25.20%	15,857 acres/ 42.17%	21,744 acres/ 57.83%
Mid to Upper Elevation/Cooler and Moist (Primarily sub alpine fir, Engelmann spruce and Whitebark pine)	21,929 acres/ 14.69%	15,830 acres/ 72.19%	6,099 acres/ 27.81%
Aspen	8,507 acres/ 5.07%	1827 acres/ 21.48%	6,680 acres/ 78.52%
Total Acres	149,233	66,263 (44.40%)	82,970 (55.60%)

is predominantly composed of stands with late successional characteristics. Late successional characteristics will vary considerably by forest type, but generally include: large trees for species and site; wide variation in tree sizes and spacing; accumulations of large, dead, standing and fallen trees (except in forest types characterized by frequent, low intensity fires); decadence in the form of broken or deformed tops or bole and some root decay; multiple canopy layers (in some forest types); and canopy gaps and understory patchiness. The large amount of land area in the “Gold” size class reflects a lack of major fire or human generated disturbances in the past 80 to 100 years. The smaller proportion of pole size or “Juvenile” structures reflects the influx of in-growth that began with the advent of fire suppression from the late 1800s. “Juvenile” size classes generally consist of younger age-class trees in a single canopy layer, have more uniform spacing, less down woody debris from the existing stand (may have some residual woody debris on the forest floor from the pre-existing stand), and fewer canopy gaps than “Gold” size class stands. The smallest size class, seedling/sapling or “Infant” indicates the relatively small proportion of lands in the planning area that have been treated by either single age class harvest activity or have been subjected to stand replacing wildland fire events or other disturbances. “Infant” size classes have little to no down woody debris from the existing stand, but may have some residual woody debris on the forest floor from pre-existing stands.

**Figure 3  
Forest Structure Distribution of Major Species Groups in the Planning Area.**



**FOREST HEALTH**

Evidence of past natural and human caused disturbances is commonly found throughout the landscape in southwest Montana. Historic fire occurrences have been well documented through fire studies. Fire events were more common up through the end of the 1800s. With the beginning of domestic livestock grazing and the increasing number of settlers, fire had less fine fuel, reducing rapid rates of spread. It also had a higher probability of being extinguished by these settlers. Evidence of varying types of timber harvest from the late 1800s through the present can be found on most forested lands. In some areas such as Bannack and Virginia City, the influence of large populations and intensive mining activity is evident in the surrounding landscape. In other areas away from these influences, settlers and min-

ers utilized wood products for smaller mining operations, homes, barns, fences and fuel wood, taking only the size classes needed for the project at hand. Small openings created by this less intensive harvest pattern as well as the continuation of fire events were re-seeded by adjacent trees.

The reduction in large fire events as a result of fire suppression coupled with the tolerance of Douglas fir has resulted in more seedlings being established in the understory of lower to mid elevation woodlands and forest than would have occurred historically. This in-growth has continued to slowly grow and increase in numbers. Today, the “normal” condition of low to mid elevation forests with a Douglas-fir component is stagnated. Vigor and growth are very limited due to increased competition for water. Nutrients are “locked up” by in-growth that would normally have been killed by frequent low severity (cool) ground fires. These fires would usually benefit the older, overstory trees by recycling the nutrients contained in the smaller understory trees and reducing competition for nutrients and available water during the growing season.

These overcrowded stands have little to no growth in diameter, decreased ability to resist insects or pathogens, and increasing mortality in all size classes. When wildland fire does occur in these stands, it spreads more easily to the overstory or oldest trees due to the thick understory. Stand replacing fires in Douglas-fir communities were relatively rare prior to the late 1800s, but are now occurring with more frequency.

Mid to upper elevation forests are generally the transition zone from Douglas-fir to lodgepole pine, Englemann spruce, sub-alpine fir, and eventually whitebark pine. Higher elevation stands usually have longer fire intervals. However, with the effects of 60 or more years of “modern” fire suppression, some of these forest types are beginning or have reached the upper limit of their normal fire cycle. Accumulating biomass of dead or downed woody materials poses the greatest threat for abnormal soil heating when these stands do burn.

Research being done by the National Biological Service and others indicate local populations of whitebark pine may become extinct due to the whitepine blister rust or other agents. This tree species plays an important role in the life cycle of some birds and mammals. Whitepine blister rust is also affecting limber pine.

#### INSECTS AND DISEASE

Spruce budworm has gone through several epidemic cycles that have periodically thinned stands of Douglas-fir, subalpine fir, and in some cases, Englemann spruce. The persistent drought conditions for the past several years favors these insects. Another cycle started in 2002 in the Centennial Mountains.

Mountain Pine beetle has gone through several minor cycles since the last planning period. The majority of this was in lodgepole pine in the Madison Valley and affected relatively minor amount of BLM lands. At the present time a major infestation is causing lodgepole pine mortality in the Centennial Mountains. There is also some evidence of endemic populations beginning to increase in the Gravelly Range.

Western Balsam bark beetle has been endemic throughout the planning area in mid to high elevation subalpine fir stands. Some of these populations also show signs of increasing.

Disease such as dwarf mistletoe is commonly found in lodgepole pine stands. Root and or stem rots are endemic in a variety of species. These are common on rocky soils or in areas which had light to moderate ground fires which created “cat faces” or scars on the lower bole area of trees.

#### SITE PRODUCTIVITY

Site productivity of forested land is a function of elevation, aspect and soil types. One method of measuring this is the cubic feet of wood biomass produced on an acre of land per year. Wooded areas that produce less than 20 cubic feet/acre/year are considered woodlands. Those areas that produce more than 20 cubic feet/acre/year are considered forest

Another characterization of site productivity is by using habitat types as developed by Pfister, Kovalchik, Arno and Presby. This is a land classification based upon potential natural vegetation of forests if they are left in an undisturbed state for long periods of time. Since the planning area has a wide variety of elevation, aspect and precipitation it has a correspondingly wide variety of habitat types. These habitat types have been grouped by temperature and precipitation regimes to simplify their use across the East Side of the Continental Divide. **Table 20** shows the habitat type groups found in the planning area and some examples of individual habitat types from Pfister’s publication.

Fire Groups mentioned in the table are groups of habitat types that respond in a similar fashion to the influence of fire on forest succession. Historically, Fire Groups 1, 4, 5, and 6 had a low severity fire once every 5 to 40 years. This is referred to as a fire cycle. Fire Groups 7 through 10 had much longer intervals between fire events. These intervals could be as short as 35 years to as long as 500 years between fire events or fire cycle. The fire events could range from low severity to stand replacing events.

**Table 20**  
**Summary of Forest Habitat Type Groups in the Planning Area**

<i>East Side Habitat Type Group (HTG)</i>	<i>Temperature and Precipitation Characteristics of HTG</i>	<i>Acres of Habitat Type Group</i>	<i>Examples of Habitat Types found within DFO (see USFS GTR INT-34 May 1977)</i>	<i>Range of Yield Capacity Classes in HTG in Cu.Ft./Ac./Yr.</i>	<i>Fire Group that HTG Falls Within</i>	<i>Remarks</i>
A	Warm & Very Dry	14,578	040,051,070,210	Very Low to Low(<30)	1,4	Most common on Woodland setting, common in DFO
B	Warm & Dry	42,984	320,323,330	Low to Moderate (25 to 70)	5,6	Generally the transition zone from wood land to forest setting, common in DFO
C	Warm & Moist	700	260	Low to Moderate (40)	—	Relatively rare in DFO
D	Cool & Moist	476	470	Low to Moderate (50 to 80)	7	Less common in DFO
E	Cool & Wet	34,517	410,650	Low to Moderate (40 to 70)	9	Common in upland riparian areas
F	Cool & Moderately Moist	23,732	730,732	Low to High (40 to 90)	7	Common in DFO
H	Moderately Cool & Dry	4,716	750,780	Low to High (30 to 90)	8	Common in DFO
I	Cold & Moist	2,050	820	Very Low to Low (15 to 50)	10	Generally, the upper limits of continuous forest cover, common in DFO
J	Cold & Dry	25,480	850	Very Low to Low (10 to 30)	10	Timberline, common in DFO

Generally, HTGs A, B, C and H have missed 2 or more fire cycles. Douglas-fir is the normal climax tree species on most of these sites. Lodgepole pine is normally the dominant tree in HTG F. Lodgepole pine stands were maintained by moderate to severe fire event(s) or other disturbance. Without such disturbances, lodgepole pine will eventually be replaced by Douglas-fir or subalpine fir. HTGs D, H, I and J are usually dominated by subalpine fir or Engelmann spruce until stand replacing fire events reverts these stand to seral lodgepole or whitebark pine. Most areas of HTGs D, F, H, I and J are on the latter stages of their current fire cycle.

## **VEGETATION–INVASIVE SPECIES AND NON-NATIVE SPECIES, including NOXIOUS WEEDS (BLM Critical Element)**

### **Laws, Regulations and Policies**

Federal and State laws make the Federal government responsible for control of weeds on Federal lands and pro-

vide direction for their control. The DFO operates under the protocols set forth in the plans, policies, and guidance listed in this section.

- Executive Order 13112, Invasive Species Control
- Federal Noxious Weed Act of 1974 (P.L. 93-629) (As amended by section 15 Management of Undesirable Plants on Federal Lands, 1990)
- Carlson-Foley Act (P.L. 90-583)
- Northwest Area Noxious Weed Control Program Environmental Impact Statement (USDI-BLM 1985)

- Supplement to the Northwest Area Noxious Weed Control Program Final Environmental Impact Statement (USDI-BLM 1987c)
- Vegetation Treatment on BLM Lands in Thirteen Western States Final Environmental Impact Statement (USDI-BLM 1991a)
- Noxious Weed Control in the Butte District - EA MT 070-86-01 (USDI-BLM 1986)
- Noxious Weed Control in DRA - EA MT-076-94-18 (USDI-BLM 1994)
- Implementation of Requirements for Noxious Weed Seed Free Forage on Public Lands in Montana - EA MT-001-EA97 (USDI-BLM 1997)
- Montana Noxious Weed Act (MCA 7-22-2116)

## Affected Environment

In Montana, as well as in other western states, noxious weeds are considered the single most serious threat to natural habitats. Noxious weed invasion contributes to the loss of rangeland productivity, increased soil erosion, reduced water quantity and quality, reduced species and structural diversity, loss of wildlife habitat, and in some instances, is hazardous to human health and welfare, as emphasized in the Federal Noxious Weed Act of 1974 (PL 93-629, as amended by section 15 – Management of Undesirable Plants on Federal Lands, 1990). Some weed species pose a significant threat to multiple-use management of public land.

Noxious weeds are impacting Montana's economy and environment. There are currently 23 Montana State designated noxious weeds. The noxious weeds are divided into three priorities based on the status of the weed in the state. These include non-established new invaders (Category 3), established new invaders (Category 2) and those that are wide spread in the state (Category 1). **Table 21** lists by category the Montana state designated noxious weeds, along with those weeds designated by Beaverhead and Madison Counties as noxious and assigned to Category 4.

Noxious weeds are present throughout the planning area. The Dillon Field Office has inventoried approximately 400,000 acres of BLM-administered lands for noxious weeds. Approximately 38,069 acres have been found to be infested with noxious weeds. Typically, about 1,400 acres are treated annually with chemicals. Approximately 10,989 acres are currently under biological treatment, and about 50 acres are treated each year by mechanical methods.

The weed management program continually changes as a result of new weed introduction, additional inventory and the ongoing implementation of weed management projects. The Dillon Field Office uses a full range of integrated pest management in the planning area. The basic management of noxious weeds in the state and the Dillon Field Office are:

- Early Detection and Rapid Response (Newly Invading Species)
- Containment and Management (Widespread Weed Infestations)
- Inventory, Monitoring and Evaluation
- Public awareness, education and outreach

Control methods used include chemical, mechanical (hand pulling, and mowing), biological (insects, diseases and grazing), and cultural (revegetation, management to enhance plant communities).

In general, road corridors are the main areas of infestation, however infestations are not limited to roads as some populations have been located well away from roads. Weed infestations can occur or spread when seeds are spread by human activities such as road maintenance and recreation activities, or when carried by livestock or wildlife, or dispersed by water or wind. In addition, ground-disturbing activities provide open sites for weeds to invade. Noxious weed control is completed using contracts with Beaverhead and Madison Counties as well as BLM field office staff. The most common chemicals used for control and eradication of noxious weeds is Picloram and 2,4-D. Other chemicals or control methods are used as site conditions change and often several treatment methods are used for the same infestation. Grazing by domestic animals is used to reduce the seed production and shift the vegetation community to more desirable species.

## VEGETATION–RANGELANDS

### Laws, Regulations and Policies

- Taylor Grazing Act of 1934 (43 U.S.C. 315)
- Federal Lands Policy and Management Act of 1976 (43 U.S.C. 1701)
- Public Rangelands Improvement Act of 1978 (43 U.S.C. 1901 *et seq.*)
- 43 CFR 4100 (Grazing Regulations)
- Vegetation Treatment on BLM Lands in Thirteen Western States Final Environmental Impact Statement (USDI-BLM 1991a)

### Affected Environment

Evidence of past human disturbance can be found across the landscape. The greatest amount of influence has occurred since the late 1800s which coincides with settlement. The vegetative communities were affected by the mining and settlement activities and the associated livestock grazing. The livestock grazing would have been most intense near the larger settlements and mining areas as food and work animals were kept nearby these settlements. The higher intensity grazing near settlements could have changed the site potential due to overgrazing and erosion.

**Table 21**  
**Montana State Designated Noxious Weeds**

<i>Common Name</i>	<i>Scientific name</i>	<i>WSSA 5-ltr code*</i>	<i>Known Occurrences in the DFO?</i>
<b>Category 1</b>			
Leafy spurge	<i>Euphorbia esula</i>	EPHES	Yes
Canada thistle	<i>Cirsium arvense</i>	CIRAR	Yes
Russian knapweed	<i>Centaurea diffusa</i>	CENRE	Yes
Spotted knapweed	<i>Centaurea maculosa</i>	CENMA	Yes
Diffuse knapweed	<i>Centaurea diffusa</i>	CENDI	Yes
Field bindweed	<i>Convolvulus arvensis</i>	CONAR	Yes
Whitetop (hoary cress)	<i>Cardaria draba</i>	CADDR	Yes
Dalmation toadflax	<i>Linaria dalmatica</i>	LINDA	Yes
St. Johnswort (goatweed)	<i>Hypericum perforatum</i>	HYPPE	No
Sulfur cinquefoil	<i>Potentilla recta</i>	PTLRC	Yes
Common tansy	<i>Tanacetum vulgare</i>	CHYVU	No
Ox-eye daisy	<i>Chrysanthemum leucanthemum</i>	CHYLE	No
Houndstongue	<i>Cynoglossum officinale</i>	CYWOF	Yes
Yellow toadflax	<i>Linaria vulgaris</i>	LINVU	No
<b>Category 2</b>			
Dyer's woad	<i>Isatia tinctoria</i>	ISATI	No
Purple loosestrife	<i>Lythrum salicaria</i>	LYTSA	No
Tansy ragwort	<i>Senecio jacobea L.</i>	SENJA	No
Tall buttercup	<i>Ranunculus acris</i>	RANAC	No
Tamarisk (saltcedar)	<i>Tamarix ramosissima</i>	TAARA	No
Meadow hawkweed	<i>Hieracium pratense</i>	HIECA	No
Orange hawkweed	<i>Hieracium aurantiacum</i>	HIEAU	No
Perennial pepperweed	<i>Lepidium latifolium</i>	LEPLA	No
<b>Category 3</b>			
Yellow starthistle	<i>Centaurea solstitialis</i>	CENSO	No
Common crupina	<i>Crupina vulgaris</i>	CJNVU	No
Rush skeletonweed	<i>Chondrilla juncea</i>	CHOJU	No
Yellow flag iris	<i>Iris pseudacorus</i>	IRIPS	No
Eurasian watermifoil	<i>Myriophyllum spicatum</i>	MYPSP	No
<b>Beaverhead and Madison County Designated</b>			
Musk thistle	<i>Carbuus nutans</i>	CRUNU	Yes
Field scabious	<i>Knautia arvensis</i>	KNAAR	Yes
Black henbane	<i>Hyoscyamus niger</i>	HYSHI	Yes
Common mullein	<i>Verbascum thapsus</i>	VESTH	Yes
Common teasel	<i>Dipsacus fullonum</i>	DIWSI	No
*Weed Science Society of America coding system			

The majority of the BLM lands in the planning area (98 percent) are within the Beaverhead Mountains section of the Middle Rocky Mountains province as described by Baily (Nesser et al. 1997). A small amount (1 percent) of the land is within the Belt section of the same province, additionally an equally small portion is within the Yellowstone Highlands section of the Southern Rocky Mountains province. The plant community classification work conducted by the MTNHP (Cooper, Jean and Heidel 1999) has identified 480 plant associations in the state of Montana. Over half of these associations occur in the Beaverhead Mountains section. The Beaverhead Mountains section comprises less than one tenth of the state's total land area. This level of concentration of community diversity is unusually high. The primary reasons for this diversity are that the region exhibits the greatest geological diversity in the state, contains the most vertical relief, is situated within a unique intersection of Pacific and Gulf of Mexico storm tracks, and contains an overlap of several floristic elements. Additionally, the Beaverhead Mountains Section has received more sampling inventory than anywhere else in the state, which can add to the apparent diversity.

While additional plant community inventory has not been completed on the ground since the Mountain Foothills EIS (USDI-BLM 1980), a satellite vegetation analysis has been completed. This analysis was based on the USFS Region One Eastside SILC3 classification, which is a satellite imagery interpretation of vegetation completed in the late 1990s. Additional BLM data and ground truthing was provided for a reclassification of the SILC3 classification. This process improved the accuracy of the non-forested vegetation types over the SILC3 classification. The satellite vegetation classification identified cover types for various grass and shrub densities. The reclassification did not adjust the timber cover types from the SILC3 project. While the satellite classification does not allow an exact comparison from the Mountain Foothill EIS some general conclusions can be drawn. A summary of the vegetation cover types from the satellite classification is found in **Table 22**.

The sagebrush and grassland plant communities dominate the vegetation (82 percent) on lands managed by the BLM and has changed little since the Mountain Foothills EIS. While not directly comparable, data from the satellite imagery suggests a slight increase (8 percent) in sagebrush dominated plant communities and a slight decrease (9 percent) in the grass dominated plant communities. The BLM has also been conducting evaluations of individual grazing allotments. The individual allotments that have been evaluated demonstrate that overall, the upland rangeland condition is improving slightly.

The sagebrush communities are the most abundant with over 58 percent of the area being in this community type. The most common sagebrush species are basin big sagebrush, mountain big sagebrush and Wyoming big sagebrush with lesser amounts of black sagebrush, threetip sagebrush, and

early low sagebrush. There are also areas of curl-leaf mountain mahogany that are included in the shrub type. The understory is grass dominated with bluebunch wheatgrass, Idaho fescue, western wheatgrass, blue grasses, and needle-and-thread grass.

The basin big sagebrush/grassland vegetation type is found in moister areas of the lower to nearly level slopes and terraces at 5,900 to 7,200 feet. The soils are deep, silty to loamy soils. The parent material is alluvium derived from limestone and quartzite. The shrub canopy cover ranges 10 to 50 percent. The grass cover ranges from 40 to 70 percent and is dominated by Idaho fescue, blue bunch wheatgrass, and needle-and-thread grass.

The mountain big sagebrush/grassland communities are found on gentle and moderate slopes and terraces to steep slopes. The soils are generally loam to silt or clay texture. The elevation generally ranges from 6,000 to 8,000 feet and has a shrub canopy cover of 20 to 50 percent. The grass cover ranges from 40 to 70 percent. The major grass species are basin wildrye, bluebunch wheat grass and Idaho fescue. The basin wildrye sites are found on the gentle to moderate slopes and terraces with warm aspects, deep soils and very mesic moisture regimes (Cooper, Jean and Heidel 1999).

The Wyoming big sagebrush/grassland communities are found on gently sloping alluvial fans and terraces at 5000 to 7500 feet. Soils are silt in texture. The shrub cover is 10 to 30 percent with a 30 to 60 percent cover of grasses. The dominant grasses are bluebunch wheatgrass, Idaho fescue, prairie June grass and thick spike wheatgrass.

The grass communities are the second most abundant with approximately 24 percent of the area being in this community type. The most common grass species are bluebunch wheatgrass, Idaho fescue, western wheatgrass, blue grasses and needle-and-thread grass with lesser amounts of tufted hair grass, giant wildrye, thickspike wheatgrass, and blue grama. The bunchgrass types of Idaho fescue and bluebunch wheat grass are generally found above 6,000 feet while the more xeric types of needle-and-thread are found below 6,000 feet.

## VEGETATION—RIPARIAN AND WETLANDS (BLM Critical Element)

### Laws, Regulations, and Policies

Riparian vegetation management on public lands administered by the BLM is directed by the following laws, mandates and other guidance:

- Federal Land Policy And Management Act of 1976
- Public Rangelands Improvement Act of 1978

**Table 22**  
**Vegetation Cover Types from Satellite Imagery Classification**

<i>Acres</i>	<i>Code</i>	<i>Description</i>		<i>Type</i>
124,624	3130	very low grass	10-34% grass <5% sage	Grassland
87,441	3150	Low/mod grass	35-64% grass <5% sage	
8,849	3170	mod/high grass	>65% grass <5% sage	
<b>Total Grassland Acres = 220,914 22.8%</b>				
8,162	3301	mountain mahogany		Shrub
185,112	3380	low cover sage	15-24% shrub	
93,775	3390	mod cover sage	25-34% shrub	
77,934	3395	high cover sage	>=35% shrub	
122,081	3550	very low sage low grass	5-14% shrub 10-24% grass	
56,926	3560	very low sage mod grass	5-14% shrub >=25% grass	
<b>Total Shrub Acres = 543,990 56.2%</b>				
4,655	3610	Mesic shrub/willow		Willow
<b>Total Willow Acres = 4,655 0.5%</b>				
8,576	4101	Aspen		Woodland
684	4150	mixed broadleaf		
2,351	4214	Juniper		
176	4205	Limber pine		
221	4244	mixed xeric conifer		
<b>Total Woodland Acres = 12,008 1.2%</b>				
34,107	4203	Lodgepole pine		Forest
6,354	4204	Whitebark pine		
22	4206	Ponderosa pine		
79,756	4212	Douglas fir		
3,491	4223	Douglas fir/lodgepole		
71	4230	Douglas fir/ponderosa		
3,928	4237	Subalpine fir/spruce		
5,844	4241	mixed upper subalpine fir		
5,847	4242	mixed lower subalpine fir		
<b>Total Forest Acres = 139,420 14.4%</b>				
520	2010	agriculture dry		Agricultural
224	2020	agriculture irrigated		
<b>Total Agricultural Acres = 744 &gt;0.1%</b>				
498	5000	Water		Water
8,147	7300	Rock		
11	9100	Snow		
37,807	0	Unclassified		
<b>Total Miscellaneous Acres = 46,463 4.8%</b>				
<b>Total Acreage = 968,194 100%</b>				

- Taylor Grazing Act of 1934
- Clean Water Act of 1977
- Water Quality Act of 1987
- National Environmental Policy Act of 1969
- Emergency Wetland Resources Act of 1986
- Fish And Wildlife Conservation Act of 1980
- EO 11990, Protection of Wetlands
- EO 11988, Floodplain Management
- EO 11987, Exotic Organisms
- EO 13186, Migratory Birds
- Montana Water Quality Act
- Montana Streamside Management Zone Law
- Montana Stream Protection Act
- Interior Department Manual 520 – riparian habitat
- BLM Manual 1737 – riparian habitat
- BLM Manual 6500 - wildlife, fish and plant resources
- BLM Manual 6840 – special status species
- Fish and Wildlife 2000 - National and state policies

## Affected Environment

### RIPARIAN HABITAT

Riparian habitats in the planning area are generally dominated by willow or aspen communities along foothills streams, and usually represent stringers of habitat extending below forested areas into sagebrush/grassland habitat. The majority of public land riparian habitat is between higher elevation habitats on National Forest lands and lower elevation private lands in the major river bottoms. BLM lands provide most of the foothill/sagebrush steppe riparian areas that are available for public use. Habitats occur on wetlands and streams throughout the area at elevations from approximately 4,500 feet to alpine areas over 9,000 feet. Riparian communities vary significantly from small, sedge-dominated wetlands to large, willow-dominated stream corridors to spruce bogs and alpine wet meadows. Riparian aspen communities are scattered on streams and springs. Riparian vegetation communities and habitats found in Montana are described in Hansen et al. (1995) and Cooper et al. (1995, 1999). Relatively few extensive wetland areas or large river floodplain habitats occur on public land. The most extensive wetland habitat in the planning area is located in the lower Centennial Valley, Big Sheep Creek Basin, and the Axolotl Lakes area. Riparian and wetland communities around springs, seeps and pothole ponds in sagebrush habitats represent important small islands of habitat diversity as well as valuable water sources. Riparian plant communities support significant consumptive uses in the planning area such as livestock grazing and hunting, and nonconsumptive uses such as camping and wildlife viewing. Riparian habitats receive a disproportionate amount of wildlife use with approximately 75 percent of all wildlife species utilizing riparian areas for at least some portion of their annual life cycle (EPA 1990).

The extensive willow and aspen habitats that historically supported beavers have been reduced, and many watersheds

are no longer sustaining stable beaver activity. While there are localized populations of beaver, local biologists have observed that stable colonies have declined substantially since the 1970s and long-term recolonization is not occurring. This precludes opportunities for riparian restoration that could otherwise be achieved by beaver activity. The loss of this key-stone species and the habitat that it creates for numerous other wildlife species may reduce biological diversity.

### *Function and Condition*

All riparian habitats are dependent on a balanced combination of physical (streambank, channel, soil characteristics), hydrologic (regular occurrence of surface water), and vegetative (hydrophytic communities) components. When any of these three components—soils, water, and vegetation—are negatively affected, the functional capacity of a riparian habitat may be degraded. Riparian-wetland areas are properly functioning when adequate vegetation, landform, or large woody debris is present to dissipate stream energy associated with high water flows and flooding, thereby reducing erosion and improving water quality. Vegetation filters sediment and aids in floodplain development, improving floodwater retention and groundwater recharge. Deep soil-binding root masses stabilize streambanks against erosion. Stream channels develop to provide diverse ponding and channel characteristics that support enhanced water quality, fish production, waterfowl breeding, and greater biodiversity (USDI-BLM 1991d). The Western Montana Standards for Rangeland Health establish proper functioning condition as the minimum standard for BLM management of riparian-wetland areas. Management objectives may establish a desired future condition that extends beyond basic proper functioning condition.

Riparian areas are dynamic and extremely responsive compared to upland habitats. Variations in seasonal water flows influence the productivity and density of riparian vegetation and channel development. Flooding is an essential part of system development and stability. Minor habitat changes are normal and are part of the resilience of the riparian ecosystem. The ability of a system to withstand major disturbances is dependent on the integrity and balance of streambank, hydrology, and vegetation components. Degraded conditions in any of those components can result in impacts that may be beyond habitat capability to withstand or repair following a major flood or other disturbance. The combined effects of small scale, repeated degradation cause incremental declines in functional condition and increase vulnerability to further degradation. Riparian losses do not imply that the habitat disappears but that it supports a different set of capabilities and uses. Altered potential however does imply a progressive, often permanent, decline in habitat complexity, productivity and diversity.

The BLM Riparian Initiative for the 1990s established goals for management of riparian/wetland habitats on public lands to:

- Restore and maintain riparian-wetland areas so that 75 percent or more are in proper functioning condition by 1997.
- Protect riparian-wetland areas and associated uplands through proper land management and avoid or mitigate negative impacts. Acquire and expand key areas to provide for their maximum public benefit, protection, enhancement and efficient management.
- Ensure an aggressive riparian-wetland information outreach program
- Improve partnerships and cooperative restoration and management processes in implementing this riparian-wetland initiative.

An extensive literature base is available in BLM’s Technical Reference Series for Riparian Area Management (BLM Technical Reference 1737, 1-17, 1987-2001) that describes riparian values, functions, inventory and monitoring methods, and guidance for achieving riparian habitat goals and objectives. Montana-specific strategies and best management practices are provided in Ehrhart and Hansen (1998), and MT DNRC (1995, 1996, 1999). Management strategies and recommendations applicable to the planning area are provided in Myers (1981, 1987, 1989b, 1989b), Hockett and Roscoe (1993), Beaverhead-Deerlodge National Forest (USDA-FS 1997a), and Bengeyfield and Svoboda (1998).

There are 906 miles of lotic (flowing water) riparian habitat currently identified on public lands in the planning area. This does not represent a comprehensive total of all riparian habitat. Estimates of functional conditions of streams and wetlands in the planning area are displayed in **Table 23**. Function assessments are based on Montana Riparian Wetland Association (MRWA) health assessments using intensive inventory data, MRWA short form inventories, other inventory methodologies, photo trend plots, and professional judgment. Intensive MRWA inventory has been conducted on 400 miles (44 percent) of streams within the planning area. The BLM PFC method (Prichard 1993, 1998) has been used on fewer than 10 percent of the stream miles in the planning area. Only 187 of 906 miles (21 percent) of riparian habitat are in PFC, mostly due to reduced woody canopies and lack of regeneration, herbaceous plant composition dominated by shallow-rooted species such as Kentucky bluegrass, and overwidened stream channels. Many

functional-at-risk (FAR) riparian areas are still within site potential but are being sustained in disturbance-caused, disclimax vegetation communities that may take decades to convert.

There are approximately 2,319 acres of lentic (standing water) wetland habitats recorded on public lands in the planning area. Wetland habitats have not been comprehensively inventoried (Prichard 1994), and numerous small wetland areas exist throughout the planning area that have not been identified. Habitat is classified as lentic only if it is associated with standing water or small closed basins. Wetland habitat associated with springs, seeps and streams has not been documented separately from stream habitat assessments, even though some of these areas contain substantial acres of off-channel habitat. Relatively few extensive wetland/wet meadow complexes are present on public land. The major portion of wetland habitat in the planning area is on the shoreline of Lima Reservoir in the Centennial Valley, and Ruby Reservoir where annual drawdown of water levels precludes the development and maintenance of shoreline and littoral vegetation. Other extensive wet meadow/wetland habitats occur in Big Sheep Creek Basin, at Axolotl Lakes and in the Centennial Valley. Wetland enhancement projects developed through Intermountain Joint Venture partnerships have created approximately 185 acres of enhanced wetland habitat. The Monida Creek DU project on Lima Reservoir will provide an additional 42 acres of shallow wetland habitat when constructed.

**Riparian Monitoring**

Extensive riparian habitat inventory and vegetation trend monitoring has occurred since 1980. Prior to 1989, most information focused on woody vegetation characteristics and active bank erosion. Montana Riparian Wetland Association inventory methodologies were developed in 1989 using existing Dillon inventories as a base, and led to the development of a comprehensive inventory focusing on vegetation, soils and hydrology. This inventory supports a health assessment that describes the functional condition of a stream reach. This methodology was used on approximately half of the identified stream reaches in planning area with most of the work completed between 1992 and 1996. In 1993, the BLM adopted the current method for assessing PFC as outlined in TR 1737-15. This methodology is used along

**Table 23**  
**Functional Condition of Streams and Wetlands in the Planning Area**

	<i>Proper Functioning Condition (PFC)</i>	<i>PFC%</i>	<i>Functional-at-risk (FAR)</i>	<i>FAR %</i>	<i>Nonfunctional (NF)</i>	<i>NF %</i>
Stream riparian (miles)	187	21	528	58	191	21
Wetlands (acres)	535	23	1559	67	225	10

with the information collected using other monitoring methods in evaluating the health of riparian areas during watershed assessments.

Riparian coverboard monitoring transects are used to monitor trend for palatable deciduous woody vegetation, and have been a primary tool, along with function assessments, for evaluating riparian management effectiveness in allotment evaluations. Over 700 of these studies have been established and monitored since 1980 (Myers 1987b). Quantifiable data and photos are collected at several photo points for each transect. Most transects have been duplicated at least twice, some several times, and have been very useful in documenting trend in riparian vegetation communities.

Thirteen small riparian exclosures were constructed in 1981, and 1982 to provide comparison areas on various riparian habitat types. Paired transects with Daubenmire studies, macro-plots, and photo points, monitor woody and herbaceous vegetation characteristics inside and outside each exclosure. Stream channel cross-sections have also been established on these exclosure studies. All exclosure studies have been duplicated at least once and have documented some significant habitat changes.

### ***Influences on Riparian Habitat***

Livestock grazing is the most widespread activity that influences riparian habitat conditions in the DFO. Mining activity, roads, timber harvest, dispersed recreation and localized wildlife impacts also affect the functional capability of riparian/wetland areas. The cumulative effects of overlapping uses complicate the effectiveness of applying management constraints to a single activity to achieve riparian objectives.

Private irrigation diversion and stream dewatering are major constraints on achieving proper functioning condition on some public land riparian and wetland habitats, particularly in the Centennial Valley and Big Sheep Creek Basin.

Altered habitat potential has occurred on many riparian areas where channel alteration has lowered the water table and reduced the extent of riparian habitat. This has altered riparian vegetation communities and allowed the encroachment of upland herbaceous species, sagebrush, and juniper. Overcrowded woodland and forest conditions could be contributing to less water yields and shrinking riparian zones in some areas, particularly in drought cycles.

## **VISUAL RESOURCES**

### **Laws, Regulations, and Policies**

Visual Resource Management (VRM) on public lands administered by the BLM is directed by the following laws and guidance:

- Federal Land Policy and Management Act of 1976
- National Environmental Policy Act of 1969
- Surface Mining Control and Reclamation Act of 1977
- BLM Manual 8400 and 8411
- BLM Manual Handbook H-8410-1

### **Affected Environment**

BLM's VRM program attempts to balance the uses of public lands with the protection of areas containing high scenic values. Scenic quality is an essential component of most recreation activities. Recent studies indicate Americans enjoy a wide variety of outdoor activities that depend on high quality visual resources. According to several sources, recreation/tourism activities are a major component of the local, regional, and statewide economy. The University of Montana's Institute for Tourism and Recreation Research recently conducted a survey of out of state visitors. Over 30 percent of the people who responded to the survey indicated the reason for making Montana their vacation destination was for the uncrowded, wide-open spaces and the mountains and streams.

### **BACKGROUND**

The visual resources of the planning area were inventoried and classified in accordance with procedures outlined in the BLM Handbook 8410-1 before and during preparation of the 1979 Management Framework Plan (MFP). Prior to the MFP, BLM personnel conducted a visual resource inventory and analysis of the entire planning area. This inventory identified and quantified visual values and provided an overall description and relative value by rating scenic quality, visual sensitivity and distance zones. This resulted in the assignment of all lands in the planning area to one of five Visual Resource Inventory classes. These classes did not establish management direction but were used as part of the information to establish Visual Resource Management classes. A Class V rating was applied to areas where the natural character of the landscape had been disturbed to a point where rehabilitation would be needed to bring it up to one of the other four classes. Since then, Class V was eliminated from the rating system for visual resource inventory. Areas previously assigned to Class V in the planning area were mined areas and were reassigned to Class IV.

### **VISUAL RESOURCE INVENTORY CLASSES**

Class I is assigned to those areas where a management decision has been made previously to maintain a natural landscape. This includes areas such as national wilderness areas, wilderness study areas, the wild section of a national wild and scenic river, and other congressionally and administratively designated areas where decision have been made to preserve a natural landscape. Class II, III, and IV as assigned based on a combination of scenic quality, sensitivity level, and distance zones. Generally, the lower the class number, the more sensitive the area is to visual intrusions. These classes do not establish management direction.

**VISUAL RESOURCE MANAGEMENT CLASS ASSIGNMENTS**

Visual Resource Management Classes are assigned through the land use planning process and identify the objectives for managing visual resources. During the preparation of the MFP, all lands in the planning area and the associated Visual Resource Inventory classes were reviewed and assigned to VRM classes. These VRM class assignments considered the value of the visual quality and anticipated future land uses and defined the maximum amount of landscape alteration and surface disturbance that could occur.

**Table 24** describes the VRM classes and associated management objectives.

<b>Table 24 Visual Resource Management Class Objectives</b>	
Class I	Preservation of the landscape is the primary management goal in Class I areas. This class provides for natural ecological changes; however, it does not preclude very limited management activity. The level of change to the characteristic landscape should be very low and must not attract attention.
Class II	The objective of this class is to retain the existing character of the landscape. Activities or modifications of the environment should not be evident or attract the attention of the casual observer. Changes should repeat the basic elements of form, line, color and texture found in the predominant natural features of the characteristic landscape.
Class III	The objective of this class is to partially retain the existing character of the landscape. The level of change to the characteristic landscape should be moderate. Management activities may attract attention, but should not dominate the view of the casual observer. Changes caused by management activities may be evident but should not detract from the existing landscape.
Class IV	Class IV VRM objective is to provide for management activities which require major modification of the existing character of the landscape. Changes may attract attention and be dominant landscape features but should reflect the basic elements of the existing landscape. Class IV rating is generally reserved for areas where the visual intrusions dominate the viewshed but are in character with the landscape (areas such as rural communities, multiple subdivisions, mining developments, etc.).

**CONDITION AND TREND**

In the Dillon planning area, Class I areas are associated with wilderness (the Bear Trap Unit of the Lee Metcalf Wilderness in Madison County) and WSAs scattered across the planning area. Class II areas are often found adjacent to Wilderness Study Area boundaries, and in the planning area are mostly located on the south side of the Centennial Valley, in the Big Sheep Creek area, adjacent to the Blacktail WSA, on the west side of the Ruby Mountains WSA, and along the Madison River corridor and foothills. Public lands on the fringes of the Tobacco Root Mountains, between the Gravelly and Ruby mountains, and in the Medicine Lodge, Clark Canyon and south and east Pioneers areas are in Class III. Over half of the planning area is in Class IV, including the large expanses of public lands in Horse Prairie, Bannack, the Sage Creek and Sweetwater Hills, the north side of the Centennial Valley, and lands in the vicinity of Virginia City Hill. **Table 25** shows the acreage of the planning area currently within each VRM class.

The planning area still maintains much of the scenic quality and pristine viewsheds encountered during the visual resource inventory of the 1970s. While growth in the planning area has occurred and resource extraction has continued over the past 25 years, dramatic alterations of the landscape area-wide have not occurred. Changes in scenic quality in this area are subtle compared to those resulting from dramatic growth in areas like the Bitterroot Valley of Montana and commodity extraction such as open pit mining. The prevalence of grazing in the planning area and the open spaces afforded by an agricultural economy have prevented major change to date. However, the trend in rural development and subdivision, especially in areas in close proximity to public lands, may bode for more rapid change in the future. One particular issue to be considered in this new RMP planning includes the management of public lands in the planning area within the viewshed of the Lewis and Clark National Historic Trail, especially with the bicentennial celebration of Lewis and Clark’s journey between 2003 and 2006.

<b>Table 25 Acreages of Planning Area by Assigned VRM Classes</b>		
<b>VRM Class</b>	<b>Acreage</b>	<b>% Of Planning Area</b>
I	130,924	13.6
II	63,221	6.5
III	223,787	23.3
IV	543,311	56.5

## **WATER (including BLM Critical Element Water Quality, drinking/ground)**

### **Laws, Regulations, and Policies**

Public lands containing water resources are administered by the BLM in accordance with the following laws, mandates, and guidance:

- Clean Water Act of 1987, as amended, 33 USC 1251, 1977
- Control of Pollution from Federal Facilities, 33 USC 1323, 1970
- Public Rangeland Improvement Act, 43 USC 1901-1908, 1978
- Montana Water Use Act, Title 85, Chapter 2, Montana Code Annotated of 1973
- Withdrawal Order, April 17, 1926, Public Water Reserve 107 (Springs and Water Holes)
- Executive Order 12088, Federal Compliance with Applicable Pollution Control Standards, Coordination with the Environmental Protection Agency, State, interstate, and local agencies.
- 43 CFR 4120.3-9 (Range Improvements and Water Rights)
- 43 CFR 4100 Bureau of Land Management Grazing Administration
- Annotated Rules of Montana 17.30 Environmental Quality, Water Quality
- Rivers and Harbors Act, 33 USC 403 10, 1899
- Safe Drinking Water Act of 1996, as amended, 42 USC s/s 300f et seq. 1974
- Water Resources Planning Act, 42 USC 1962
- Montana Natural Streambed and Land Preservation Act (310 Law), Title 75, Chapter 7, Montana Code Annotated of 1975
- Montana Streamside Management, Title 77-5-301 Montana Code Annotated (MCA)
- Montana Water Quality Act, 75-5-301 Montana Code Annotated
- BLM Western Montana, Standards for Rangeland Health and Guidelines for Livestock Grazing Management, 1997
- BLM Manual Section 7240, Water Quality (USDI 1978)
- BLM Manual Section 7250, Water Rights (USDI 1984)
- Clean Water Action Plan, 1998
- Federal Reserved Water Rights Compact between State of Montana and Bureau of Land Management for the Upper Missouri National Wild and Scenic River and Bear Trap Canyon Public Recreation Area. (MCA 85-20-501)
- Memorandum of Understanding with Montana DEQ regarding Water Quality, 2002
- Unified Federal Policy for a Watershed Approach to Federal Land and Resource Management, 2000
- Water Rights Order, Montana Supreme Court, 1979

## **Affected Environment**

The Dillon planning area is located in the Upper Missouri River basin of the Missouri River hydrologic region. Subbasins in the planning area defined by the USGS 4th Hydrologic Unit Code include the Beaverhead, Big Hole, Jefferson, Madison, Red Rock and Ruby, all drained by major rivers of the same name.

### **SURFACE WATER**

The Dillon planning area contains over 900 miles of stream across the planning area and several small natural lakes in the Axolotl Lakes area. Precipitation in the form of rain and snow are the main sources of surface water and ranges from less than eight inches in the valleys to over 50 inches in the mountains. Peak flows within the streams in the planning area typically occur between April 15 and July 15 as a result of snowmelt.

Average annual discharge estimates from the principal subbasins in the planning area are displayed in **Table 26**.

Five major reservoirs under various non-BLM ownerships are located within the planning area as noted on **Table 27**. Surface water located on and across public lands is mainly used for water-based recreation activities, domestic and agricultural water supplies and maintenance of fisheries and habitats. More detailed surface water availability statistics are available on the USGS website at <http://mt.waterdata.usgs.gov/nwis>.

### **GROUNDWATER**

The occurrence and distribution of ground water in the Dillon planning area is determined by area geology. Primary sources of ground water include infiltration of runoff, stream channel losses and water contained in bedrock formations. Wells for domestic, livestock, irrigation and public purposes are the main use of groundwater in the planning area. In Beaverhead County, well depths vary from 6 to 880 feet, with nearly 70 percent of wells less than 100 feet in depth and over 90 percent of wells less than 200 feet in depth. In Madison County well depths vary from 2 to 1222 feet, with over 60 percent of wells less than 100 feet in depth and just over 80 percent less than 200 feet in depth. Well development for domestic purposes, as defined in MCA 85-2-306 (less than 35 gallons per minute to 10 acre feet per year), can occur prior to filing with the Montana DNRC and are exempted from the various basin closures.

### **PUBLIC WATER SUPPLIES**

The DFO is the operator of five public water supplies located at campgrounds on public land in Madison County. Public water suppliers throughout Beaverhead and Madison County also depend upon surface and groundwater supplies that originate on or are influenced by public lands. Amendments to the Safe Drinking Water Act require public

**Table 26**  
**Annual Discharge Estimates from Subbasins in the Planning Area**

<i>Rivers</i>	<i>Gauge Location</i>	<i>Drainage Area</i>	<i>Mean Annual Yield</i>
Beaverhead River	Twin Bridges	3,600 square miles	305,700 acre feet year
Big Hole	Melrose	2,500 square miles	809,800 acre feet year
Horse Prairie Creek	Grant	325 square miles	61,200 acre feet year
Jefferson River	Three Forks	9,500 square miles	1,487,300 acre feet year
Madison River	Below Ennis Lake	2,200 square miles	1,291,000 acre feet year
Red Rock	Monida	570 square miles	93,500 acre feet year

water suppliers to perform Source Water Assessments. These assessments are used to determine the susceptibility of public water systems to potential contamination sources.

Information obtained through the assessments is utilized in the development of Source Water Protection Management Plans. The DFO performs assessments and develops management plans for public water supplies operated by the BLM, and provides assistance upon request to communities and public water suppliers whose source waters include public land. In the planning area, most communities rely on groundwater supplies for their water, though Lima and Virginia City obtain water from surface supplies. Activities on BLM have little influence on the groundwater supplies, and in general, few public lands lie near these sources. While there are few public lands administered by BLM in the vicinity of the Lima source located on State lands, the DFO manages several sections of public land in proximity to the private land spring source providing Virginia City's water.

**Table 27**  
**Capacity and Purpose of Reservoirs**  
**in the Planning Area**

<i>Name of Reservoir</i>	<i>Primary Purpose</i>	<i>Storage Capacity</i>
Lima Reservoir	Irrigation	84,000 acre-feet
Clark Canyon Reservoir	Irrigation	261,000 acre-feet
Ruby Reservoir	Irrigation	38,000 acre-feet
Meadow Lake (Ennis Lake)	Hydropower	39,000 acre-feet
Hebgen Lake	Hydropower	379,000 acre-feet

### **MONTANA WATER LAW**

Water in Montana is the property of the State of Montana. The Montana State Constitution states in Article IX, Section 3(3) that "(a)ll surface, underground, flood, and atmospheric waters within the boundaries of the state are the property of the state for the use of its people".

Montana, historically, has recognized riparian and prior appropriation water rights, however, recognition of riparian rights has been very limited and couched in terms of prior appropriation language. Water rights laws were extensively debated during the 1972 Montana Constitutional Convention. The convention incorporated all past water rights into the new Montana Constitution (Article IX, Section 3 (1)) and charged the legislature with providing administration, control, regulation, and a system of centralized record keeping. The resulting legislation, the Montana Water Use Act (Title 85, Chapter 2, Montana Code Annotated) was passed in 1973. The legislation became effective July 1, 1973 and required several significant changes as follows:

- All existing water rights must be adjudicated. Water rights must be quantified and prioritized.
- A permit process was established for changes to existing water rights and establishment of new rights.
- All water rights must be filed with the State of Montana and the State must maintain a centralized records system.
- A water reservation system was created to reserve unappropriated waters to meet Montana's future demands. Unappropriated water was to be reserved by local government entities,
- State or federal agencies. Reservations applications in the Missouri River basin were submitted by the BLM, the Bureau of Reclamation (BOR), several municipalities, numerous state conservation districts, Montana Department of Health and Environmental Sciences, and Montana FWP. Uses included future irrigation needs, future municipal and industrial growth, water quality maintenance and improvement, and instream flows for fisheries and habitat maintenance.

As a result of the reservation process, BLM filed for rights on 31 streams in the planning area. In addition to these rights, BLM entered into a negotiated compact agreement with the State of Montana for water flows in the Bear Trap Canyon area of the Madison River. The compact agreement was signed by the Director of the Department of Interior in 1997. In 1998 the compact was ratified by the Montana Legislature and signed by the Governor.

### RIVER BASIN CLOSURES AND GROUNDWATER AQUIFER CONTROL AREAS

The State of Montana has the authority to control or close river basins and groundwater aquifers to certain types of water appropriations because of water availability problems, water contamination problems, and protection of existing water rights. Where surface water is over appropriated or contaminated, the State of Montana, through the DNRC, can close a basin to further appropriation.

The planning area is affected by the legislative closure process. The Upper Missouri River Basin is closed to new appropriations and applications for state water reservations.

Where groundwater is over appropriated or contaminated, the State of Montana can also designate a Controlled Groundwater Area. Currently, there are no Controlled Groundwater Areas in Beaverhead or Madison Counties.

### WATERSHED ASSESSMENTS, TMDLS, AND WATER QUALITY RESTORATION PLANS

Section 303(d) of the federal Clean Water Act (and related regulations) requires states to assess the condition of their waters to determine where water quality is impaired (does not fully meet standards) or threatened (is likely to violate standards in the near future). Every two years, the Montana DEQ submits to the EPA a list of water bodies that fail to meet water quality standards—known as the “303(d) list”. In Montana, lists have been submitted to the EPA in 1996, 1998, 2000, and most recently, in 2002. Montana DEQ’s 303(d) list is available on the DEQ website at [http://www.deq.state.mt.us/wqinfo/303\\_d/303d\\_information.asp](http://www.deq.state.mt.us/wqinfo/303_d/303d_information.asp).

DEQ is required to develop Total Maximum Daily Loads (TMDLs) for all water bodies on the 303(d) list. Montana’s approach is to include TMDLs as one component of a comprehensive water quality restoration plan (WQRP) using a watershed approach. In 2000, a federal judicial order required DEQ to complete all necessary TMDLs for all waters on the 1996 303(d) list by 2007. As a result, DEQ has divided the state into 91 watershed planning areas. Eleven (11) of these watershed planning areas span the planning area. See [Map 82](#) for the Dillon Field Office watershed evaluation schedule.

Watershed assessments conducted by the BLM evaluate activities conducted on public lands managed by the BLM. Evaluation criteria is based on whether or not activities will

meet the Standards for Rangeland Health. Watershed assessments will be completed by 2008 for all of the planning area, then a new cycle of watershed assessments would be initiated. Watershed assessment findings would provide the basis for actions necessary to achieve the Standards for Rangeland Health.

## WILD HORSES AND BURROS

### Laws, Regulations, and Policies

The BLM manages the public lands in accordance with laws established by the U.S. Congress. The major legislation and regulations directing management of Wild Free-Roaming Horses and Burros are the following:

- Wild Free-Roaming Horses and Burros Act of 1971 (16 U.S.C. 1331)
- Federal Land Policy and Management Act of 1976 (43 U.S.C. 1701)
- The Public Rangeland Improvement Act of 1978 (43 U.S.C. 1901 et seq.)

### Affected Environment

The DFO had a small wild horse herd at the time of the Mountain Foothills EIS. The Mountain Foothills EIS included a decision to remove these animals, which was completed. The only wild horse and burro work the DFO does is assist with public education, local or regional adoptions, and conduct compliance and health inspections for adopted animals.

## RESOURCE USES □

### FOREST PRODUCTS

#### Laws, Regulations, and Policies

The sale of forest products is authorized under and directed by the following laws, policy and guidance:

- Material Disposal Act of 1947-Public Law 80-291
- National Environmental Policy Act of 1969
- Federal Land Policy and Management Act of 1976
- Water Quality Act of 1987
- Clean Air Act
- Public Domain Forest Management Policy of 1989
- State of Montana Streamside Management Zone Law of July 1991
- Total Forest Management Initiative of June 1992
- BLM Handbook H-9231-1 (Forest Products Trespass Procedures)

## Affected Environment

### COMMERCIAL FOREST LANDS

Under the 1979 Dillon MFP, the “annual harvest” was set at 4.4 million board feet (MMBF) on a little under 100,000 acres of productive forest land. As a result of lands identified for wilderness study in the early 1980s, the probable sale quantity was adjusted to about 1.6 MMBF on approximately 83,000 acres of available commercial forest land. If released from wilderness review, an estimated 40,300 acres of commercial forest lands would no longer be constrained by WSA policies. Land adjustments have reduced the acres of forested lands in the commercial forest land base to approximately 82,000 acres. None of the forested lands acquired as a result of land adjustments were placed in the commercial base acres.

Approximately 5,000 acres of forested lands in the planning area have been treated by forest management or burned from 1951 to 2001. Of this total, 55 percent were clearcut and 45 percent were partial cut acres. Based on an estimated available base acreage of 82,000 acres, almost 6 percent has been affected by either harvest activity or fire in the past 50 years. The majority of forest treatments were in sawlog size stands. The bulk of the clearcut acres were in lodgepole pine, with the majority of partial cut acres being in Douglas-fir habitats. Wildfire suppression has kept forest structure changes from wildfire to less than 1 percent of all disturbances.

### LOCAL/REGIONAL DEMAND FOR FOREST PRODUCTS

Local or regional demand for sawlog products from the planning area has averaged a little over 1 million board feet/year. There has only been one year since 1980 when DFO timber sales that were offered did not sell. Local demand for post/poles has varied from several hundred to several thousand trees/year. Personal use firewood permits from BLM lands has been averaging about 50,000 board feet/year of dead wood. Approximately 30 individual small sale permits are issued annually for these forest products. Since 1995, Christmas tree permits have averaged about 20 per year.

Financial returns to the US Treasury from the BLM forestry program in Dillon between 1951 and 2001 were approximately \$1,490,000. Total volume of timber harvested in that period was 57,500,000 board feet for an average of 1,150,000 board feet per year.

Regional demand is well over 200 million board feet from four major sawmills within 200 miles of Dillon. The working circle for these sawmills ranges from Canada to Utah, from eastern Montana to the vicinity of Missoula and varies with the timber market.

### UNAUTHORIZED USE

BLM Timber Trespass Policy is contained in BLM H-9231-1 Forest Products Trespass Procedure Handbook. Over all, while timber trespass is noteworthy in the immediate area where it occurs, its cumulative effect in the planning area has been minor. Timber trespass actions have averaged from one to two per year over the past 20 years. The majority of these would be classified as small inadvertent trespass onto BLM lands when timber harvest activity occurred on adjacent lands. Usually, these have been settled at the local administrative level. There has been one criminal trespass processed in 20 years.

Prevention actions have consisted of cautioning adjacent land owners of BLM trespass policy when staff is informed of activity in the vicinity of BLM administered lands.

## LANDS AND REALTY

### Laws, Regulation, and Policy

The lands and realty program operates in accordance with a myriad of laws and associated regulation and guidance. These include but are not limited to:

- Federal Land Policy and Management Act of 1976, as amended
- Mineral Leasing Act of 1920, as amended
- Federal-Aid Highway Act of 1958, as amended
- Alaska National Interest Lands Conservation Act of 1980
- The Recreation and Public Purposes Act of 1926, as amended
- The Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1971
- Land and Water Conservation Fund Act of 1965, as amended
- Federal Land Transaction Facilitation Act of 2000
- The Declaration of Taking Act of 1931
- The Condemnation Act of 1888, as amended
- The Engle Act of 1958
- The Federal Power Act of 1920, as amended
- The Act of May 24, 1928, as amended
- Taylor Grazing Act, as amended
- The Desert Land Act of 1877, as amended
- The Carey Act of 1894, as amended
- General Allotment Act of 1887, as amended
- The Act of December 22, 1928, as amended
- Sections 2275 and 2276 of the Revised Statutes, as amended
- 43 CFR 2100 (Acquisitions)
- 43 CFR 2200 (Exchanges)
- 43 CFR 2300 (Withdrawals)
- 43 CFR 2400 (Land Classification)
- 43 CFR 2500 (Disposition: Occupancy and Use)

- 43 CFR 2600 (Disposition: Grants)
- 43 CFR 2700 (Disposition: Sales)
- 43 CFR 2800 (Use: Rights-of-Way)
- 43 CFR 2900 (Uses: Leases and Permits)
- 43 CFR 9230 (Trespass)

## Affected Environment

### LAND USE AUTHORIZATIONS

Land use authorizations include various authorizations and agreements to use BLM land such as right-of-way grants, road use agreements and associated temporary use permits under several different authorities; leases, permits, and easements under Sec. 302 of the Federal Land Policy and Management Act of 1976 (FLPMA); airport leases under the Act of May 24, 1928; and Recreation and Public Purposes (R&PP) Act leases. For the purposes of this planning effort R&PP transfers, unlike R&PP leases, are considered “land ownership adjustments” and are covered below under that heading.

The DFO administers approximately 355 rights-of-way which encumber over 8,000 acres of BLM lands (LR2000 Database Report, April 2002). These existing grants are for a myriad of different facilities and are held by private individuals and groups as well as various business and government entities. Power transmission and distribution lines, roads, and telephone lines are the most common types of right-of-way facilities – accounting for well over half of the total number of grants. Examples of additional types of right-of-way facilities authorized within the planning area include water pipelines, communication sites, ditches, railroads, material sites, and fiber optic lines. The DFO processes approximately 10 to 15 right-of-way actions annually. These include right-of-way applications for new facilities as well as the amendment, assignment, renewal or relinquishment of existing right-of-way grants.

Sixteen communication site rights-of-way occupying ten different communication site locations are authorized within the planning area (see **Map 19** and **Table 28**). Potential new users are encouraged to locate within existing communication facilities. While Maurer Mountain has a communication site plan completed in 1983, none of the other communication site facilities have plans. However, site plans are expected to be completed or updated for the Bear Trap, Pipe Organ, Armstead Mountain, Badger Pass and Maurer Mountain communication sites early in 2005.

The BLM has not formally designated any right-of-way corridors or use areas within the planning area, although attempts are made to group compatible facilities where possible. The DFO currently has no right-of-way exclusion or avoidance areas. In accordance with the 1979 Dillon MFP, when feasible, power distribution lines are required to be buried when located on public lands within 1/4 mile on each side of the Madison River from Quake Lake to the northern planning area boundary to protect scenic values.

The DFO administers six Sec. 302 FLPMA temporary land use permits involving about 40 acres of BLM lands (LR2000 Database Report, April 2002). These permits are issued for a term of up to three years and are for the temporary use of public lands for agricultural use. There are no leases or easements under Sec. 302 of FLPMA or airport leases located in the planning area. Only one R&PP lease exists within the area administered by the DFO. This 90-acre lease is held by the Dillon Rifle and Pistol Club and expires in 2008. R&PP transfers are discussed below under *Land Ownership Adjustment*.

Currently, the DFO analyzes requests for land use authorizations and applies mitigation measures on a case-by-case basis.

**Table 28**  
**Communication Sites, Locations, and Existing Uses (Designations)**

<i>Communication Site</i>	<i>Legal Description (Principal Meridian, Montana)</i>	<i>Existing Uses (Designations)</i>
Armstead Mountain	SE1/4NE1/4, Sec. 34, T. 10 S., R. 11 W.	Low Power; Non-Broadcast
Pipe Organ	SW1/4NE1/4, Sec. 4, T. 9 S., R. 10 W.	Low Power; Non-Broadcast
Maurer Mountain	NE1/4NW1/4, Sec. 29, T. 10 S., R. 9 W.	Low Power; Broadcast and Non-Broadcast
Bear Trap	SE1/4NE1/4, Sec. 18, T. 4 S., R. 1 E.	Low Power; Non-Broadcast
Baldy Ridge	NE1/4SE1/4, Sec. 26, T. 7 S., R. 3 W.	Government Use Only
Badger Pass (aka: Bannack)	NE1/4NW1/4, Sec. 22, T. 7 S., R. 11 W.	Low Power; Non-Broadcast Existing Facility Only
Barton Gulch	SE1/4SW1/4, Sec. 12, T. 7 S., R. 4 W.	Resource Monitoring
Lakeview Ridge	Lot 4 of Sec. 26 and Lot 1 of Sec. 27, T. 14 S., R. 2 W.	Resource Monitoring
Monida Pass	NE1/4NE1/4, Sec. 25, T. 14 S., R. 7 W.	Resource Monitoring
VC Hill	NE1/4SW1/4, Sec. 32, T. 6 S., R. 2 W.	Low Power; Non-Broadcast

**LAND OWNERSHIP ADJUSTMENT**

Land ownership (or land tenure) adjustment refers to those actions that result in the disposal of BLM lands and/or the acquisition of non-Federal lands or interests.

Current planning guidance with respect to land ownership is provided by the 1979 Dillon MFP as supplemented by State Director guidance issued in 1984 (USDI-BLM 1984b). This guidance was later amended by the 1989 State Director’s guidance pertaining to access (see the *Access* section). This direction establishes land exchange as the predominant method of land ownership adjustment. It also establishes retention, disposal, and acquisition criteria to be used in categorizing the public lands. Criteria in the supplement were used to identify retention zones within the planning area. There are currently approximately 811,228 acres (90 percent) of BLM lands located within retention zones in the planning area. These retention zones typically include the better blocked BLM lands that meet the retention criteria. Although lands in retention zones can be disposed of when significant public benefits are realized, the goal generally is to retain or enhance public land holdings within these zones. Lands outside these retention zones are generally available for the full range of land ownership adjustment opportunities – including retention, exchange, sale, or transfer. Land ownership adjustment proposals in the planning area are analyzed in project specific reviews using the aforementioned guidance.

Since the completion of the Dillon MFP in September of 1979, the primary means of land ownership adjustment within the planning area has been through exchange. Twenty-four exchanges affecting Federal and/or non-Federal lands within the planning area have been completed during this time period. The DFO has been using exchanges extensively to improve public land ownership patterns by generally disposing of small, isolated tracts of public land with limited resource values and acquiring non-Federal land with higher public resource values adjacent to larger blocks of public land. Lands in the planning area have also been used in exchanges mandated by Congress. During this same time period, the DFO has also completed three land purchases along the Beaverhead River about 12 miles southwest of Dillon and one public land sale approximately 17 miles north of Dillon.

The Recreation and Public Purposes (R&PP) Act authorizes the transfer of public lands in addition to leases when it serves the public interest. The DFO completed five R & PP transfers since the approval of the MFP. Three of the transfers have been to Montana FWP for additions to Bannack State Park, one has been to Madison County for a historic monument, and one to the Montana Heritage Commission also for historic monument purposes. During this same time period, no lands have been conveyed for agricultural entries under the Desert Land Act or Carey Act, nor have any lands been conveyed for airport grants, Indian allotments,

color-of-title actions, railroad or state grants.

**Table 29** lists land ownership adjustment actions for the planning area since the completion of the Dillon MFP in September of 1979. Note that acreage figures are approximate.

<i>Type of Action</i>	<i>Number of Actions</i>	<i>Acres Disposed</i>	<i>Acres Acquired</i>
Public Sales	1	20	—
Purchases	3	—	2,329
R&PP Transfers	5	1,270	—
Land Exchanges	24	38,594	21,682
Total Acres	—	39,633	24,011

**ACCESS**

Access, for the purposes of this section, refers to the physical ability and legal right of the public, agency personnel, and authorized users to reach public lands. The lands and realty program primarily assists in the acquisition of easements to provide for legal access where other programs have identified a need.

Access to public lands administered by the Dillon Field Office is an issue of concern to both agency personnel and the public. The planning area’s existing fragmented ownership pattern of BLM lands, intermingled with private, state, and other Federal lands, complicates the access situation. While the DFO has and is currently making progress in terms of improving access to public lands, there are still areas within the planning area that lack legal access. Current planning guidance with respect to access is provided by the 1979 Dillon MFP as supplemented by guidance prepared by the Montana State Office on access (USDI-BLM 1989). In accordance with guidance in this latter document, the DFO has been focusing its access acquisition efforts on:

- larger blocks of public lands which are designated for retention in BLM ownership
- areas with important resource values
- areas where public demand for access is high
- areas with substantial BLM investments

Generally speaking, access is acquired from willing landowners on a case-by-case basis as needs or opportunities arise, using criteria and direction provided in the guidance referred to above.

The Dillon Field Office uses the acquisition of road and trail easements as the primary means of obtaining legal access to public lands where it does not currently exist. The DFO administers a total of 106 easements, including 84 exclusive and 24 nonexclusive easements (LR2000 Database Report, April 2002). Most of these are road or trail easements, though some are for fence or pipeline placement across lands not administered by BLM. Since the completion of the Dillon MFP in 1979, the DFO has been acquiring access-related easements at the average rate of about three per year. When possible, emphasis for easement acquisition is on those roads or trails identified through a route analysis process.

Although used much less frequently than easement acquisition, the DFO uses land exchanges on occasion to acquire needed access to public lands. Access is typically just one of many benefits of these exchanges. The consolidation of BLM land ownership patterns by exchange has generally improved the access situation in the planning area. When disposing of BLM parcels containing roads or trails necessary for access to other public lands, the DFO protects these access routes by reserving them in the conveyance documents.

## WITHDRAWALS

A withdrawal is a formal action that sets aside, withholds, or reserves Federal lands by administrative order or statute for public purposes. The effect of a withdrawal is to accomplish one or more of the following:

- Segregates (closes) Federal land to the operation of all or some of the public land laws and/or mineral laws
- Transfers total or partial jurisdiction of Federal land between Federal agencies
- Dedicates Federal land for a specific public purpose

Withdrawals can be categorized into three major types including:

- Congressional - legislative withdrawals made by Congress in the form of public laws. Examples include designation for wild and scenic rivers or wilderness
- Administrative – withdrawals made by the President, Secretary of Interior, or other officers of the executive branch of the Federal Government. Examples include stock driveways and public water reserves
- Federal Power Act – power project withdrawals established under the Federal Power Act of June 10, 1920. These withdrawals are automatically created upon the filing of an application for hydroelectric power development with the Federal Energy Regulatory Commission (FERC)

**Table 30** summarizes the specific types of withdrawals and the acres of public lands withdrawn in each type of withdrawal. It should be noted that many of these withdrawals overlap so the total number of acres withdrawn is less than the sum of the acres shown in **Table 30**. **Map 19** shows the

location and distribution of withdrawals across the planning area. The table and map do not include withdrawals of National Forest System lands (other than administrative sites outside forest boundaries), the Big Hole National Battlefield administered by the National Park Service, the U.S. Sheep Experiment Station administered by the Agricultural Research Service, or the Red Rock Lakes National Wildlife Refuge and associated Red Rock Lakes Wilderness administered by the U.S. Fish and Wildlife Service. These acreages are discussed in Chapter 1.

**Table 30**  
**Existing Withdrawals in the Planning Area**

<i>Type of Withdrawal</i>	<i>BLM Acres Withdrawn</i>
BLM Recreation Sites	6,526
Public Water Reserves	1,991
BLM Protective Withdrawal	2,702
Reservoir Site Reserve	8,737
USFS Administrative Sites	591
Bureau of Reclamation	880
Air Navigation Site	10
Power Site Reserves, Classifications, and FERC Power Projects	12,008
Lee Metcalf Wilderness – Bear Trap Unit	6,162
<b>Total Acreage</b>	<b>39,607</b>

**BLM Recreation Sites:** These include several administrative withdrawals for the Deadwood Gulch, Shearing Pen, Red Mountain, Ennis Lake, Ruby Reservoir, Ruby Creek and South Madison recreation sites as well as the Bear Trap Canyon Recreation Area. All of these sites are withdrawn from surface disposal and mining, but not from mineral leasing. The Bear Trap Canyon Recreation Area is also withdrawn from mineral leasing.

**Public Water Reserves:** These include a number of administrative withdrawal actions over the years for spring areas set aside for public use. These areas are scattered throughout the planning area and are withdrawn from surface disposal and nonmetalliferous mining, but not from metalliferous mining and mineral leasing.

**BLM Protective Withdrawals:** These include two administrative withdrawals on lands acquired for wetland, riparian, recreation, and wildlife values. One is located along the Beaverhead River about eleven miles south of Dillon, and the other is located in the Axolotl Lakes area about five miles southeast of Virginia City. The properties are with-

drawn from surface disposal and mining, but not from mineral leasing.

Reservoir Site Reserve: This consists of a single administrative withdrawal for Lima Reservoir located in the southern portion of the planning area near the Montana-Idaho border. The lands are withdrawn from surface disposal and nonmetalliferous mining, but not from metalliferous mining and mineral leasing.

USFS Administrative Sites: These are administrative withdrawals for U.S. Forest Service administrative sites located outside Forest Service boundaries including the Wisdom, Jackson, Bloody Dick, and Madison River (Ennis Horse Pasture) sites. The Wisdom and Madison River (Ennis Horse Pasture) sites are withdrawn from surface disposal and mining, while the Jackson and Bloody Dick sites are withdrawn from surface disposal and nonmetalliferous mining. None of these sites is withdrawn from mineral leasing.

Bureau of Reclamation: There are two separate reclamation withdrawals for the Clark Canyon Project located at or in the general vicinity of Clark Canyon Reservoir southwest of Dillon. The lands are withdrawn from surface disposal and mining, but not from mineral leasing.

Air Navigation Site: This is a single administrative withdrawal for an air navigation site located about twelve miles southwest of Dillon. It's withdrawn from surface disposal and mining, but not from mineral leasing.

Power Site Reserves and Classifications: There are numerous powersite reserves and classifications within the planning area. These are administrative withdrawals that protect water/power development potential and are located in three general areas including along portions of the Big Hole River about 15 miles north of Dillon, along the Red Rock River in the general vicinity of Lima Reservoir, and along the Madison River. Generally speaking, these sites are withdrawn from surface disposal only.

#### FERC Power Projects:

There are two main FERC Power Project withdrawals affecting BLM lands within the planning area. One withdrawal is for FERC Project No. 2188, a hydropower development on the Madison River about eleven miles northeast of Ennis. The second withdrawal is for FERC Project No. 9482, a hydropower project on Wisconsin Creek and Noble Fork about five miles northeast of Sheridan. These withdrawals are administered by FERC.

Lands included in an application for hydroelectric power development with FERC are automatically segregated from surface disposal. At the time FERC issues a license or preliminary permit, the lands are automatically closed to location and entry under the mining laws, but are still available for mineral leasing.

Lee Metcalf Wilderness – Bear Trap Unit: This is a Congressional withdrawal located along the Madison River and adjacent public lands between Ennis Lake on the south and the Warm Springs recreation site on the north. The lands are withdrawn from surface disposal, mining, and mineral leasing.

The Dillon Field Office considers requests for new withdrawals and withdrawal revocations, extensions, or modifications on a case-by-case basis. Existing withdrawals are also reviewed on a case-by-case basis prior to the end of the withdrawal period or as otherwise required by law to determine whether they should be extended, revoked, or modified.

It should be noted that while BLM land classifications are not formal withdrawals, they are considered “de facto” withdrawals since most land classifications also segregate public lands from the operation of all or some of the public land laws and/or mineral laws. A BLM land classification accomplishes one of the following:

- Determines if BLM lands are suitable for certain types of entry (disposal or lease) under the public land laws (e.g., Desert Land Act entries)
- Determines if BLM lands are suitable for retention for multiple use management

Historically, much of the planning area was under classification for retention for multiple use pursuant to the Classification and Multiple Use (C & MU) Act of 1964. With the passage of FLPMA in 1976 and its direction that BLM lands generally be retained in public ownership, these C & MU classifications within the planning area were deemed unnecessary and were terminated. The one exception is a five-acre C & MU classification that still remains for the retention of BLM lands encompassing a historical site known as Road Agent's Rock in Section 29, T7S, R11W, PMM. This site remains segregated from all forms of appropriation under the public land laws, including the mining laws but not the mineral leasing laws.

Any new classification actions since the completion of the MFP in 1979 have been associated with Recreation and Public Purposes Act lease or sale actions.

#### **UNAUTHORIZED USE**

Trespass under the Lands and Realty program can be split into three separate categories. These include:

- Unauthorized Use
- Unauthorized Occupancy, and
- Unauthorized Development

**Unauthorized Use** refers to activities that do not appreciably alter the physical character of the public land or vegetative resources. Some examples of unauthorized use include

the abandonment of property or trash, enclosures, and use of existing roads and trails for purposes which require a use fee or right-of-way. **Unauthorized Occupancy** refers to activities which result in full or part-time human occupancy or use. An example would be the construction, placement, occupancy, or assertion of ownership of a facility or structure (cabin, house, natural shelter, trailer, etc.). **Unauthorized Development** means an activity that physically alters the character of the public lands or vegetative resources. Examples include cultivation of public lands and road or trail construction/realignment.

The DFO attempts to abate trespass through prevention, detection, and resolution. In the Lands and Realty program, priority for resolving trespass in the planning area is accorded to those newly discovered, ongoing uses, developments, or occupancies where resource damage is occurring and needs to be halted to prevent further environmental degradation. Lesser priority is accorded those historic trespass cases where little or no resource damage is occurring. Realty trespass cases in this latter category are resolved as time permits.

## LIVESTOCK GRAZING

### Laws, Regulations, and Policies

The major legislation, mandates and guidance directing administration of livestock grazing on public land include:

- Taylor Grazing Act of 1934 (43 U.S.C. 315)
- Federal Land Policy and Management Act of 1976 (43 U.S.C. 1701)
- The Public Rangeland Improvement Act of 1978, 43 U.S.C. 1901 et seq.
- Executive Order 12548, Livestock Grazing Fee
- 43 CFR 4100 (Grazing Regulations)

### Affected Environment

The Dillon Field Office manages the livestock grazing on public lands administered by the Bureau of Land Management in Beaverhead and Madison counties that are under the jurisdiction of DFO. The planning area encompasses about 5.8 million acres of which BLM manages approximately 900,000 acres. There are 425 allotments in the project area which are utilized by 268 livestock operators. The total active permitted use of all permittees in the planning area is 113,219 animal unit months (AUMs) (see glossary terms for AUMs, Active Preference, and Actual Use). The total number of AUMs authorized for the past ten years is shown on **Table 31**. Grazing licenses and permits are issued for a ten-year period and are reviewed through an evaluation process.

<i>Year</i>	<i>Authorized (Actual Use)</i>	<i>Preference (Maximum)</i>
1992	78,973	113,219
1993	76,704	113,219
1994	78,176	113,219
1995	80,227	113,219
1996	83,691	113,219
1997	82,829	113,219
1998	84,450	113,219
1999	81,558	113,219
2000	82,443	113,219
2001	80,328	113,219
<b>Average</b>	<b>80,938</b>	<b>113,219</b>

### ALLOTMENT CATEGORIZATION AND GRAZING SYSTEMS

Three selective management categories were developed in 1981 to prioritize grazing allotments according to management needs. All allotments have been placed into these categories according to management needs, resource conflicts, potential for improvement, and Bureau funding/staffing constraints. The allotments categorization was reviewed in 1990 to ensure proper classification.

Improve (I) category allotments are managed to improve current unsatisfactory resource conditions and receive the highest priority for funding and management actions. Maintain (M) category allotments are managed to maintain current satisfactory resource conditions and are actively managed to ensure that resource values do not decline. Custodial (C) category allotments are managed custodially by the BLM to protect resource conditions and values. As watersheds are evaluated, the allotment category is reviewed. The DFO has 128 Improve (I) category allotments covering 542,213 acres, 88 Maintain (M) category allotments covering 206,284 acres, and 209 Custodial (C) category allotments covering 82,100 acres.

The Mountain Foothills Grazing EIS outlined proposed grazing systems for most I and M category allotments. As a result of this direction, grazing systems have been developed and implemented through agreements or decisions with allottees. These grazing systems are usually documented and described in an Allotment Management Plan (AMP). An AMP is a documented program, developed as an activity plan, that directs management of livestock grazing on specified public land in order to achieve objectives relating to desired resource conditions, sustained yield, and multiple use. AMPs are implemented when incorporated into the terms and conditions of the grazing permits or leases and

accepted by the permittee or lessee. Strategic portions of AMPs are the rangeland projects identified to meet resource objectives and subsequent grazing systems/schedules. The planning area has 56 I category allotments, 46 M category allotments and five C category allotments with AMP'S that have been implemented.

There are 40 allotments that cross administrative boundaries and are co-managed with the Forest Service. Some of these allotments have interim riparian management guidelines that were applied based on the Beaverhead Forest Plan Riparian Amendment EIS until allotment plans are revised or completed.

#### **RANGELAND MONITORING AND EVALUATIONS**

The BLM conducts rangeland monitoring to determine whether land use plan and AMP objectives are being met. Vegetation trend, livestock utilization and actual use, and climate are monitored. Monitoring data collection tracks progress in meeting identified management objectives. Active grazing use authorizations and management actions in each allotment are periodically evaluated, based on the monitoring data. If monitoring shows that progress is being made towards objectives, management continues. However, if progress is not being made towards meeting objectives, then management adjustments are made. Adjustments are made by agreement or decision in accordance with legislation, regulations, and policy so that public land resources are maintained or improved.

Direction since 2000 provides for allotments to be evaluated for rangeland health on a watershed basis at the fifth Hydrologic Unit Code (HUC) level. Following watershed

evaluations, management is prescribed to maintain or improve rangeland health. **Table 32** outlines the high priority watersheds with acreage figures by administrative jurisdiction.

#### **RANGE IMPROVEMENTS**

The BLM and cooperators have completed structural and nonstructural projects on public lands to improve and manage these lands since 1943. The nonstructural projects include seedings, plowing, chiseling, contour furrowing, and herbicide spraying. The structural projects have included wells, pipelines, troughs, fences, guzzlers, reservoirs and cattle guards. A summary of existing range improvements of record is shown on **Table 33**. There are older projects that are not included in **Table 33**.

#### **STANDARDS FOR RANGELAND HEALTH AND GUIDELINES FOR LIVESTOCK GRAZING MANAGEMENT**

The rangeland reform process of 1994 modified the grazing regulations identified in 43 CFR Part 4100. A new regulation was developed and is currently being implemented throughout the BLM. The regulation, 43 CFR 4180, addresses the fundamentals of rangeland health. In May 1997, the Montana State Director approved the Standards for Rangeland Health and Guidelines for Livestock Grazing developed in consultation with the Western Montana Resource Advisory Council. These standards and guidelines are intended to provide a clear statement of agency policy and direction for those who use public lands for livestock grazing and for those who are responsible for their management and accountable for their conditions.

**Table 32**  
**Acreage by Jurisdiction within High Priority Watershed Analysis Areas**

<i>Watershed Name</i>	<i>5<sup>th</sup> HUC #</i>	<i>BLM</i>	<i>FS</i>	<i>ARS</i>	<i>FWS</i>	<i>State</i>	<i>Private</i>
Bannack	1110 & 2020	91,541	28,134	0	0	16,670	50,322
Beaverhead	2040	33,580	0	0	0	6,604	43,120
Big Sheep Creek	1050	55,505	101,803	0	0	3,410	10,400
Blacktail	2050	56,354	26,691	0	0	52,767	12,512
Centennial Valley	1010 & 1020	86,558	43,986	15,649	39,176	62,054	53,584
Horse Prairie	1090 & 1100	50,767	102,370	0	0	18,918	65,058
Medicine Lodge	1120	38,835	46,612	0	0	6,388	33,025
Ruby	3030 & NE corner of 3010	34,350	3,890	0	0	8,132	54,526
Sage Creek	1070	84,358	0	0	0	32,001	47,776
South Tobacco Roots	3050	12,614	43,552	0	0	4,058	74,708

**Table 33**  
**Summary of Types of Existing**  
**Rangeland Improvements**

<i>Improvement</i>	<i>Number</i>
Cattle guards	114
Fences (miles)	1468
Seedings (acres)	12,315
Land Treatments (acres)*	85,996
Reservoirs and stock ponds	29
Spring Developments	285
Pipelines (miles)	175
Guzzlers	3
Wells	25
*Land Treatments = burns, chemical, or mechanical treatments	

The objectives of the rangeland health regulations are to "...promote healthy sustainable rangeland ecosystems; to accelerate restoration and improvement of public rangelands to properly functioning conditions... and to provide for the sustainability of the western livestock industry and communities that are dependent upon productive, healthy public rangelands." The fundamentals of rangeland health combine the basic precepts of physical function and biological health with elements of law relating to water quality and plant and animal populations and communities. Although the focus of the standards is on domestic livestock grazing on BLM lands, on-the-ground decisions must consider the effects and impacts of all uses.

The standards are the basis for assessing and monitoring rangeland conditions and trend. Watershed assessments are conducted by an interdisciplinary team with participation from permittees' and other interested parties and determine whether the Western Montana Standards for Rangeland Health are being met. The five standards for rangeland health are as follows:

Standard # 1: Uplands are in proper functioning condition.

Standard # 2: Riparian and wetland areas are in proper functioning condition.

Standard # 3: Water quality meets state standards.

Standard # 4: Air quality meets state standards.

Standard # 5: Provide habitat as necessary, to maintain a viable and diverse population of native plant and animal species, including special status species.

Based on 43 CFR 4180, if existing grazing management is a significant factor in the non-attainment of a standard, appropriate actions will be implemented that will result in significant progress toward attainment of the standard(s) as soon as practical but no later than the start of the next grazing season.

The Dillon Field Office began watershed assessments in 1998 and will continue until all allotments are assessed and management revisions deemed necessary have been initiated. The evaluation process has been completed on 67 allotments covering 208,431 acres through the end of the 2001 fiscal year. In the assessments completed, existing grazing management was identified as contributing to the non-attainment of some standards on a portion of the allotments. New management has been initiated on all of these allotments in new term grazing permits. If a term grazing permit expires and an assessment cannot be completed due conflicting workloads, a standard stipulation is placed in the terms and conditions of the permit identifying that an assessment will be completed in the near future. This assessment may result in a modification of the permit if it is determined that livestock grazing is contributing to the non-attainment of a standard.

#### **UNAUTHORIZED USE**

Prohibited acts identified in regulations found at 43 CFR 4140 identify unauthorized grazing use. Grazing permittees and lessees as well as the public can be cited for unauthorized grazing use, depending on the circumstances. The most common unauthorized use that occurs in the planning area is the grazing of livestock outside the area or at a different time than authorized. Settlement of unauthorized use is handled in accordance with regulations at 43 CFR 4150.

## **MINERALS**

### **Laws, Regulations, and Policies**

The management of minerals on lands administered by BLM is split into three main categories: leasable, locatable, and saleable minerals (also known as mineral materials). The following major laws, mandates, and guidance direct the management of these resources.

#### **General Mining Law**

- Act of July 26, 1866
- General Mining Law of 1872
- Federal Land Policy and Management Act of 1976
- Montana Natural Streambed and Land Preservation Act
- Mining and Mineral Policy Act of 1970

#### **Leasable Minerals**

- The Mineral Leasing Act of 1920, as amended
- The 1947 Acquired Lands Mineral Leasing Act

- Geothermal Steam Act of 1970
- Federal Onshore Oil and Gas Leasing Reform Act of 1987
- *Conner v. Burford*, 848 F. 2d 1441, 9th Cir., 1988
- 43 CFR Group 3100 (Oil and Gas Leasing)
- 43 CFR Group 3200 (Geothermal Resource Leasing)
- 43 CFR Group 3400 (Coal Management)
- 43 CFR Part 3500 (Leasing of Solid Minerals other than Coal and Oil Shale)

#### Locatable Minerals

- 43 CFR 3715 (Use and Occupancy Under the Mining Laws)
- 43 CFR 3802 (Exploration and Mining, Wilderness Review Program)
- 43 CFR 3809 (Surface Management)

#### Saleable Minerals

- Mineral Materials Act of 1947
- 43 CFR 3600 (Mineral Materials Disposal)

### Affected Environment

A significant amount of mining has taken place over the years in the planning area. Most mining activities have tended to be boom and bust due to mineral prices, economic conditions, and availability of the ore. The following discussion covers leasable minerals, locatable minerals and mineral materials (also known as saleable minerals).

#### LEASABLE MINERALS

##### *Coal*

The potential for development of coal is unlikely in the planning area due to the limited occurrence, inaccessibility of deposits, and low grade.

Small amounts of lignite and bituminous coal are known or suspected to exist in the Dillon Field Office. Late Cretaceous coal is exposed along the upper part of the Ruby River in the valley between the Snowcrest and Gravelly Ranges in Madison and Beaverhead Counties. Most of the coal beds are less than one foot thick, although some local deposits are up to two and one half feet thick.

Tertiary coals may exist in many of the intermontane basins located in the Field Office. However, outcrops are not reported in the Big Hole Valley, Jefferson Valley, Beaverhead Valley, Madison Valley, or Centennial Valley. If Tertiary Coals exist in these basins, they would most likely be low grade likely consisting of thin beds of lignite covering restricted areas (Hall and Gill 1953).

The coal beds found in the Medicine Lodge Creek Valley are part of the best exposures of coal-bearing Tertiary lake deposits in southwestern Montana. Small-scale coal mining occurred in the area until the winter of 1949/1950 (Hall

and Gill 1953). More than 14 beds of high ash and high sulfur coal as much as 6.7 feet thick have been revealed by drilling several exploratory holes in Tertiary rocks exposed in the area. Previously described as lignites, the coals rank from subbituminous A to high volatile B bituminous. The relatively high rank may be a sign that these coal beds were metamorphosed by a relatively high local geothermal gradient to a higher rank than typically expected for these Tertiary coals. The strata are relatively steeply dipping and localized by faults (Dyner and Schell 1982).

##### ***Geothermal Resources***

Geothermal energy is energy contained in the rock and fluid that fills the fractures and pores in the earth's crust and is released as hot water and steam. Due to a variety of geologic processes, shallow geothermal resources underlie substantial portions of many western states including lands administered by the Dillon Field Office. However, there is presently (in late 2002) a low level of interest in developing Montana's federally owned geothermal resources.

These shallow resources can be classified as low temperature (less than 194° F), moderate temperature (194° - 302° F), and high temperature (greater than 302° F). Low and moderate temperature resources are generally used for heating rather than power generation. There are at least 23 known thermal springs or warm drill holes in Madison and Beaverhead Counties. Measured temperatures range from 59.9° F to 160.7° F. Estimated reservoir temperatures range from 86° F to 267.8° F. Presently, there are seven inventoried facilities using geothermal heat in Beaverhead and Madison Counties, all of which produce from non-federal resources (Geo-Heat Center 2002). There are no geothermal power plants anywhere in Montana including the Dillon Field Office, as there are no identified high temperature resources in the State. Statewide, the BLM has only received two inquiries since 1979 regarding development of federal geothermal resources in Montana.

##### ***Oil and Gas***

There are no producing oil and gas wells in the Dillon FO. A total of 13 dry holes have been drilled in the two counties since 1980. (If no economically producible oil or gas is discovered, a well is called a "dry hole.") The last of these was completed in 1996 in Beaverhead County. Minimal drilling is partially due to the fact that leasing in the planning area has been curtailed until this RMP and the Forest Service leasing document for the Beaverhead-Deerlodge National Forest could be completed. Up until the mid 1980s, most of the planning area was under lease. As a result of litigation, few new leases were issued and existing leases were allowed to expire. At the end of 2001 there were 12,611.68 acres under Federal lease in the planning area. Because leasing has been curtailed, there are at present (March 2002) 36 suspended, nominated lease parcels covering 34,023.37 acres in Madison and Beaverhead Counties.

The planning area is partially within the Rocky Mountain Overthrust Belt and partially within the Central Rocky Mountain Foreland Province. The Rocky Mountain Overthrust Belt, also known as the Sevier Thrust Belt, is characterized by low angle thrust faulting. (Beutner 1977). East of this line, in the Central Rocky Mountain Foreland Province, thrust faults still occur, but they are at a much higher angle and involve basement rock (granite and Precambrian cores of mountains). Both areas are considered highly prospective for oil and gas. Most of the previous drilling activity in southwest Montana has been focused in the Foreland Province.

Geologic knowledge of the planning area is based on surface mapping, geophysical data, and the 44 dry oil and gas wells drilled in the region. While 44 wells may seem like many tests, 26 of those were drilled less than 5,000 feet deep. This is not considered an adequate depth to test the deep structures of Southwest Montana. Drilling 44 consecutive dry holes in frontier areas is not unusual. In the Wyoming Overthrust Belt, 134 wells were drilled before a major discovery was found at Ryckman Creek field in 1976. The Ryckman field has since produced more than 150 billion cubic feet of gas and 50 million barrels of oil (Hodgden and McDonald 1977).

#### Occurrence Potential

The potential for occurrence of oil and gas in the planning area has been classified by BLM staff geologists based on standardized criteria (Long 1990a-f, 1991a-e). Because the occurrence potential is based solely on geology, Congressionally designated wilderness areas have been rated for their occurrence potential. Areas classified as having a high potential for the occurrence of oil and gas are reserved for proven oil and gas producing provinces. There are no areas of “high” oil and gas occurrence potential in the planning area because the nearest producing field is very far from southwest Montana. Moderate occurrence potential designates an area with at least 2,500 feet of apparently unmetamorphosed sediments overlying Archean rocks. This designation also requires that the area is located in a non-productive province and contains probable source and reservoir beds. Low occurrence potential areas were classified using two slightly different standards. Under the first, they are areas having sediments less than 2,500 feet thick or areas where there is insufficient evidence to determine the sediment thickness. Under the second standard they are areas with 1,000 to 3,000 feet of sediment covering Pre-Cambrian rocks. Areas with very low occurrence potential are primarily Precambrian outcrops or highly metamorphosed rocks that are not proven overthrusts with a section of sediments below the thrusts faults.

#### Development Potential

The potential for development of oil and gas in the planning area has been classified by BLM staff geologists based on standardized criteria (Long 1990a-f, 1991a-e). **Table 34**

summarizes lands administered by BLM with very low to high development potential. Development potential across the planning area is depicted on **Map 83**. As with the occurrence potential rankings, there are no areas of “high” development potential within the planning area. High development potential areas occur in proven producing petroleum provinces and where established production has demonstrated the economic viability of numerous additional development wells, such as the Sweetgrass Arch or the Williston Basin in Montana. An area of high potential for development has proven production or significant hydrocarbon shows. Areas of moderate development potential have an adequate sedimentary section present that includes possible source and reservoir rocks for oil or gas. An area having a low potential for development has a thin sedimentary section present or there is insufficient subsurface data available to analyze the potential. It also lacks source or reservoir rocks or is metamorphosed. An area of very low development potential has no sedimentary section at the surface or insufficient data for a different classification. Low development potential areas also include areas of federal lands that are unavailable for leasing.

The BLM has developed a Reasonably Foreseeable Development Scenario based on analysis of the occurrence and development potential. The BLM estimates that six wildcat wells could be drilled in the planning area within the next 10 to 15 years (a “wildcat well” is an exploratory well drilled in an area with no existing production). Of these six wells, the BLM estimates that four would be dry holes. Dry holes would be plugged and abandoned with surface reclamation occurring shortly afterward. For analysis purposes, oil and/or gas production is assumed in the RFD scenario. It is believed that two of the wells could likely have gas discoveries (however there is also a smaller chance of oil production). Of the two discoveries it is projected that one producer would be developed on Federal minerals administered either by the BLM or by the Forest Service and the other would be on privately owned minerals. Each of those wells would probably prompt additional step-out wells (a “step-out well” is a well drilled adjacent to or near a proven well to establish the limits of the oil or gas reservoir). BLM estimates that a total of four step-out wells would be drilled, two for each discovery. The general areas where exploration might occur in the two counties are depicted on **Map 83**.

#### Coalbed Natural Gas

There is a very small chance of economic coalbed natural gas resources occurring in the Dillon Field Office because the coal is most commonly small lenticular lignite deposits found in Tertiary lakebeds. There are no existing sources of coalbed natural gas being produced from lignite in the United States. In addition, areas with higher rank coal have been metamorphosed by a relatively high local geothermal gradient and faulted into steeply dipping beds that limit the possibility of coalbed natural gas traps.

**Table 34**  
**Oil and Gas Development Potential Rankings Across the Planning Area**

	<i>Acres of Very Low</i>	<i>Acres of Low</i>	<i>Acres of Moderate</i>	<i>Acres of High</i>
Total Acres	2,620,736	2,594,140	633,706	0
Acres Covered by RMP Decisions	512,508	653,862	190,722	0

### ***Oil Shale***

At present (in late 2002) there is a very low interest nationally and locally in oil shale as an energy resource.

Oil shale resources are known to exist within the boundaries of the Dillon Field Office. In the Dillon-Dell area the formation of chief interest as a bearer of oil shale is the Permian Phosphoria Formation. In the general area, the Phosphoria crops out along the principal mountain fronts, is generally steeply dipping, and is extensively faulted.

Between the principal mountain ranges in the Field Office are broad valleys with rolling topography underlain by gently dipping oil shale bearing Tertiary strata. These formations are limited in occurrence. The rocks consist of sandy shale, sandstone, impure lignitic coal, brown oil shale, and an abundant shaly to conglomeratic volcanic material. The basal unit of these formations is a conglomerate containing limestone, shale, sandstone, granite, and quartz pebbles.

Oil shale from the Phosphoria averages about 10 gallons per ton upon distillation, a maximum of 24 gallons per ton have been produced. Tertiary sources have yielded less oil in most cases, although a high of 36 gallons per ton has been produced.

One serious attempt to commercialize oil shales in the Field Office was made by the Dillon Oil Company. In early 1919 a small retort plant was installed east of Smallhorn Canyon, 12 miles south of Dillon. This plant was used for tests during the summer of 1919 (Winchester 1923).

### ***Phosphate***

The major leasable solid mineral in the planning area is phosphate. Phosphates occur in the Permian Phosphoria Formation. Significant phosphate deposits exist in the Centennial Mountains on the Idaho – Montana state line. Much of this area is now under jurisdiction of the USDA Agricultural Research Service (ARS) though BLM administers the federal mineral estate. Open cut mining has occurred on both sides of the border, however none of the mines are active today and they have all been reclaimed.

Significant phosphate mining has also occurred in the past in the extreme northern part of the planning area near Maiden Rock. Surface and underground mining and associated operational facilities occurred on both sides of the Big Hole

River, extending onto lands that are now administered by the Butte Field Office.

Phosphate deposits in this planning area are not now being mined because surface deposits in Florida and Idaho are much cheaper to remove. These more economic deposits are being rapidly depleted, and some time in the next 20 years, Montana may once again become an important source of phosphate. This mineral is an essential agricultural nutrient, and as soils continue to become depleted, these phosphate deposits will become critically important to our food supply.

### **LOCATABLE MINERALS**

The diverse geology of the planning area has resulted in a wide variety of mineral deposits that have been mined since the 1860s. Locatable minerals present in the resource area include, but are not limited to gold, silver, copper, lead, tungsten, talc, chlorite, and vermiculite. Maps compiled by the U.S. and Montana Bureau of Mines in 1995 show known occurrences of selected commodities and locations of mines, prospects, sites, and mineral potential areas (Ellis et al. 1995). **Appendix H** contains a map showing the distribution of mining activity across the planning area.

### ***Overview of Production***

Gold was first discovered in the planning area at Bannack in 1862. In 1863 the placer gold deposits of Virginia City were discovered. This district became the largest producing mining district in the state of Montana, producing almost \$1 billion (1992 dollars) worth of gold and associated metals over the years (US Bureau of Mines 1995). Most of this value was from placer gold. Today production from the Virginia City area is small and sporadic, but exploration in the area is ongoing and interest remains high. The second largest producing historic district within Madison and Beaverhead Counties, in terms of dollars produced, is the Hecla Mining District. Located west of Melrose on private and Forest Service lands, this hard rock underground district produced approximately \$135 million (1992 dollars) worth of silver, lead, copper, zinc and gold. Numerous other historic mining districts exist in the planning area. **Table 35** lists significant mining districts and their respective production. Most of these historic districts have potential for future mining activity if mineral prices increase.

**Table 35**  
**Summary of Production from Major Mining Districts**  
**April 1, 2002**

<i>District</i>	<i>Total Prod.</i>	<i>Gold (oz)</i>	<i>Silver (oz)</i>	<i>Copper (lb)</i>	<i>Lead (lb)</i>	<i>Zinc (lb)</i>	<i>Tungsten (MTU)</i>
Virginia City - Placer	\$905,200,000	2,513,510	1,172,492	55,449	178,018		
Virginia City - Lode	\$81,800,000	included in placer totals					
Hecla	\$135,000,000	not available					
Pony	\$93,600,000	116,316	193,211	1,311,137	292,600		
Renova	\$84,400,000	60,022	1,282,052	106,202	1,005,792		
Argenta	\$48,900,000	72,348	562,170	604,135	18,189,939	2,009,366	
Silver Star	\$46,400,000	18,236	37,843	80,627	347,130		
Norris	\$41,400,000	35,212	72,129	56,761	88,463		
Rochester	\$31,100,000	38,800	114,633	2,589,344			
Sheridan	\$27,400,000	29,115	185,044	151,661	1,445,503	294,452	
Washington	\$26,200,000	22,671	52,668	3,396	65,905		
Vipond Park Quartz Hill	\$21,700,000	1,118	1,024,485	198,991	72,032	500	
Bannack	\$19,300,000	55,639	114,663	92,930	138,137	880	
Tidal Wave	\$17,100,000	30,567	143,037	150,109	2,801,820		
Rock Creek Lost Creek	\$8,100,000	1	1,822	12,629			202,121
Blue Wing	\$5,900,000	479	469,951	47,670	287,995	125,79	
McCarthy Mtn.	\$4,000,000	not available					
Elkhorn	\$3,900,000	1,184	208,593	383,580	857,659	4,800	
Polaris	\$3,200,000	312	120,023	20,937	11,140	12,100	
Birch Creek	\$2,000,000	308	43,744	1,771,824	5,464		218
Chinatown	\$300,000	56	11,182	700	728,908	14,977	
Wisdom	\$280,000	1,469	36,010	6,932	160,901		
Bald Mtn.	\$200,000	468	3,428	4,986	80,901	6,700	
Beaverhead	\$160,000	114	10,181	98,982	49,862		
Fairweather Stone Creek	\$140,000	not available					
Cherry Crk.	\$600,000	not available					
Blacktail	\$91,000	not available					
Sand Creek	small	not available					
Medicine Lodge Creek	\$128,000	1	1,852	1,385	283,693	14,143	
See (1)		1,804	12,568	297,921	17,549	500	123,640
<b>Totals</b>	<b>\$1,608,499,000</b>	<b>2,997,946</b>	<b>5,861,213</b>	<b>7,750,367</b>	<b>27,091,862</b>	<b>2,483,712</b>	<b>202,339</b>

(1) Includes Calvert, Ajax, Star and Star Ext, Saginaw, Dark Horse, North Star, Janke and Jackson Mines  
Source: US Bureau of Mines Mineral Resource Development Report, 1995.

In recent years, Beaverhead and Madison Counties have produced large quantities of talc and chlorite. The Barretts Minerals Inc. Treasure Mine (located on BLM and patented claims) and the Regal Mine (located on private estate) are producing significant quantities today. The Treasure Mine has been operating for 40 years and is estimated to contain another 28 years of reserves. Barretts Minerals Inc. is a major industry in the Dillon area employing approximately 100 people. The Yellowstone Mine (private estate) owned by Luzenac America and located south of Ennis is also a major producer of talc in this area. The Beaverhead Mine located just south of the Treasure Mine produced significant amounts of talc, but was closed in 1999 and reclaimed. The Willow Creek Mine (Forest Service) located southeast of Ruby Reservoir produced notable quantities of talc until it closed a number of years ago. The Antler Chlorite Mine located south of Silver Star produced significant quantities of chlorite until it too closed a couple of years ago. Chlorite from the Antler Chlorite mine was used on tiles that went on the space shuttle.

Only one metal producing mine in the planning area is currently active. This is a small placer gold operation located several miles from Bannack. It is approved under a Plan of Operation. Other sporadic or small-scale open pit and underground metal mining has occurred in recent years in Beaverhead and Madison Counties.

The planning area has also been the source of various other minerals production. A limited amount of vermiculite was produced from the Elk Gulch Mine south of the Sweetwater Road. The mine operated under a Notice (less than 5 acres of disturbance) from 1990 to 1998, at which point the operator submitted a Plan of Operation. Due to permitting problems, this project was never expanded over 5 acres and the site is currently inactive. Although there has been some interest in, and exploration for garnets, actual mining has been limited to private lands.

Talc production is the only substantive mineral production presently occurring in the planning area. The Treasure Mine and a small placer gold operation are the only two operations presently considered active on public land. Exploration activity also remains low, probably due to the current low metal prices.

The planning area currently contains no gold cyanide heap leach or cyanide milling operations even though deposits exist that may be amenable to cyanide extractions. The passage of Montana Initiative 137 in 1999 bans the use of cyanide to process material that originated from open-pit mines through cyanide heap and vat leach technologies. Not being able to use cyanide limits the number of deposits that are (or could be) economic.

### ***BLM Management***

Surface disturbing activities under the jurisdiction of 43 CFR 3809 (43 CFR 3802 if within a wilderness study area) regulations are reviewed on a case-by-case basis. Occupancy related to mining is regulated under 43 CFR 3715. The intent of these regulations is to prevent unnecessary or undue degradation of surface resources and to ensure reasonable reclamation of disturbed sites on federal lands.

According to 43 CFR 3809, casual use or handwork using a pick or shovel does not require notification to BLM. Submission of a Notice is required 15 days prior to any surface-disturbing exploration activities using mechanized equipment or explosives when the cumulative disturbance is less than five acres. Production activities or exploration activities disturbing more than five acres require a Plan of Operation, Reclamation Plan, and environmental analysis. Notices and Plans of Operation both require a reclamation bond. Notices and casual use are not federal actions and thus do not require environmental analysis or approval by the authorized officer. However, notices are reviewed and measures applied to prevent unnecessary or undue degradation.

The BLM is required to conduct inspections at least yearly on Notices and Plans of Operation to ensure compliance and to check for unauthorized use. BLM works closely with the MT DEQ on processing Plans of Operations and Notices and inspecting mining operations. Per Memorandum of Understanding, MT DEQ is the lead agency on jointly approved Plans of Operation. The State of Montana does not require that a Plan of Operation be submitted for production operations with less than five acres of disturbance under the Montana Small Miner Exemption.

There are 40 Notices and 12 Plans of Operation currently on file at the DFO. As mentioned earlier, only the Treasure Mine and a small placer gold operation are presently considered active. Total unreclaimed disturbance from the 40 Notices is estimated at 23 acres. Much of this disturbance has a reclamation bond associated with it. Disturbed acreage associated with the 12 Plans of Operation is estimated at 300 acres, and is bonded for reclamation.

Under current management, less than an estimated 30,000 acres of public land in the planning area is withdrawn from mineral entry. See the *Withdrawal* section for more specific information.

There are approximately 1,650 active mining claims located on BLM, Forest Service and private surface estate in Beaverhead and Madison Counties. Recordation and processing of mining claims are handled at the BLM Montana State Office.

### ***Unauthorized Use***

Regulations found at 43 CFR 3715 state "The purpose of this subpart is to manage the use and occupancy of the pub-

lic land for the development of locatable mineral deposits by limiting such use or occupancy to that which is reasonably incident. The BLM will prevent abuse of the public lands while recognizing valid rights and uses under the Mining law of 1872 and related laws...”.

These regulations were enacted in 1996 to prevent occupancy of public land under the guise of mining when no justifiable reason or significant amount of mining is occurring. The occupancy must be “reasonably incident to mining” (not undue or unnecessary) and the occupancy must be needed to sustain regular work, to protect property, or other justifiable reason. It must also lead to the extraction and beneficiation of minerals, involve observable activity and use appropriate operable equipment. Generally, if adequate housing within a reasonable distance is available the occupancy is not justified (unless property must be protected).

BLM has four types of enforcement actions it takes under the regulations found at 43 CFR 3715. These include 1) immediate suspension, 2) cessation order, 3) notice of non-compliance, or 4) other (if the occupancy is not incidental to mining, an application for use under another regulation may be required, and trespass under a different regulation may be pursued).

## MINERAL MATERIALS

Congress set aside minerals that cannot be reserved by a mining claim, but can be purchased from the government on a per ton or per cubic yard basis. These are known as mineral materials or common variety minerals, and include such things as sand, building stone, gravel, pumice, cinders, and clay.

BLM’s policy is to make mineral material available to the public and local governmental agencies whenever possible and whenever it is environmentally acceptable. Mineral material is sold to the public at fair market value, but is given free to states, counties, or other government entities for public projects. A limited amount may also be provided free to non-profit groups. Materials obtained free of charge cannot be bartered or sold. Occasionally an exclusive sale or an exclusive free use permit will be issued. This gives a person, corporation, or entity the exclusive right to remove material from a particular location. Before they are opened, all sites must have an approved Plan of Operation, a Reclamation Plan, and environmental analysis. In some cases a reclamation bond is required. Mineral Material sales and management is conducted under 43 CFR 3600.

The DFO currently maintains eight mineral material sites listed in **Table 36**. Combined sales from all these sites tends to be relatively low; however, these sites provide a valuable public service by providing mineral material within a close proximity of where they are needed.

<i>Material Location</i>	<i>Available Material</i>	<i>Acres</i>
Silver Star	Rip Rap, Borrow	40
Small Horn	Rip Rap	40
Rochester	Rip Rap	34
Laurin	Gravel	40
Camp Creek	Decorative Stone	208
Badger Pass	Gravel	40
Sheep Creek	Rip Rap	12
Lima	Sand and Gravel	40

Note: “Acres” represents acres within the project boundary or collection area and does not represent acres disturbed. Actual acres disturbed is usually much less.

## RECREATION

### Laws, Regulations, and Policies

Recreation management on public lands administered by the BLM is authorized under and directed by the following laws, mandates and guidance:

- Federal Land Policy and Management Act (43 U.S.C. 1701-1782).
- Land and Water Conservation Act, as amended (16 U.S.C. 4601-4).
- National Trails System Act (16 U.S.C. 1241-1249).
- National Wild and Scenic Rivers Act (16 U.S.C. 1271-1287).
- National Parks and Recreation Act of 1978 (16 U.S.C. 1242-1243).
- Alaska National Interest Lands Conservation Act [ANILCA] of 1980 (16 U.S.C. 3101 et seq.)
- Federal Cave Resource Protection Act of 1988 (P.L. 100-691).
- Executive Order 11644, Use of Off-Road Vehicles on Public Lands (37 FR 2877; Feb. 8, 1972)
- Executive Order 11989, Off-Road Vehicles on Public Lands (42 FR 26959; May 25, 1977)
- Executive Order 13195, Trails for America in the 21<sup>st</sup> Century
- Antiquities Act (16 U.S.C. 433).
- Archaeological Resources Protection Act [ARPA] (16 U.S.C. 470aa).
- Taylor Grazing Act (43 U.S.C. 315a)
- Endangered Species Act (16 U.S.C. 1531 et seq.)
- Act of September 15, 1960, as amended (16 U.S.C. 670 et seq.)

- Wild and Scenic River Act (16 U.S.C. 1281c)
- Recreation Fee Demonstration Project (PL 104-134, HR 3019, Section 315)
- Director's Priorities for Recreation and Visitor Services—BLM Workplan for 2003-2006
- Architectural Barriers Act (ABA) of 1968
- Rehabilitation Act of 1973, Section 504
- Uniform Federal Accessibility Standards (UFAS)
- American with Disabilities Act
- Accessibility Guidelines (ADAAG)

Motorized vehicle use on public lands is managed according to the Southwest Montana Interagency Visitor/Travel Map last published in 1996. Management prescribed on this travel map is amended by the Final OHV EIS (USDI-BLM and USDA-FS 2001a), which eliminated cross-country travel of motorized vehicles on BLM and USFS lands within this planning area. Travel management is also modified by the *Centennial Mountains Travel Management Plan* (USDI-BLM 2001a), which restricted motorized vehicle use to designated routes within the Centennial Mountains area, prohibited use of snowmobiles, restricted mountain bike use to designated roads, and identified certain trails to be maintained for hiking and equestrian use.

## Affected Environment

Lands within the planning area offer a tremendously diverse array of recreational activities that are maintained at relatively high use levels throughout most of the year. Recreation in the eastern portion of the planning area is dominated by river recreation uses along the Madison River including; fishing, floating, whitewater rafting and kayaking. All of the Field Office's recreation fee sites and the majority of the developed recreation facilities are along the Madison River. The proximity of this area to Bozeman and Gallatin County increases the intensity of recreational demand.

Although BLM manages relatively isolated tracts of public lands along the rivers, fishing and floating uses are major recreational activities, particularly along the Big Hole and Beaverhead Rivers in the western portion of the planning area. Other streams in Beaverhead County also receive significant recreational fishing use.

Other recreation activities in the planning area include: horseback riding, hiking, hunting, lake fishing (Axolotl Lakes), camping, snowmobiling, mountain biking, rock climbing, wildlife viewing, rock collecting, motorized vehicle use, etc. The most intensive recreational use area-wide occurs during the big game hunting season. Nearly all of the BLM lands in the planning area contain populations of big game, at least seasonally, that attracts hunters from throughout the state, and the entire country.

The BLM Dillon Field Office Recreation program has responsibility for:

- 20 developed recreation sites with widely varied levels of development ranging from minor improvements for parking to multi-site hosted campground facilities
- A 51-mile road segment identified as a National Back Country Byway
- The 6,000-acre Bear Trap Canyon Wilderness Area
- 10 Wilderness Study Areas totaling approximately 124,000 acres
- Dispersed recreation throughout the approximate 900,000 acres in the planning area

Until recently, the BLM Dillon Field Office was considered to be responsible for construction, maintenance and management of approximately 21 miles of the Continental Divide National Scenic Trail (CDT) with another eight miles of "feeder trails" accessing it in the Centennial Mountains. Memorandums of Understanding involving the USFS, Agricultural Research Service (ARS), and BLM identified trail management responsibilities for the CDT through the Centennial Mountains until the authority for those agreements recently came into question. Current CDT responsibilities are not clearly defined. There are approximately 8.25 miles of the CDT on BLM managed lands in the Centennial Mountains. The Dillon Field Office is also responsible for trail management on nine miles of the Bear Trap Canyon National Recreation Trail within the Bear Trap Canyon Wilderness; and portions of the Lewis & Clark, and Nez Perce, National Historic Trails. There are numerous other unmarked or unmaintained trails on public lands that receive varying levels of use.

Reported recreation-related visitor use over the last three years in the planning area has averaged over 225,000 visits annually (RMIS report #23b, FY '99 – 2001). Adjustments made in 2002 to account for underreported dispersed use across the planning area more closely estimate visitor use at 335,000 visits. The highest participation according to activities is: fishing, camping, rowing/floating/rafting, hiking, big game hunting.

## SPECIAL RECREATION MANAGEMENT AREAS

The Dillon Field Office has identified eight Special Recreation Management Areas (SRMAs) in the planning area to direct recreation program priorities toward areas with high resource values, elevated public concern, or significant amounts of recreational activity. The SRMAs and associated acreage as reported in RMIS are: Axolotl Lakes (7,804 acres); Bear Trap/Red Mountain (7,500 acres); Big Sheep Creek (1,000 acres); Centennial Mountains (21,774 acres); East Fork of the Blacktail (6,730 acres); Lower Big Hole River (12,980 acres); Ruby Reservoir (120 acres); and the Upper Madison River (4,200 acres). The remainder of the planning area is included in the Dillon Extensive Recre-

ation Management Area. Most recreation activity occurs within the SRMAs throughout the year, except during the big game hunting season when use is widely dispersed throughout the planning area.

### SPECIAL RECREATION PERMITS

The Dillon Field Office currently administers approximately 30 ongoing commercial use recreation permits of which approximately 18 are for outfitted big game hunting. Database records indicate 982 visitor use days associated with big game hunting reported for 2001. Many of these permitted outfitters also provide visitors an opportunity for horseback riding and other backcountry recreation activities outside the hunting season. There are approximately eight applications made annually for permits to hold special events or organized group events on public lands. These have been processed on a case-by-case basis. During the preparation of this land use plan, a moratorium has been enacted for this office, and no new applications for permits are being accepted which require NEPA analysis. Permits not requiring preparation of an Environmental Assessment can continue to be issued, including renewals and transfers of existing permits, repeats of events or activities previously analyzed and permitted, or minor activities with negligible opportunities for resource or user conflicts.

## RENEWABLE ENERGY

### Laws, Regulations, and Policies

- Federal Land Policy and Management Act of 1976, as amended
- National Energy Policy

### Affected Environment

Consideration of renewable energy sources available on the public lands has come to the forefront of land management planning as demand for clean and viable energy to power the nation has increased. No special management provisions were considered in the Dillon MFP specifically in regard to renewable energy resources and applications for renewable energy are analyzed on a case-by-case basis, though to date there has not been a strong demand on public lands in the planning area.

In cooperation with the National Renewable Energy Laboratory (NREL), BLM assessed renewable energy resources on public lands in the western United States (USDI-BLM et al. 2003). The assessment reviewed the potential for concentrated solar power, photovoltaics, wind, biomass and geothermal on BLM, BIA and Forest Service lands in the west. Hydropower was not addressed in the BLM/NREL report. In the Dillon planning area, wind and biomass resources had the highest ratings of the five categories ad-

ressed in the BLM/NREL study. The details of each category are described below.

### CONCENTRATING SOLAR POWER (CSP)

This technology uses sunlight concentrated on a single point to generate power. The BLM/NREL study indicates that the potential for this type of renewable energy lies primarily in states to the south and southwest of Montana. No BLM lands within the planning area were identified as having potential for this type of energy source. In keeping with this assessment, the DFO has not had any expressions of interest in developing CSP facilities on public lands.

### PHOTOVOLTAICS (PV)

Photovoltaics technology makes use of semiconductors in PV panels (modules) to convert sunlight directly into electricity. The BLM/NREL study did not identify the DFO as one of the top 25 BLM planning areas for PV potential. However, the study did identify a total of approximately 287,918 acres of public lands within the planning area as having PV potential after screening criteria such as the amount and intensity of sunlight received per day, the proximity to power transmission lines, and environmental compatibility were applied. To date, though, the DFO has not authorized any PV facilities strictly for commercial power production, nor has any interest been expressed by industry in developing such facilities on BLM lands.

### WIND RESOURCES

The BLM/NREL study identified the Dillon planning area as one of the top 25 BLM planning units having the highest potential for wind energy development. The study takes into consideration certain screening factors such as wind velocity, proximity to roads and electric transmission facilities, the degree to which state and local policies support wind energy development, and environmental compatibility criteria in the rating of these planning areas. **Table 37** displays the results of this study as it pertains to BLM lands within the planning area. It should be noted that these acreages are approximate and reflect the results of the screening criteria referenced above.

<b>Wind Power Class</b>	<b>BLM Acres</b>
Class 3–Fair	85,298
Class 4–Good	34,781
Class 5–Excellent	12,429
Class 6–Outstanding	7,784
Class 7–Superb	1,719

Since the completion of the Dillon MFP in 1979, there have been no wind energy generation facilities authorized on BLM lands within the planning area. Although there have been a few inquiries about the possibility of erecting wind monitoring sites on BLM lands, only one such facility was actually applied for and subsequently authorized by the DFO. In 1996, a local utility company was issued a short-term right-of-way for a wind monitoring tower on public lands located about 25 miles west of Dillon. After completion of the monitoring, the company showed no further interest in the development of this or other sites in the planning area, and the monitoring facility was removed. Consultation with various local utility companies has revealed no future plans for wind energy development on public lands in the planning area. Despite this current low level of interest in wind energy, it is possible that with improvements in technology and a more favorable economic climate, interest in the development of wind energy facilities on public lands will increase.

### BIOMASS

The BLM/NREL study identified the Dillon planning area as one of the top 25 BLM planning units having high potential for biomass resources. However, to date, utilization of small diameter forest material has been sporadic at best to non-existent. This is due to long haul distances to pulp facilities and low return pulp markets. Some of this material is used through personal use firewood permits. This is directly related to distance from larger population centers such as Dillon and the length of time that access roads remain open prior to being closed. Utilization of this material for biomass related energy production has not been a factor. No such facility exists in this region.

The potential for such material from the existing forested land base located outside of the WSAs and designated wilderness is 80 percent of the approximately 83,000 acres (includes area of aspen stands) or about 64,000 acres. If the average acre has 2,000 Board Feet or four cords per acre of small size material, the planning area contains an estimated 328,000 cunits (100 cubic feet) of biomass material.

Use of small diameter wood products or residue is currently encouraged when possible.

### GEOHERMAL

Geothermal resources are addressed under the *Minerals–Leasable Minerals* section throughout the RMP.

## TRANSPORTATION AND FACILITIES

### Laws, Regulations, and Policies

BLM authority for transportation management is primarily derived from the following sources:

- Federal Land Policy and Management Act of 1976 (43 U.S.C. 1715, 1737, 1762).
- National Environmental Policy Act of 1969, as amended (42 V.S.C. 4321, et seq).
- The Federal-Aid Highway Act of 1962, as amended (23 U.S.C. 214).
- The Federal-Aid Highway Act of 1968, as amended (23 U.S.C. 116).
- The Federal-Aid Highway Act of 1973, as amended (23 U.S.C. 217).
- Timber Access Road Act of 1955 (69 Stat. 374).
- Highway Safety Act of 1966, as amended (23 U.S.C. 401, 402, 403).
- Surface Transportation Assistance Act of 1982 (P.L. 97-424, Section 126(d)).
- National Trails System Act, as amended (1968) (16 U.S.C. 1241 et seq).

### Affected Environment

This section describes transportation facilities and their maintenance as well as other types of facilities administered by BLM. Travel management of roads as open, closed or limited is discussed under the *Travel Management and OHV Use* section.

### ROADS

The DFO contains an estimated 668 miles of transportation system roads as documented in the Facilities Inventory Maintenance Management System (FIMMS) database and many more miles of non-system roads. The DFO has never completed formal transportation planning to determine which roads will be included in a formal transportation system, so the following criteria for including roads in the system have been informally applied:

- Roads which are regularly maintained (e.g. campground roads, and other recreational area access roads.)
- Roads for which BLM has obtained easements. Easement acquisition indicates the route is important enough to warrant inclusion in the Transportation System.
- Roads which have structural improvements, such as culverts and cattle guards. These roads should be periodically inspected to insure the improvements are functioning properly, and drainage structures are not plugged.

- Other roads in which BLM has made significant investments. These roads should be inspected periodically to protect the investment.

Transportation system roads provide physical access to public, State, private, and other federal lands throughout the Field Office. Demands for transportation in the planning area are directly related to the resources found on public lands. A transportation system is needed to maintain access for commercial activities (e.g., livestock grazing, timber harvest, minerals development, outfitting and guiding), non-commercial activities and casual use (e.g., OHV use, hunting, fishing, rafting, camping, bird watching, recreational driving, firewood gathering), and for administrative access to manage resources.

BLM transportation system roads provide access to public lands administered by the BLM. Almost all of the roads are single lane, and almost all are natural material. A few high-usage roads are double lane, and a few are aggregate surfaced. On the average, 50 miles of BLM roads are maintained annually by BLM crews.

According to the FIMMS database, the Beaverhead/Deerlodge National Forest is responsible for maintaining 48 miles of roads across BLM administered lands in the planning area, and the Gallatin National Forest maintains 8 miles. These roads cross BLM lands and provide access to Forest Service administered lands. They are generally single lane roads, with native soil or gravel surfacing. Most of the roads are maintained on a regular basis. Most of the roads are seasonally closed administratively by the Forest Service, or by snow.

Transportation system roads are classified by maintenance levels as specified in BLM Manual Handbook H-9113-2. While the levels identify schedules for maintenance, funding often does not allow BLM to meet the maintenance provisions of the assigned level. The five levels are described in **Table 38**.

The Dillon Field Office has no Level 1 roads. Roads which are no longer needed are removed from the transportation system. Roads which have been closed but which still contain culverts are assigned to Level 2.

Approximately 601 miles of road in the transportation system are Level 2 roads. Examples are the Basin Creek Road #18102, Coyote Flats Road #1864, and Riverside Road #2567 roads. These roads are more infrequently used than higher level roads, and include such roads as timber sale spur roads, or roads with a single destination ('dead end') as opposed to roads which loop or connect to other BLM, state, Forest Service, or other roads.

An additional 41 miles of roads are assigned to Level 3. Examples are the Barton Gulch Road #2524, Everson Creek Road #1882, and Muddy Creek Road #1829. These roads access relatively large blocks of public land, and are important for recreational and commercial access.

Twenty five miles of roads are Level 4. Examples are the Red Mountain Campground Road #2539, West Madison Recreation Sites Road #2510, and Ruby Creek Campground Road #2512. According to FIMMS database notes, these are the most-traveled roads in the planning area, and require periodic maintenance to remain in good traveling condition for recreational and other visitors.

Dillon Field Office has no roads assigned to Level 5.

### TRAILS

The Dillon Field Office has 30 trails crossing over 106 miles identified in the transportation system based on the FIMMS database. All are identified as recreational access trails. Almost 3/4 of the trail miles are located in three areas that receive high recreational use, including the Centennial Mountains, the East Fork of Blacktail, and the Lower Madison River area. Like transportation system roads, trails are assigned to five (5) levels which identify schedules for maintenance. Again, funding often does not allow BLM to meet the maintenance provisions of the assigned level. The five trail levels are described in **Table 39**.

The Dillon Field Office has no Level 1 trails in the transportation system.

Almost 46 miles are classified as Level 2 trails. Examples include the Hidden Pasture Trail #1810T and Garden Creek Trail #2510T. These trails are not on a regular maintenance schedule, and are maintained mostly by users according to notes in the FIMMS database. Over 60 miles of trail are assigned to Level 3. Examples include the East Fork Blacktail Trail #1801T and the Nemesis Mountain Trail #1815T. These trails receive more frequent visitors, and are relatively major access points to roadless blocks of public land. Currently, these trails are not on a regular maintenance schedule, but are maintained mostly by users according to notes in the FIMMS database. The Continental Divide Trail #1800T and the Bear Trap Trail #2501T are other examples of trails in also in Level 3, but are maintained at a very low level to maintain wilderness character.

The Dillon Field Office has no trails in Level 4, and one very short trail (about one-quarter mile) in Maintenance Level 5, the Trail Creek Handicap Fishing Access Trail #2508T. This trail has had significant investment to provide accessibility for persons with physical disabilities, and maintaining safe access is a major concern. It is regularly inspected and maintained.

**Table 38**  
**BLM Road Maintenance Levels**

<i>Maintenance Level</i>	<i>Assignment Criteria</i>	<i>Minimum Maintenance Standard</i>
Level 1	This level is assigned to roads where minimum maintenance is required to protect adjacent lands and resource values. These roads are no longer needed and are closed to traffic. The objective is to remove these roads from the transportation system.	Emphasis is given to maintaining drainage and runoff patterns as needed to protect adjacent lands. Grading, brushing, or slide removal is not performed unless roadbed drainage is being adversely affected, causing erosion. Closure and traffic restrictive devices are maintained.
Level 2	This level is assigned to roads where the management objectives require the road to be opened for limited administrative traffic. Typically, these roads are passable by high clearance vehicles.	Drainage structures are to be inspected within a 3-year period and maintained as needed. Grading is conducted as necessary to correct drainage problems. Brushing is conducted as needed to allow administrative access. Slides may be left in place provided they do not adversely affect drainage.
Level 3	This level is assigned to roads where management objectives require the road to be open seasonally or year-round for commercial, recreation, or high volume administrative access. Typically, these roads are natural or aggregate surfaced, but may include low use bituminous surfaced roads. These roads have defined cross section with drainage structures (e.g., rolling dips, culverts, or ditches). These roads may be negotiated by passenger cars traveling at prudent speeds. User comfort and convenience are not considered a high priority.	Drainage structures are to be inspected at least annually and maintained as needed. Grading is conducted to provide a reasonable level of riding comfort at prudent speeds for the road conditions. Brushing is conducted as needed to improve sight distance. Slides adversely affecting drainage would receive high priority for removal, otherwise they will be removed on a scheduled basis.
Level 4	This level is assigned to roads where management objectives require the road to be open all year (except may be closed or have limited access due to snow conditions) and to connect major administrative features (recreation sites, local road systems, administrative sites, etc.) to County, State, or Federal roads. Typically, these roads are single or double lane, aggregate, or bituminous surface, with a higher volume of commercial and recreational traffic than administrative traffic.	The entire roadway is maintained at least annually, although a preventative maintenance program may be established. Problems are repaired as discovered.
Level 5	This level is assigned to roads where management objectives require the road to be open all year and are the highest traffic volume roads of the transportation system.	The entire roadway is maintained at least annually and a preventative maintenance program is established. Problems are repaired as discovered. These roads may be closed or have limited access due to snow conditions.

<b>Table 39 BLM Trail Maintenance Levels</b>		
<i>Maintenance Level</i>	<i>Assignment Criteria</i>	<i>Minimum Maintenance Standard</i>
Level 1	These trails are closed to motorized and non-motorized use. This level is the minimum maintenance required to protect adjacent lands and resource values. The objectives may be to remove these trails from the trail system.	Emphasis is given to maintaining drainage and runoff patterns as needed to protect adjacent lands. Brushing and removal of hazards is not performed unless trail drainage is being adversely affected, causing erosion. Closure devices are maintained.
Level 2	Low use trail with little or no contact between parties. Little or no visitor use management. Visitors may encounter obstructions like brush and deadfall.	Trail would require condition surveys once every year. Repairs will be done at the beginning of the season to prevent environmental damage and maintain access. Emphasis is given to maintaining drainage and mitigating hazards. The trail may be signed "Not Regularly Maintained". Major repair may not be done for several seasons.
Level 3	Moderate use trail with visitor use on a seasonal/and or peak use period with frequent contact between parties. Trail management is conducted with occasional visitor use patrols. Visitors are not likely to encounter obstructions.	The trail shall require a minimum of one condition survey 1 to 2 times per season. Major repairs shall be completed annually. Maintenance shall be scheduled two to three times per season, if required, to repair the trail for environmental damage and to maintain access. Trail is kept in good condition.
Level 4	High use trail used during specific times of the year with high frequencies of contact between parties. Regularly scheduled visitor use patrol and management.	Scheduled maintenance shall occur frequently during the use season (three or four times per season). Trail condition and accessibility for persons with disabilities is a major concern. Significant repairs shall be completed as within 10 workdays.
Level 5	A special high use trail with routine visitor use patrols and management.	Has a scheduled maintenance program. Trail condition and accessibility for persons with disabilities is a major concern. Significant repairs shall be completed within 2-3 workdays.

#### **AIRSTRIPS**

One unauthorized airstrip is located on BLM administered lands within the Field Office, on Erickson Creek in the upper Medicine Lodge drainage, T. 13 S., R. 12 W., sec. 14, NW1/4NW1/4. It consists of two intersecting runways of about 1200 feet each. A hanger at the south end has fallen into disrepair. The runways are natural unimproved surfaces, and are suitable only for light aircraft.

#### **BOAT RAMPS**

Boat ramps are located on BLM administered land in the planning area at several locations along the Big Hole River, the Madison River, and Ennis Lake.

One undeveloped boat ramp is available on the Big Hole River:

- Maiden Rock Recreation Site: a single width ramp of native material surface, suitable for white water boats, small boats and inflatable rafts.

Developed boat ramps are located at four recreation sites on the Madison River:

- Palisades Day Use: a single width ramp of precast concrete planks, suitable for white water boats, small boats and inflatable rafts.
- West Madison Boat Ramp: a single width ramp of precast concrete planks, suitable for white water boats, small boats and inflatable rafts.
- Power House Boat Ramp: steel I-beam rails, suitable for inflatable rafts only
- Warm Springs Day Use: a double width ramp of precast concrete planks, suitable for white water boats, small boats and inflatable rafts.

Ramps are available at 2 sites on Ennis Lake:

- Kobayashi Beach Day Use: a single width ramp of cast in place concrete, suitable for small boats, rafts, and jet skis.
- Clute's Landing Recreation Site: a single width ramp of precast concrete planks, suitable for small boats, rafts, or jet skis.

In addition to these sites, numerous small, undeveloped boat, canoe, and raft launch sites occur on public land along the major rivers.

### COMMUNICATION SITES

The Dillon Field Office has two communication sites operated and managed by BLM (see the *Lands and Realty* section for additional information on communication sites managed by other authorized users). Both facilities are located in Madison County and are assigned to Maintenance Level 2. Level 2 sites are used infrequently by Bureau personnel and are maintained to assure health, fire and life safety standards are met. Condition surveys for these sites are completed a minimum of every three years.

The Baldy Mountain Repeater Site (also known as Baldy Ridge) houses a repeater for the DFO radio communications system. One other non-Federal user is located in the log cabin building on wood skids. It is powered by a solar panel, and includes two, 25 foot tall metal frame antenna towers.

The Bear Trap Radio Site houses a repeater for the DFO radio communications system in a 48" diameter cement culvert, 48" long, set vertically in the ground, with a steel cover. It is powered by a solar panel.

## TRAVEL MANAGEMENT AND OHV USE

BLM regulations (43 CFR 8342.1) require that all BLM public lands be designated as "open," "limited," or "closed" to off-highway vehicles (OHVs). According to information from the Recreation Management Information System, the Dillon Field Office manages 854,250 acres as "limited," and 46,976 acres as "closed."

The *Southwest Montana Interagency Visitor/Travel Map* became the means for identifying travel management decisions for all of the land managing agencies in southwest Montana since the early 1980s. Cooperators for the current travel management include:

- Bureau of Land Management (BLM)
- Beaverhead-Deerlodge National Forest
- Montana Fish, Wildlife & Parks (FWP)
- Red Rock Lakes National Wildlife Refuge
- USDA Agricultural Research Service
- Clark Canyon Recreation Area (BOR)
- Big Hole National Battlefield (NPS)
- Montana Department of Natural Resources and Conservation
- Beaverhead County Commissioners

The 1996 version of the map is the most current. The map has been amended by the decisions implementing the Final OHV EIS (USDI-BLM and USDA-FS 2001). These decisions establish "a new standard that restricts yearlong, wheeled motorized cross-country travel, where it is not already restricted." Although there are several exceptions to this restriction, it essentially eliminates all areas previously designated as "open" (to cross-country vehicle travel) according to the definitions provided in BLM's regulations at 43 CFR 8342.1.

Currently, OHV use in the Dillon Field Office is primarily associated with resource management activities and hunting. Although nearly 74 percent of the public lands in the planning area were identified as "open" to cross-country travel on the 1996 travel map, the majority of cross-country travel was not recreational OHV riding, but related rather to hunting and other multiple-use activities (e.g., – grazing administration, firewood gathering, etc.).

In preparation for this land use plan, the BLM Dillon Field Office conducted an inventory of roads and trails on BLM lands within the Field Office, including routes, however faint, that crossed BLM lands and were accessible to the public. The intent of the inventory was to map and photo-document the condition of routes across public lands, focusing on those routes that were unlikely to appear in any other mapped road coverages (e.g., – on existing USGS maps). It is estimated that at least 90 percent of existing

routes were mapped, and their conditions documented, through this inventory effort. This map of inventoried routes, combined with other routes appearing on USGS maps, is considered the baseline for “existing routes” within the Dillon Field Office.

Snowmobile use is naturally limited on BLM lands within the planning area because the majority of the lands are in the lower elevations where there is inadequate snow cover. In the higher elevation areas of BLM lands, snowmobile use is mostly unrestricted. Those areas closed year-round, or seasonally restricted, to snowmobile use are restricted primarily for the benefit of wildlife. Approximately 138,974 acres have some type of restrictions to snowmobile use.

BLM has maintained an agreement with the Vigilante Snowmobile Club, based in Virginia City, for maintenance of a groomed snowmobile route through the north end of the Gravelly Mountains in the area of Alder and Bachelor Gulch. An annual snowmobile “poker ride” has been permitted in that area for approximately the last ten years through a joint USFS and BLM Special Recreation Permit.

Snowmobile use was once relatively common through the Odell Creek Canyon in the Centennial Mountains. Snowmobile use never occurred legally through this area since neither the USFWS, nor the private property owners at the mouth of the canyon, allowed snowmobile access across their lands. This part of the Centennial Mountains was officially closed to snowmobile use across BLM lands as part of the Centennial Mountains Travel Management Plan (USDI-BLM 2001a). Areas of relatively regular snowmobile use include the Centennial Valley, Axolotl Lakes area (north end of Gravelly Mountains), Highland Range, Sage Creek and the north end of the Blacktail Mountains. Use occurs intermittently in other high elevation areas depending on snow cover.

## UTILITY AND COMMUNICATION CORRIDORS

### Laws, Regulations, and Policies

- Federal Land Policy and Management Act of 1976, as amended
- Mineral Leasing Act of 1920, as amended
- Federal-Aid Highway Act of 1958, as amended
- 43 CFR Group 2800
- IM WO-2002-196 (Right-of-Way Management-Land Use Planning)
- IM MT-2002-071

## Affected Environment

### STATUS OF CORRIDORS IN THE PLANNING AREA

The planning area is traversed by a number of rights-of-way that are authorized for utility and communication uses. In accordance with direction provided in the Dillon MFP, attempts are made to group compatible right-of-way facilities where feasible. In particular, new communication site applicants are encouraged to locate in one of the ten communication site locations spread throughout the planning area. However, the DFO currently has no formally designated right-of-way corridors or use areas, nor have exclusion or avoidance areas been identified.

The 1992 Western Regional Corridor Study (Clayton and Associates 1993) produced by the Western Utility Group identified both proposed and existing corridors throughout the western United States. The study identified no proposed corridors within the planning area. However, the study did identify a number of existing corridors. These existing corridors correspond primarily with several of the major electric transmission lines found throughout the planning area and are depicted on the map included in **Appendix F**.

### FUTURE NEEDS

There are no known plans for energy generation facilities in the planning area that would require major corridors outside of existing general right-of-way locations. It is probable that existing power transmission lines will be upgraded and that additional transmission lines may be proposed to parallel other current linear rights-of-way. Future wireless communication sites will focus on interstate and highway corridors.

Consultation with local utility representatives indicates that designation of corridors as delineated in the 1993 study with some additions and modifications would meet anticipated future needs.

## FIRE MANAGEMENT AND ECOLOGY

### Laws, Regulations, and Policies

- Protection Act of September 20, 1922 (U.S.C. 594)
- Reciprocal Fire Protection Act of May 27, 1955, as amended (42 U.S.C 1856, 1856a)
- Federal Wildland Fire Management Policy & Review 1995
- Review and Update of Federal Wildland Fire Management Policy (USDI-BLM 2001b)
- Smoke permits through Montana/Idaho Airshed; EPA Interim Air Quality Policy for Wildland and Prescribed Fire (EPA 1998)

- Interagency offset and Six Party Fire Protection Agreement between the BLM, Forest Service and Montana DNRC
- Wildland and Prescribed Fire Management Policy: Implementation Procedures Reference Guide (National Interagency Fire Center 1998)
- Review and Update of the 1998 Federal Wildland Fire Management Policy (National Interagency Fire Center 2001)

**Affected Environment**

Fire Occurrence in the planning area is presented in several sections below, detailing Fire History, Current Fire Policy, Wildland Fire Suppression and Occurrence, Prescribed Burning, Historical Fire Regimes, Fuel Conditions, and Fire Behavior. Fire Risk for the planning area is then discussed.

**FIRE HISTORY**

Natural fire is a climatic phenomenon. As the natural climate has fluctuated, vegetation communities and fire regimes have changed and wildland fire has expanded and contracted its range. As glaciers receded and forest communities were established, associated changes in weather patterns gave rise to lightning caused wildfires. Native Americans and early settlers also used fire to manipulate the environment. Studies of fire scars and even-aged stands of old timber show a consistent pattern of fire frequency from at least 1600 to 1900 (Pyne 1982). However, the devastating fires of 1910 prompted broad-scale fire control and suppression activities that marked the beginning of changes in vegetative communities and fire regimes, which continue today.

**CURRENT FIRE POLICY**

Until the 1960s, fire policy emphasized control of all wild-fire by 10 a.m. the following day. Prompted by passage of the Wilderness Act of 1964, fire managers began to consider the natural role of fire in the environment. This changed the strategy from fire control to one of fire management. Options available under this new fire management strategy allowed for fire by prescription and a range of suppression alternatives to achieve fire management objectives once initial attack failed. The current Federal Wildland and Prescribed Fire Policy allows fire managers to use the appropriate fire suppression response for all wildfires. These responses vary from aggressive initial attack, with the intent of minimizing the number of acres burned, to monitoring fires in an effort to reduce suppression costs, provide resource benefits, and reduce firefighter exposure to the hazards of fire suppression. The 1984 Fire Management Plan for the DFO provides the current direction for fire management activities; however, it has not been updated to reflect current Federal Wildland Fire Policy. The RMP will provide direction to develop a new Fire Management Plan for the planning area.

**WILDLAND FIRE SUPPRESSION AND OCCURRENCE**

The Beaverhead-Deerlodge National Forest and the Montana Department of Natural Resources has suppression responsibility for BLM land within the Dillon Field Office. Fire activity records kept between 1982 and 2001 on federal, state, and some private ownerships document 583 fires that burned approximately 28,982 acres. This is about 1 percent of the area in both Beaverhead and Madison Counties. This does not include the Mussigbrod Fire northwest of Wisdom, Montana that doubled this amount in the year 2000. **Figure 4** displays the fire statistics from 1982 to 2001 (excluding the Mussigbrod Fire).

**PRESCRIBED BURNING**

Since 1982, an average of 125 acres per year of public land in the planning area have been treated by prescribed fire. **Table 40** lists prescribed burning projects completed in the planning area since 1982.

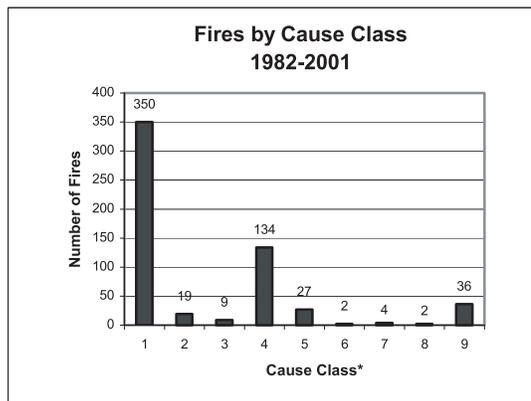
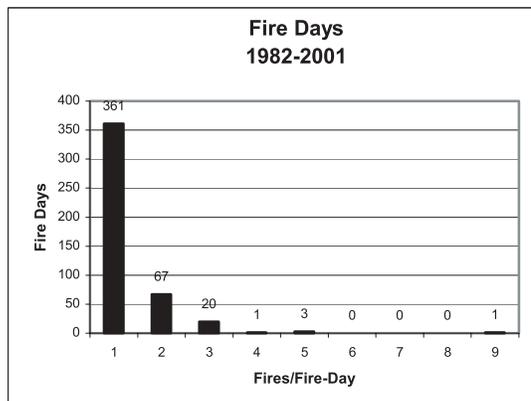
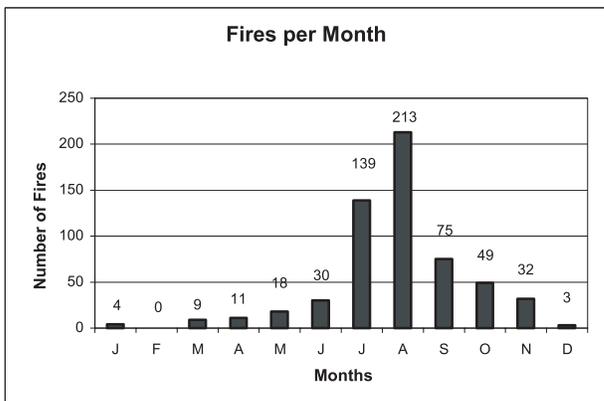
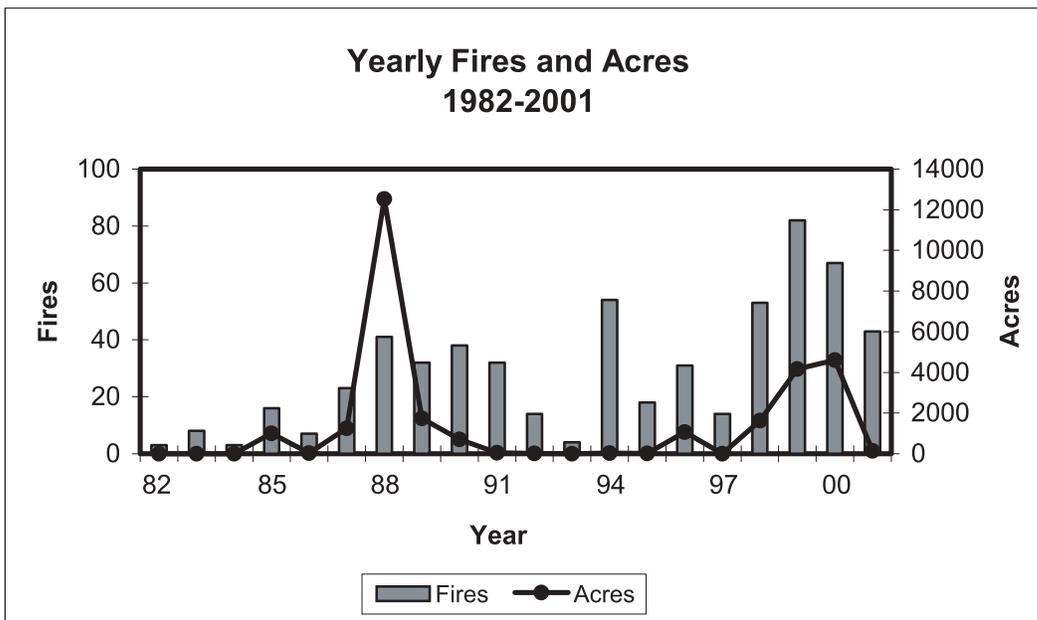
No prescribed burns occurred during the ten year interval between 1989 and 1999 due to prescribed burn escapes and resource concerns. Project planning based upon ecosystem management issues has been completed for a project in the East Grasshopper area. Several more projects are in preliminary stages.

<b>Table 40 Prescribed Burns Completed in the Dillon Planning Area since 1982</b>			
<i>Project Name</i>	<i>Approx. Area</i>	<i>Approx. Acres</i>	<i>Year</i>
Swamp Creek	Big Hole	150	1982
Gravellys	Virginia City Area	150	1983
Timber Gulch	Timber Gulch	400	1984
Centennials	Price Creek Unit 7	40	1985
Centennials	Lima Reservoir	200	1986
McCartney Mtn.	McCartney Mtn.	600	1986
Gravellys	Nevada City	300	1988
Medicine Lodge	Poole Creek	400	2000
<b>Total Acres</b>	<b>2240</b>		

**HISTORICAL FIRE REGIMES**

Forests and rangelands in the western United States and specifically within the planning area have adapted to fire differently. The fire regime concept is used to characterize the personality of a fire in a given vegetation type—how often it visits the landscape, the type of pattern created, and the ecological effects. **Table 41** displays the natural fire regimes arranged along a temporal gradient, from the most frequent to the least frequent fire return interval (Lavery and Williams 2000).

Figure 4  
Fire Statistics from 1982 through 2001



\*Size Classes:  
A=0-.25 acres, B=.25-10 acres, C=10-99 acres, D=100-299 acres,  
E=300-999 acres, F=1000-4999 acres, G=5000+ acres

\*Cause Classes:  
1=lightning, 2-9=human related activities

**Table 41**  
**Fire Regime Classifications**

<i>Regime</i>	<i>Fire Frequency</i>	<i>Fire Effect to dominant above ground vegetation</i>	<i>Representative Ecosystem</i>
Fire Regime I	0-35 years	Low severity	dry pine and juniper forests
Fire Regime II	0-35 years	Stand replacement	grassland/shrubland
Fire Regime III	35-100+ years	Mixed severity	shrubland and mixed conifer forests
Fire Regime IV	35-100+ years	Stand replacement	lodgepole pine and dry Douglas-fir forests
Fire Regime V	200+ years	Stand replacement	high elevation whitebark pine, spruce-fir, and Pacific coastal forests

The majority of the planning area falls within Fire Regimes I and II. The dry forest habitat types and rangelands for the Dillon Field Office fit well within the low to moderate fire regimes. The moist forest types have characteristics similar to the severity of the moderate to high severity fire regimes. For fire planning purposes, habitat types are lumped into three general types: grassland/shrubland, dry forests, and moist forests.

#### ***Grassland/Shrubland***

Grassland and shrubland areas are generally dry and fire plays a key role in reducing the conifer encroachment and recycling nutrients back into the soil. Historically, fires generally burned in a mosaic pattern and did not consume all of the vegetation on these sites. Arno and Gruel (1983) estimated a historic mean fire return interval of about 35 to 40 years for southwestern Montana, and Houston (1973) estimated an even shorter period of 20-25 years for similar habitat types in northern Yellowstone Park. In the high valleys of southwestern Montana, big sagebrush is well adapted to these sites, while grasses are poorly adapted to the soils, which have droughty surface conditions. Harniss and Murray (1973) found that 30 years after burning in a sagebrush-grass range, sagebrush yields were about the same on the burned and unburned plots. On sites that received frequent fire, the fuel loading would remain light with an average 1/2 to 3 tons per acre of available fuel based on the typical grass, shrub fire behavior prediction model (Anderson 1982). Without periodic fires, these areas become encroached by juniper, Douglas-fir, and limber pine.

#### ***Dry Forests***

Conifer species that dominate these habitat types are Douglas-fir, limber pine, and juniper. Historically, ground fire maintained many mature stands in an open park-like condition and where dense regeneration occurred, fire played a key role as a thinning agent (Fischer and Clayton 1983). A mean fire return interval of 35-75 years has been estimated in pre-settlement stands in Montana (Arno and Gruel 1983). Fuel loading would usually remain at low levels (<10 tons

per acre) and periodic fire would consume needles, dead limbs, and whole trees. In the absence of fire, these forested stands develop toward a climax condition with various densities and have several layers in the understory (Fischer and Clayton 1983). With an increase in competition for sunlight, moisture, and nutrients, disease and insect infestations become more prevalent, causing an increase in dead woody fuel loads which in turn cause greater fire severity.

#### ***Moist Forests***

Conifer species that dominate these wetter or moister habitat types are Douglas-fir, lodgepole pine, spruce, and subalpine fir. The majority of the moist forests fall within the wetter of the Douglas-fir habitat types. Fire is important in these types as a thinning agent and as a stand replacement agent. Historically, low to moderate severity fires converted pole-sized or larger stands to a fairly open condition (Fischer and Clayton 1983). Fire returned to these areas approximately every 40 to 100+ years, dependent upon the habitat type and associated moisture level. Natural fires generally underburned in Douglas-fir stands. Mosaic burn patterns would occur where steep slopes encouraged patches of stand replacing fire. Fuel loading is generally less than 15 tons per acre, but can exceed 15 tons per acre if fire has not entered the area for long periods of time, or where a large stand replacing fire killed the overstory vegetation. Natural fires in lodgepole pine, subalpine fir, and spruce ranged from mixed severity to stand replacing events. These forests have fire return intervals greater than 100 years (Fischer and Clayton 1983).

#### **FUEL CONDITIONS**

Fuel conditions are one component of the fire environment used to predict fire behavior and assess potential fire damage to resources. The fire program classifies fuel conditions into four groups based on 13 fire behavior prediction models. These four groups are grass, shrub, timber, and slash. The differences in fire behavior among these groups are related to the fuel load and its distribution among the fuel particle size classes (Anderson 1982).

**Table 42** shows the group distribution in the planning area. The table also includes the number of acres with no vegetation. Some of the acreage displayed in the grass group includes timber types.

<i>Group</i>	<i>Approximate Acres within the Planning Area</i>
No Vegetation	8,550
Grass	280,535
Shrub	529,422
Timber	80,399
Slash	0

### **FIRE BEHAVIOR**

There are three main factors that affect fire behavior: fuels, weather and topography. Each of these factors is variable within a geographical location. Of the three main factors, only fuel conditions can be managed or changed on the ground. The fuel matrix can be changed by wildfire, prescribed fire, grazing, or logging. These changes can affect the rates of spread and intensity of wildland fires. The variability of fuel conditions across the analysis area changes with aspect, slope, and forested structure. Forest structure can be interpreted as three-dimensional patches of fuel, with differing amounts, size classes, arrangements, and flammability. Some fuels, such as large tree boles, rarely are consumed by fire, while others, such as needle litter, are partially to fully consumed in every fire. Other fuels, such as leaves in the tree crowns, are inconsequential in surface fires but are a major source of energy in crown fires. Forest structure affects fire behavior, and fire behavior in turn affects forest structure (Agee 1996).

#### ***Grassland/Shrubland***

The grass and shrub communities are generally drier, more open places, which have increased wind speeds, higher fuel temperatures, and lower relative humidities. Where these sites were historically free from conifer invasion, there is now a significant increase. The increase of conifers will increase fire intensities and decrease fire suppression effectiveness.

#### ***Dry and Moist Forests***

A fire moving through a stand of trees may move as a surface fire, an independent crown fire, or as a spectrum of

intermediate types of fire. The initiation of crown fire behavior is a function of surface fire intensity and critical parameters of the tree crown layer, its height above the ground, and moisture content. With these physical characteristics currently present, the probability of a crown fire increases in the dry and moist forested stands. Current stands are multi-storied with significant amounts of ladder fuels such as juniper, Douglas-fir, and dead downed fuels in the understory. The current overstory crowns have high crown densities, less spacing, and low height to live crown ratios. These conditions along with steep slopes and extreme weather conditions create the potential for high intensity fires and rapid rates of spread.

### **FIRE RISK**

Current conditions are a function of the degree of departure from historical fire regimes resulting in alterations of key ecosystem components such as species composition, structural stage, stand age, and canopy closure. One or more of the following activities may have caused this departure: fire suppression, timber harvesting, grazing, introduction, and establishment of exotic plant species, insects or disease (introduced or native), or other past management activities (Lavery and Williams 2000).

Three condition classes were developed to categorize the current condition with respect to each of the five historic Fire Regime Groups. The risk of losing key ecosystem components is highest at Class 3, with little or no risk at the Class 1 level (Lavery and Williams 2000). **Table 43** identifies the approximate acres in the planning area within each Condition Class.

In the planning area, resources that lie near Class 2 and 3 condition class areas are of most concern. Even at current levels of treatment, risks to species, watersheds, forest health, and human communities throughout the interior West are escalating due to increasing fuels buildups (vegetation) in fire-prone environments. As human populations continue to expand and forest fuels accumulate, fire risks will increase. The answer is not in bigger and better firefighting apparatus. At very high fuel loadings, fire behavior overwhelms even the best fire suppression efforts. Under extreme conditions, control of fire becomes dependent on relief in weather or a break in fuels (Lavery and Williams 2000). Reducing fuels and restoring fire's ecological role in fire-adapted ecosystems can reverse many adverse trends. A change in the horizontal and vertical components of the fuel matrix within rangelands and forests will now carry fire along the surface or through the crowns.

**Table 43  
Fire Risk Condition Classifications**

<i>Condition Class</i>	<i>Description</i>	<i>Approximate Acres Within Planning Area</i>	<i>Example of Typical Management</i>
1	Fire regimes are within a historical range, and the risk of losing key ecosystem components is low. Vegetation attributes (species composition and structure) are intact and functioning within a historical range. Fires burning in CC1 lands pose little risk to the ecosystem and have positive effects to biodiversity, soil productivity, and hydrologic processes. Class 1 lands are mainly high elevation and moist forest types.	96,388	Historical fire regime is replicated through periodic application of prescribed fire or through fire use.
2	Fire regimes have been moderately altered from their historical range. The risk of losing key ecosystem components is moderate. Fire frequencies have departed from historical frequencies by one or more return intervals (either increased or decreased). This results in moderate changes to one or more of the following: fire size, intensity and severity, and landscape patterns. Vegetation attributes have been moderately altered from their historical range. Wildland fires burning in CC2 lands can have moderately negative impacts to species composition, soil conditions, and hydrological processes. All of the grass and shrub habitat types in the planning area are included in Condition Class 2.	764,665	Moderate levels of restoration treatments are required, such as a combination of prescribed fire with mechanical/hand treatment.
3	Fire regimes have been significantly altered from their historical range. The risk of losing key ecosystem components is high. Fire frequencies have departed from historical frequencies by multiple return intervals. This results in dramatic changes to one or more of the following: fire size, intensity, severity, and landscape patterns. Vegetation attributes have been significantly altered from their historical range. Wildland fires burning in CC3 lands may eliminate desired ecosystem components, exacerbate the spread of unwanted non-native species, and result in dramatically different ecological effects compared to reference conditions. Condition Class 3 areas in the planning area are mainly located in the dry forest and woodland habitat types.	27,765	High levels of restoration treatments, such as mechanical treatments, are required before fire can be used to restore desired ecosystem function. Intensive efforts, which may include seeding, herbicide application, biomass removal, and other types of rehabilitation, are required for CC3 lands.

## SPECIAL DESIGNATIONS □

### AREAS OF CRITICAL ENVIRONMENTAL CONCERN

#### Laws, Regulations, and Policies

- The Federal Land Policy and Management Act (FLPMA) (43 U.S.C. 1701 *et seq.*)

Section 202 (c)(3) of FLPMA mandates the BLM to give priority to the designation and protection of ACECs in the development and revision of land use plans. BLM Manual 1613 describes the process followed to nominate ACECs and screen areas for their suitability for ACEC designation. The BLM's planning regulations (43 CFR 1610.7-2) establish the process and procedural requirements for designating ACECs in RMPs and RMP amendments.

#### Affected Environment

##### BACKGROUND

Areas of Critical Environmental Concern (ACECs) are unique to the BLM. BLM regulations (43 CFR Part 1610) define an ACEC as an area "within the public lands where special management attention is required (when such areas are developed or used or where no development is required) to protect and prevent irreparable damage to important historic, cultural, or scenic values, fish and wildlife resources, or other natural systems or processes, or to protect life and safety from natural hazards." While an ACEC may emphasize one or more unique resources, other existing multiple-use management can continue within an ACEC so long as the uses do not impair the values for which the ACEC was designated.

##### NOMINATED AREAS

Currently, there are no designated ACECs in the planning area. When finalized in 1979, the Dillon MFP contained recommendations that 15 areas be considered further for ACEC designation once guidance was available to conduct the evaluations. A plan amendment for the MFP was never completed for these nominations after BLM manual guidance finalized the process for identification and evaluation of ACECs in the 1980s. This guidance outlined criteria for "relevance" and "importance" to be applied to nominated areas to determine if it should move forward for additional analysis. **Appendix K** contains information on the relevance and importance criteria as applied to ACEC nominations.

During scoping for the Dillon RMP, the DFO actively solicited nominations and comments from the public on areas that should receive consideration as ACECs. Nominators were asked to include a boundary of the area, preferably at a 1:24,000 map scale and information and rationale as to

why the area met the relevance and importance criteria. As a result of these efforts, a total of 63 nominations, including the MFP nominations, were identified for review in this planning process. **Appendix K** provides additional information on each of the 63 nominations reviewed in this process.

##### POTENTIAL ACECs

As a result of work completed by a subgroup convened by the Western Montana RAC and a BLM review team, 13 of the 63 nominations reviewed met both the relevance and importance criteria and **have received** additional consideration as alternatives for the RMP **have been** developed and analyzed. Originally, the Thorium City area was considered a potential ACEC pending investigation of natural hazards. Additional investigation conducted in June of 2003 isolated heightened radioactivity, and those concerns have since been remediated. As a result, Thorium City does not meet the ACEC criteria and will not move forward in this planning process. These 13 ACECs are summarized in **Table 44** followed by a brief narrative description of each area. Additional information on all nominations is included in the report released by BLM in November 2002 on the ACEC evaluation process (USDI-BLM 2002c).

##### *Beaverhead Rock*

Beaverhead Rock is located fifteen miles northeast of Dillon, Montana (see **Map 58**). There are approximately 120 acres of public land in this area. This includes the N1/2 of the NW1/4 and the SW1/4 of the NW1/4 of Section 22, T5S, R7W. The area is a potential ACEC based on the historic value it contains.

Beaverhead Rock is one of a few prominent physiographic features mentioned specifically in the journals of Lewis and Clark and is a prominent and important feature of the Lewis and Clark National Historic Trail. While traveling with Lewis and Clark and the Corps of Discovery on August 8, 1805, Sacajawea recognized the point of a high plain. Sacajawea's people knew this prominent landscape feature as "the beavers' head". Recognition of this feature was important to the Corps of Discovery because it informed the company that the land of the Shoshone was not far and they might obtain horses for faster cross country travel. It also told them that the Continental Divide was close at hand where they would encounter rivers that flow into the Pacific. Approximately 70 acres of land adjacent to, and south of, this parcel of public land are owned by the State of Montana and managed by the Department of Fish, Wildlife and Parks as a primitive state park.

##### *Big Sheep Creek Basin*

Big Sheep Creek Basin is located fifteen miles southwest of Lima, Montana. There are approximately 25,990 acres of public land in this area (see **Map 59**). The area is a potential ACEC based on the wetland habitats and associated plant species that lie within that overall area.

**Table 44**  
**Potential Areas of Critical Environmental Concern**

<i>Area Name</i>	<i>Values of Concern</i>	<i>Acres/Miles</i>
Beaverhead Rock	Historic resources	120 acres
Big Sheep Creek Basin	Wetland habitats and associated sensitive plant species	2,393 acres within 25,990 acres
Block Mountain	Geologic features	8,661 acres
Blue Lake	Axolotl habitat	430 acres
Centennial Mountains	Scenic values, grizzly bear, lynx, wolf habitats, wildlife migration, Whipple's beardtongue, avalanche ecology	40,715 acres
Centennial Sandhills	Sand dune complex and associated plant species of special concern	1,040 acres
Centennial Valley Wetlands	Wetland habitats, peregrine falcon, trumpeter swan, and other migratory bird habitat, paleontological resources	17,388 acres
Everson Creek	Cultural resources	8,608 acres
Ferruginous Hawk Nesting Area	Ferruginous hawk nests/habitat	114,300 acres
Lewis & Clark Trail	Historic resources	16 miles
Muddy Creek/Big Sheep Creek	Scenic values, cultural resources	22,829 acres
Virginia City Historic District	Historic resources	513 acres
Westslope Cutthroat Trout Habitats	Westslope cutthroat trout populations with 99%-100% genetic purity	74 miles, 1,934 acres

There are approximately 2,393 acres of palustrine persistent emergent and shrub-scrub wetlands within this basin. Very few of these seasonally and temporarily flooded alkaline fens, marshes, and meadows can be found in southwest Montana. These wetlands support some unique and rare plant communities.

#### ***Block Mountain***

The Block Mountain area is located fifteen miles northeast of Dillon, Montana. There are approximately 8,661 acres of public land in this area. These lands lie in portions of Sections 14, 15, 21, 22, 23, 24, 25, 26, 27, 28, 33, 34, 35, T4S, R8W, and portions of Sections 2, 3, 4, 9, 10, 11, T. S, R8W (see [Map 60](#)). The area is a potential ACEC given the exceptional fold and thrust belt structure that is easily visible, making it a premier location to teach geologic field mapping.

#### ***Blue Lake***

Blue Lake is located twelve miles southwest of Ennis, Montana, and supports the only known population of axolotl in southwest Montana and possible anywhere else in Montana. There are approximately 430 acres of public lands in this

area. These lands lie in portions of Sections 7, 18, and 19 in T7S, R2W (see [Map 61](#)).

The axolotl is a neotenic form of tiger salamander that retains gills and an aquatic lifestyle from living in a cold, relatively sterile environment, with no fish. Research has shown that these animals metamorphose into normal terrestrial adult salamanders when water temperatures exceed approximately 72 degrees F. for more than 30-45 days. No other suitable habitat is present in the Axolotl Lakes area or in the general vicinity where other axolotl populations could be transplanted.

The area is a potential ACEC based on the habitat it provides for the axolotl.

#### ***Centennial Mountains***

The Centennial Mountains potential ACEC includes the public lands lying south of the Centennial Valley road from Red Rock Pass to the West Fork of Corral Creek. There are approximately 40,715 acres of public land in this area. The area is a potential ACEC based on the habitat it contains for grizzly bear, lynx and wolf, its use as a wildlife migration

corridor, its outstanding scenic value, and for the only known occurrence in Montana of Whipple's beardtongue in the Taylor Mountain area, which also provides a good example of avalanche ecology.

The area provides relatively intact habitat with limited evidence of human-caused impacts, and provides an important route for wildlife migration and movement between high security habitats. (see [Map 62](#)).

#### ***Centennial Sandhills***

The Centennial Sandhills is located six miles north of Lakeview, Montana. There are approximately 1040 acres of public land in this area within portions of Sections 21, 22, 23, T13S, R2W (see [Map 63](#)). The area is a potential ACEC given that it is one of only two sand dune complexes in Montana, along with the habitat it provides for special status plant species.

The area supports ecological processes related to sand dune migration, which are necessary for survival of the special status plant species including sand wildrye, pale evening primrose, and painted milkvetch. Loss of sand dune activity and other disturbances could put these values at risk.

#### ***Centennial Valley Wetlands***

The Centennial Valley Wetlands are located along the Red Rock River in the Centennial Valley. There are approximately 17,388 acres of public land in this area (see [Map 64](#)). The area is a potential ACEC based on the wetland habitats it contains which provide habitat for peregrine falcon, trumpeter swan and other migratory birds, and paleontological resources.

This area contains the largest wetland complex in the planning area and is an important area along a migration flyway as well as supporting nesting by a wide variety of waterfowl, shorebirds, and other water birds. Two federally listed species (bald eagle and peregrine falcon) and several BLM sensitive wildlife species use this area. Bald eagles nest in the vicinity and utilize habitat on wetlands. Two peregrine falcon territories are present on the reservoir and river that depend on the productivity of this wetland habitat. Approximately twelve trumpeter swan breeding territories are dependent on these public land wetlands. This is one of only three places where trumpeter swans nest in the tri-state area, and this particular population is considered the "natural" relic population of the trumpeter swan. Canada geese use Lima Reservoir and the Red Rock River every summer and represent the largest molting population in the northern Rocky Mountains. The area also contains paleontological properties that are threatened by erosion along Lima Reservoir.

#### ***Everson Creek***

This area is located fifteen miles southwest of Grant, Montana. There are approximately 8,608 acres of public land in

this area (see [Map 65](#)). The area is a potential ACEC based on the cultural resources it contains.

The Everson Creek area contains perhaps the oldest archaeological site in Montana as well as several quarry sites. The extensive cultural resources are important both to archaeologists and to Native Americans, and comprise an archaeological district.

#### ***Ferruginous Hawk Nesting Area***

This potential ACEC includes three important nesting areas for ferruginous hawks. These areas cover portions of the Sweetwater Hills, the Lima Breaks, and the Bell-Limekiln Canyon area near Clark Canyon Reservoir. There are approximately 114,300 acres of public land in the potential ACEC boundary (see [Map 66](#)). The area is a potential ACEC based on the area exhibiting the second highest ferruginous hawk nest densities in Montana and one of the highest densities in all of North America.

Ferruginous hawks, a BLM sensitive species, are particularly sensitive to disturbance, especially during the breeding and early nesting periods. High nesting populations occur as the result of clustering within or near special habitat features, availability of high prey populations, and/or low levels of human disturbance.

#### ***Lewis & Clark Trail***

The Lewis and Clark Trail, a Congressionally designated National Historic Trail, crosses through the planning area along the Jefferson and Beaverhead Rivers and in the vicinity of Horse Prairie. There are approximately 16 miles of the Lewis and Clark Trail that cross public land in the planning area. These lands lie in portions of Section 32, T1N, R4W, Sections 1, 11, 12, 14, 22, 23, 27, 34, T8S, R12W, Sections 1, 2, 11, 31, 32, 33, T9S, R10W, Sections 3, 10, 31, 32, 33, T9S, R12W, Section 33, T9S, R13W, and Sections 4, 5, 7, T10S, R13W (see [Map 67](#)). Acreages have been calculated based on a 1/2 mile area on either side of the designated trail route. The area is a potential ACEC based on the historic value of the trail.

#### ***Muddy Creek/Big Sheep Creek***

This potential ACEC lies four miles southwest of Dell, Montana and continues upstream along the Big Sheep Creek drainage to its confluence with Deadman Creek, and includes public lands in the Muddy Creek drainage. There are approximately 22,829 acres of public land in this area (see [Map 68](#)). The area is a potential ACEC based on the scenic values along Big Sheep Creek and the cultural resource values in the area.

#### ***Virginia City Historic District***

The Virginia City Historic District is located in Madison County, Montana and includes the public lands in and near Virginia City that lie within the National Historic Landmark boundary. There are approximately 513 acres of public land

in this area. These lands lie in portions of Sections 21, 22, 23, 24, 26, 27, 34, 35, T6S, R3W (see [Map 69](#)). The area is a potential ACEC due to the historic resources and landscape contained within the boundary.

***Westslope Cutthroat Trout Habitats (with 99-100% purity)***

This potential ACEC includes an estimated total of 74 miles of westslope cutthroat trout habitat on public land that contains populations with purity of 99 percent and greater. This habitat occurs across the planning area. Acreage is estimated based on 100 feet either side of the stream.

Based on inventory and genetic analysis through 2000, there are only 144 streams in the Upper Missouri Drainage that contain westslope cutthroat trout with a genetic purity of greater than 99 percent and 40 of these are within the planning area, resulting in this potential ACEC. BLM manages the headwaters and/or significant portions of the occupied habitat for about 15 of these populations. Many of these populations are extremely small and vulnerable to further degradation or extinction. (see [Map 70](#)).

## BACK COUNTRY BYWAYS

### Laws, Regulations, and Policies

- BLM Handbook H-8357-1 (Byways)

### Affected Environment

The BLM Dillon Field Office manages the 55-mile Big Sheep Creek Back Country Byway, which runs from near the town of Dell through the Big Sheep Creek Canyon, then turns north through Horse Prairie to the intersection with Highway 324 just west of Clark Canyon Reservoir. The Back Country Byway was designated in 1989 as part of a BLM/American Recreation Coalition initiative to provide for increased opportunities for pleasure driving. There is no development associated with this route except for the Back Country Byway portal sign on the Dell end. One primitive campground is along the Byway at Deadwood Gulch, but is incidental to the Byway. Outstanding scenery, wildlife viewing opportunities, solitude, and cultural and historic resources are highlights of the byway.

## NATIONAL RECREATION AREAS

There are no National Recreation Areas in the Dillon Field Office.

## NATIONAL TRAILS

### Laws, Regulations, and Policies

- National Trails System Act (16 U.S.C. 1241-1249).

### Affected Environment

The Dillon Field Office currently has management responsibility for one National Recreation Trail (Bear Trap Canyon NRT), and portions of one National Scenic Trail (Continental Divide NST) and two National Historic Trails (Lewis & Clark NHT and Nez Perce NHT).

### BEAR TRAP CANYON NATIONAL RECREATION TRAIL

Bear Trap Canyon National Recreation Trail is a nine-mile segment of hiking trail within the Bear Trap Canyon Wilderness. The trail is a one-way trail that goes from a trailhead at the north end of the canyon to the point where it terminates at the Madison Dam Powerhouse and is fenced to prevent passage across an emergency spillway. The trail is open only to foot traffic through most of the year, but is also open to pack and saddle stock from October 15 through December 15 to better accommodate big game hunting use in the wilderness area. The trail is maintained annually to the extent staffing and funding allows.

### CONTINENTAL DIVIDE NATIONAL SCENIC TRAIL

The Dillon Field Office assumes responsibility for management and maintenance of approximately 21 miles of the Continental Divide NST from Red Rock Pass to the divide between Ching and Odell Creeks in the Centennial Mountains on the Idaho/Montana border. This includes approximately 3 miles across lands managed by the Beaverhead-Deerlodge National Forest in the vicinity of Red Rock Pass, and approximately 14 miles of trail that crosses back and forth across lands managed by the USDA Agricultural Research Service (Sheep Experiment Station) and the Targhee National Forest in Idaho. Only roughly 3 1/2 miles of the CDNST is actually located on BLM public lands.

### LEWIS AND CLARK NATIONAL HISTORIC TRAIL

There are approximately 244 miles of the Lewis & Clark NHT within the boundaries of Madison and Beaverhead Counties. Only approximately 16 miles of that trail cross through BLM public lands. The majority of those trail miles are along the return route from the upper Big Hole Valley back to Clark Canyon Reservoir. The BLM recreation program has provided an interpretive site along the return route on the Grant-to-Bannack road. In cooperation with the USFS, BLM has provided a staging area along Highway 324 prior to the turn-off to Lemhi Pass in order to accommodate visitors with vehicles too long to make the drive

over the winding route through the pass. Some interpretive signs, toilet facilities, and picnic tables are provided at this site as well. BLM has also provided an interpretive sign, which is installed at the FWP fishing access site at Notch Bottom along the Big Hole River.

### **NEZ PERCE NATIONAL HISTORIC TRAIL**

The Nez Perce NHT crosses the through the western portion of the planning area in a north-south direction along the eastern base of the Bitterroot Mountains. Only approximately 6-3/4 miles of the trail is located across public lands managed by the BLM. There are no recreational or interpretive facilities on BLM lands associated with this trail, and there is no physical evidence of a "trail" on the ground. The location of the trail has been approximated on maps based on historical records of the Nez Perce people fleeing for their lives.

## **WILD AND SCENIC RIVERS**

### **Laws, Regulations, and Policies**

The BLM's Wild and Scenic Rivers program is authorized under the following laws and policies.

- Wild and Scenic Rivers Act of 1968, as amended
- Federal Land Policy and Management Act of 1976
- National Environmental Policy Act of 1969
- Land and Water Conservation Fund Act of 1965
- BLM Manual 8351 (Wild and Scenic Rivers)

### **Affected Environment**

There are currently no Wild and Scenic Rivers or congressionally designated study rivers within the planning area.

In an effort to assure that no potentially eligible rivers were inadvertently missed, an interdisciplinary team comprised of BLM staff specialists conducted a systematic inventory and assessment of all rivers in the planning area as defined in the WSR Act. As a result, 52 rivers or river segments were assessed in coordination with federal and state river-administering agencies. Applicable source lists, such as the NPS Nationwide Rivers Inventory and the American Rivers Outstanding Rivers List were also consulted. Following the inventory, resource specialists assessed each river segment under the eligibility criteria of free-flowing and possessing one or more outstandingly remarkable values (ORVs). The team reviewed this information and determined 10 rivers or river segments were eligible for further evaluation.

In March 2002 the Draft Wild and Scenic Rivers Eligibility Report (USDI-BLM 2002d) was prepared and released for public review. This report identified those eligible rivers or

river segments needing study and assessment for suitability or nonsuitability as potential wild and scenic rivers. Based on additional field work and public comments, several changes were made to that report and the final report (USDI-BLM 2002b) was released in July 2002. The final report dropped three of the ten segments from consideration due to new information on ORVs and resegmented one of the rivers into two segments based on field review to conclude that eight river segments were eligible for further suitability assessment. **Table 45** details the eight river segments studied for suitability.

Eligible rivers identified for further study through agency planning processes are protected under BLM's discretionary authority. Existing uses occurring at the time of the evaluation may continue in the same manner and degree on rivers determined eligible for further study. New uses or changes in use will be assessed on a case-by-case basis in an environmental analysis to determine whether the identified river values, the free flow, or the tentative classification could be degraded with new or changed use.

## **WILDERNESS (BLM Critical Element)**

### **Laws, Regulations, and Policies**

- Federal Land Policy and Management Act of 1976
- The Wilderness Act of 1964
- Public Law 98-140, An Act to establish the Lee Metcalf Wilderness and Management Area in the State of Montana, and for other purposes
- Wilderness Management Plan for Bear Trap Canyon Unit of Lee Metcalf Wilderness (USDI-BLM 1984b)
- BLM Management of Designated Wilderness Areas H-8560-1 (USDI-BLM 1988)
- BLM Wilderness Management Policy, September 1981

### **Affected Environment**

The Dillon Field Office is responsible for management of the Bear Trap Canyon Wilderness, the first BLM managed lands to become part of the National Wilderness Preservation System. The Bear Trap Canyon Wilderness was designated as part of the 259,000-acre Lee Metcalf Wilderness (managed mostly by the USFS) on October 31, 1983, and is still the only designated wilderness managed by BLM in Montana. A management plan completed for the wilderness area in 1984 was intended to provide management direction for the area for a 10-year period. The plan has not been revised since, but a request for funding to review the plan was made for fiscal year 2003, and a plan update or revision should be completed by no later than FY 2005.

Current use of the wilderness has increased dramatically since its designation. Primary recreational activities in the

Table 45  
Eligible Rivers and River Segments in the Planning Area

River Name	River Segment	Outstandingly Remarkable Values										Tentative Classification			Total Segment Length (Miles)*	BLM Segment Length (Miles)*		
		Scenic	Recreation	Geological	Fish	Wildlife	Historic	Cultural	Other Values	Wild	Scenic	Recreational						
Bear Creek	Beginning at the headwaters of Bear Creek in the SW 1/4 of Section 8, T15S, R3W near the Continental Divide and ending where the river leaves the Centennial Wilderness Study Area in the SW 1/4 of Section 32, T14S, R3W.				X												2.27	2.27
Beaverhead River	Beginning at the I-15 bridge in the SW 1/4 of Section 11, T9S, R10W and ending where the river leaves BLM lands near Dalys exit in the NW 1/4 of Section 1, T9S, R10W.																	
Big Hole River--Divide to Melrose	Beginning at the Hwy 43 bridge near Divide in the NE 1/4 of Section 13, T1S, R9W and ending at Melrose Bridge in the NW 1/4 of Section 35, T2S, R9W.		X															2.95
Big Hole River--Melrose to Notch Bottom	Beginning at the Melrose Bridge in the NW 1/4 of Section 35, T2S, R9W, and ending where the river leaves BLM land at the Notch Bottom in the NW 1/4 of Section 2, T5S, R8W.				X													5.27
Big Sheep Creek	Beginning in the SE 1/4 of Section 4, T15S, R10W, at the confluence with Rock Creek and ending at the mouth of the canyon in the NW 1/4 of Section 20, T13S, R9W.	X																4.27
Madison River--Cliff Lake to Varney Bridge	Beginning at the bridge in the SW 1/4 of Section 32, T11S, R2E near old townsite of Cliff Lake and ending at Varney Bridge in the SW 1/4 of Section 8, T7S, R1W.																	8.62
Madison River--Powerhouse to North Wilderness Boundary	Beginning where river enters Bear Trap Unit of the Lee Metcalf Wilderness in the NW 1/4 of Section 17, T4S, R1E and ending where river leaves Bear Trap Unit of the Lee Metcalf Wilderness boundary in the SW 1/4 of Section 10, T3S, R1E.	X																13.33
Madison River--N. Wilderness Boundary to Greycliff	Beginning where river leaves the Bear Trap Unit of the Lee Metcalf Wilderness in the SW 1/4 of Section 10, T3S, R1E, and ending where river leaves public land at Greycliff in the NE 1/4 of Section 6, T2S, R2E.																	7.67

\*All lengths were measured from a 1:24,000 topographic map using a hand planimeter.

wilderness include; camping, fishing, hiking, backpacking, whitewater rafting and kayaking. Important wildlife values include bald eagles, mountain goats, moose, and mule deer. Infestations of noxious weeds, especially knapweed and leafy spurge, have become a major management concern in recent years, and control efforts begun in 2001 have met with some initial success. Weed control efforts are ongoing.

## WILDERNESS STUDY AREAS

### Laws, Regulations, and Policies

- Federal Land Policy and Management Act (43 U.S.C. 1701-1782).
- BLM Interim Management Policy and Guidelines for Lands under Wilderness Review

### Affected Environment

#### BACKGROUND

The BLM Interim Management Policy and Guidelines for Lands under Wilderness Review (USDI-BLM 1995) states:

“Under FLPMA, wilderness preservation is part of BLM’s multiple-use mandate, and wilderness values are recognized as part of the spectrum of resource values considered in the land-use planning process. Section 603 of FLPMA specifically directed the BLM, for the first time, to carry out a wilderness review of the public lands.”

It further states (USDI-BLM 1995):

“The wilderness review required by Section 603 of FLPMA focused on roadless areas of 5,000 acres or more and on roadless islands. The BLM as a matter of policy used its general management authority under Sections 302 and 202 of FLPMA to include in the wilderness review certain other roadless areas. These included: (1) areas smaller than 5,000 acres that were not islands, (2) areas less than 5,000 acres that had wilderness characteristics in association with contiguous roadless lands managed by another agency, and (3) lands placed under BLM administration after the wilderness inventory was conducted in 1978-80.”

FLPMA mandated that within 15 years the BLM would inventory and study its lands for their wilderness suitability, and that based on this review, the Secretary of Interior would forward wilderness recommendations to the President. Recommendations for those areas within the Dillon Field Office were included in the Montana Statewide Wilderness Study Report released in September 1991 (USDI-BLM 1991b). Recommendations were signed by the Secretary of Interior and by the President, and forwarded to Congress

before the end of that year. As a result of the inventory and study conducted on lands within the Dillon Field Office, eight WSAs were identified under Section 603 and two WSAs were identified under Section 202 where those lands were contiguous with USFS roadless lands. FLPMA Section 603 (c) states:

“During the period of review of such areas and **until Congress has determined otherwise** (emphasis added), the Secretary shall continue to manage such lands according to his authority under this Act and other applicable law in a manner so as not to impair the suitability of such areas for preservation as wilderness...”

This language is intended to ensure that the option to either designate lands as wilderness or release them from further consideration as wilderness rests with Congress. It also makes it clear that BLM’s responsibility is to ensure that wilderness values on those lands are not degraded until Congress can make a final determination as to the suitability of those lands for inclusion in the National Wilderness Preservation System. BLM’s actions may not preempt Congress’ authority to make a final decision on those lands that were studied, regardless of whether they were recommended by the BLM as suitable for wilderness designation. Even through the land use planning process, BLM may not assert any further authority over the designation – or release — of lands studied under Section 603 of FLPMA.

Lands identified as WSAs under the authority of Section 202 are treated differently. “Those WSAs studied under Section 202 of FLPMA and subsequently found to be nonsuitable for wilderness designation may be released from interim management by the BLM State Director 30 days after approval of the land-use plan. Suitable WSAs studied under Section 202 of FLPMA will be studied using the Bureau’s procedures for such areas, remaining under IMP protection until Congress acts. In the interest of consistency with related land-use plans, the State Director also has the option of keeping such areas in wilderness study status, and under interim management, until final decisions have been made on adjacent areas under wilderness review (USDI-BLM 1995).”

#### WILDERNESS STUDY AREAS IN THE DILLON PLANNING AREA

The Dillon Field Office manages ten wilderness study areas totaling approximately 123,000 acres. Eight of those areas were studied under the authority of Section 603, and two were studied under Section 202. Recommendations on nine of those WSAs were included in the Montana Statewide Wilderness Study Report (USDI-BLM 1991b), and those recommendations are shown in **Table 46**.

There was no recommendation in the Montana Statewide Wilderness Study Report on the Tobacco Root Tack-on WSA (MT-076-063). This WSA was studied under FLPMA Sec-

**Table 46**  
**Recommendations on WSAs in the Dillon Field Office**

<i>WSA Name</i>	<i>WSA Number</i>	<i>Total Acreage</i>	<i>Acres Recommended for Wilderness</i>	<i>Acres Recommended for non-Wilderness</i>
Ruby Mountains	MT-076-001	26,611	15,615	10,996
Blacktail Mountains	MT-076-002	17,479	10,586	6,893
East Fork Blacktail Deer Creek	MT-076-007	6,230	0	6,230
Hidden Pasture Creek	MT-076-022	15,509	0	15,509
Bell/Limekiln Canyons	MT-076-026	9,650	0	9,650
Henneberry Ridge	MT-076-028	9,806	0	9,806
Axolotl Lakes	MT-076-069	7,804	0	7,804
Centennial Mountains	MT-ISA-002	27,691	23,054	4,637
Farlin Creek (Section 202)	MT-076-034	1,139	610	529
Total (Percent Total)		121,919	49,865 (40.9%)	72,054 (59.1%)

tion 202 authority, and consists of approximately 860 acres within two separate tracts bordering USFS lands on the west side of the Tobacco Root Mountains near Whitehall, Montana. The Tobacco Root Tack-ons were to be studied in conjunction with the Forest Service's further planning area, Middle Mountain-Tobacco Roots, as part of the Deerlodge National Forest management plan. The Deerlodge National Forest completed their Forest Plan in September 1987, but did not specifically address the adjacent BLM's Tobacco Roots Tack-on WSA. The goals identified in the Forest Plan for USFS lands adjacent to the WSA included, "To provide high quality motorized recreation opportunities." The lands are not being considered for wilderness. As a Section 202 WSA, the BLM should consider disposition of this WSA during the RMP process.

## SOCIAL AND ECONOMIC CONDITIONS

### ECONOMICS

#### Laws, Regulations, and Policies

- National Environmental Policy Act of 1972 (42 U.S.C. 4321)
- Federal Land Policy and Management Act of 1976 (43 U.S.C. 1701 et seq.)
- Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations

### Affected Environment

The following section provides a summary of demographic and economic trend information, followed by a description of the key industries in the planning area that could be affected by BLM management actions. Area industries most heavily affected by BLM land management policies and programs are: (1) production agriculture, in particular cattle grazing and production, (2) forest products, including logging and post and pole production, (3) mining and mineral exploration, and (4) travel, tourism and recreation, with BLM lands providing areas for hunting and fishing, hiking and camping, and general sight-seeing, as well as providing important habitat for area fish and wildlife that spend time both on and off BLM lands. Additional detailed information on demographic and economic trends of Beaverhead and Madison counties prepared by the Center for the Rocky Mountain West is available by contacting BLM.

#### DEMOGRAPHIC OVERVIEW

Certain defining features of every area heavily influence and shape the nature of local economic activity. Principal among these are the size of the area's population, the presence of or proximity to large cities or regional population centers, types of longstanding industries such as agriculture or forestry or mining, area racial and cultural features, and predominant land and water features and unique area amenities. Within a larger context, both Beaverhead and Madison Counties are rural in nature, having no large cities and being relatively sparsely populated. While the two counties border each other and occupy a common area, each county has a different dominant population center. Bozeman, a fast-growing urban area with 40,000 people located in Gallatin

**Table 47**  
**Cities and Towns in Madison and Beaverhead Counties**

	1980	1990	2000	1990 - 2000	
				no.	%
Madison County	5,448	5,989	6,851	862	+14.4%
Ennis	660	773	840	67	+8.7%
Sheridan	646	652	659	7	+1.1%
Twin Bridges	437	374	400	26	+7.0%
Virginia City	192	142	130	- 12	-8.5%
Beaverhead County	8,186	8,424	9,202	778	+9.2%
Dillon	3,976	4,001	3,752	-249	-6.2%
Lima	272	265	242	- 23	-8.7%

Source: U.S. Census Bureau

County, borders Madison County to the east and serves as its nearest regional population center. Butte, an urban area with less than 40,000 people located in Silver Bow County, sits northeast of Dillon, and is the nearest population center for many living in Beaverhead County.

Madison County is a large, sparsely populated county occupying 3,603 square miles (2,305,920 acres) with no cities greater than 1,000 in population. A significant share of Madison County's work force commutes out of the county to work. In 2000 over 15 percent of all labor earnings by workers in Madison County were earned at places of employment outside of the county. The county's most significant underlying industry is the travel industry, but it also has a sizeable agricultural sector.

Beaverhead County is even larger in size than Madison County, occupying 5,572 square miles (3,566,080 acres) and also very sparsely populated. Its largest city is Dillon with nearly 3,800 people. The county's underlying industry dependencies include production agriculture, the travel industry, and Federal and State government – the latter including Western Montana College of the University of Montana located in Dillon. The largest landowner in the planning area is the U.S. Forest Service with nearly 2.2 million acres—38 percent of the total land area of nearly 5.85 million acres and almost two and one half times greater than BLM acreage in the two counties. Private lands account for 1.2 million acres, followed by approximately 900,000 acres of BLM lands about 500,000 acres of lands under jurisdiction of the State of Montana. **Table 1** in Chapter 1 details land ownership by county.

Economic conditions and trends in counties with relatively small populations can be greatly affected by close proximity to moderate-size cities. Counties of this size in more isolated rural areas with no nearby population centers tend to

follow economic paths almost exclusively dictated by trends in their major underlying industries, like agriculture or mining. Likewise, if population and employment growth is relatively high in a nearby regional population center, this can translate into higher population growth in nearby closely-linked rural counties. Bozeman and Gallatin County are relatively fast-growing, with county-wide population increasing from 42,865 in 1980 to 50,484 in 1990, and to more than 71,000 in 2002. In contrast, Butte and Silver Bow County are losing population with county-wide population falling from 38,092 in 1980 to 33,400 in 2002. So, growth pressure on nearby Madison County emanating from growth in nearby Bozeman is largely absent from Beaverhead County where nearby Butte is actually losing population. Madison County has additional growth pressure because of its close proximity to a growing resort area – Big Sky - and to Yellowstone National Park. Many non-metro areas in the West nearby major national parks are seeing sharply higher population growth in recent years.

#### **PERSONAL INCOME GROWTH AND CHANGE**

Personal income is all income received by individuals and households from all sources. There are three major sources: (1) labor earnings or income from the workplace, (2) investment income, or income received by individuals in the form of rent, dividends, or interest earnings, and (3) transfer payment income or income largely received as Social Security retirement and disability income or Medicare and Medicaid payments.

In both Beaverhead and Madison Counties, labor earnings are the largest source of income, accounting for 57 percent of all income in Beaverhead County in 2000, about 50 percent of all income in Madison County. This is a relatively low proportion of personal income, especially in Madison County compared to Montana as a whole where labor earnings account for over 60 percent of all income.

The second largest source of income in the planning area is investment income, which accounts for 25 percent of all income in Beaverhead County and over 30 percent of all income in Madison County. Statewide, investment income accounts for 23 percent of income. Investment income's share of all income has been rising, reflecting population aging, with older adults more likely to have investment earnings than young adults.

Transfer payments accounted for 19 percent of all income in Beaverhead County and 18 percent of all income in Madison County, as compared to 16 percent statewide. As the population of both counties continues to age, income from non-labor sources should continue to rise as a share of all income. However, this will largely depend on how many older residents decide to stay in the area after retirement.

### EMPLOYMENT TRENDS

There are two major types of employment that generate labor earnings: wage and salary employment and proprietor or self-employment. Wage and salary employment accounts for 55 percent of all employment in Madison County and

70 percent of all employment in Beaverhead County. Non-farm proprietors are 33 percent of all employment in Madison County and farm proprietors account for the remaining 12 percent. Non-farm proprietor employment is a much smaller percentage of total employment in Beaverhead County, accounting for about 23 percent of employment. Farm proprietors account for about 7 percent of the total. **Table 48** details total labor earnings, employment by type, and employment by sector by county.

Private non-farm employment currently accounts for 69 percent of all employment in Madison County and 68 percent of all employment in Beaverhead County. Farm employment, including both proprietors and other on-farm workers, accounts for 17 percent of total employment in Madison and 14 percent in Beaverhead. The third major category of employment is public or government employment, which covers federal and state government workers and local government workers. In Madison County, public employment covers 14 percent of all workers, while in Beaverhead it covers 18 percent.

**Table 48**  
**Employment and Labor Earnings by Major Type and Sector in 2000**

	<i>Madison County</i>	<i>Beaverhead County</i>
Total employment	3,902	5,639
<b>Total labor earnings (mil. '96 \$)</b>	\$56.9	\$107.7
Wage & salary employment	2,136 (55%)	3,973 (70%)
Wage & salary earnings	\$38.0	\$76.1
Self-employment/proprietors	1,766 (45%)	1,666 (30%)
Self-employment earnings	\$13.4	\$20.3
All employment by type (private non-farm, farm, and public):		
Private non-farm employment	2,683 (69%)	3,821 (68%)
Private non-farm labor earnings	\$42.2	\$65.9
Private on-farm employment	679 (17%)	775 (14%)
Net farm earnings	\$1.3	\$12.0
Public/govt. employment	540 (14%)	1,043 (18%)
Public/govt. labor earnings	\$13.4	\$29.8
All private employment by major sector:		
Services	827 (21%)	1,438 (26%)
Farm & ranch	679 (17%)	775 (14%)
Retail trade	568 (15%)	943 (17%)
Construction	446 (11%)	319 (5.7%)
Finance, insurance, real estate	267 (6.8%)	393 (7.0%)
Transpt. & public utilities	171 (4.4%)	150 (2.7%)
Manufacturing	149 (3.8%)	114 (2.0%)
Ag & forestry services	125 (3.2%)	154 (2.7%)
Mining	92 (2.4%)	160 (2.8%)
Wholesale trade	38 (1.0%)	150 (2.7%)

Source: Derived from U.S. Dept. of Commerce, Bureau of Economic Analysis, *Regional Economic Information System (REIS)* state and county data series.

Farm and ranch employment, again both proprietors and other on-farm workers both full and part-time, has steadily grown in Beaverhead County. Total farm employment in 1977 was 608 with 276 of these farm proprietors. In 1997 total farm employment in Beaverhead was 664 with 370 proprietors. Figures for 2000 place total farm employment at 775 with 384 proprietors. This growth is largely indicative of some expansion of agriculture among relatively small operations. In Madison County, total farm employment went from 655 with 405 proprietors in 1977 to 613 total and 450 proprietors in 1997. These expanded to 679 and 474, respectively, in 2000.

The composition of public or government employment is quite different in the two counties. In Madison County public employment is largely by local government, including employees of public education. Of the 540 government workers in 2000, over 400 were employed by local government. In Beaverhead County, of the 1,043 public workers in 2000, just over 400 were in local government. The second largest category was state government with 340, which would include employees of Western Montana College. Employment by different departments of the U.S. civilian government totaled 203 workers. This would include an estimated 26 full-time equivalent staff positions with the Dillon BLM Field Office in the year 2000.

Private employment divides into ten major sectors of the economy. Besides farm and ranch, these include manufacturing, transportation and public utilities, mining, agricultural and forestry services, construction, wholesale trade, retail trade, services, and finance, insurance, and real estate (F.I.R.E.). In recent years, most employment growth in the two counties has concentrated in only a few sectors – services, retail trade, construction, and finance, insurance, and real estate.

In Beaverhead County, services employment grew from 653 in the late 1970s to 883 in the late 1980s, and to nearly 1,440 by 2000. Retail trade is second to services in employment at 943, growing from around 600 workers in the late 1980s. The third largest private non-farm employer is finance, insurance, and real estate (F.I.R.E.) with 393 workers in 2000 followed by construction at 319. Employment in each of the other private non-farm sectors is less than 200 and has remained below this level for most of the last twenty years. In Madison County, the services sector is the largest private non-farm employment sector with 827 or 21 percent of all workers in the county in 2000. Retail trade is the second largest with 568 workers or 15 percent of the total. Next are construction and finance, insurance, and real estate. The other private non-farm sectors all have employment levels under 200.

Recent unemployment rates in both counties are relatively low, ranging between 3.0 and 4.0 percent.

## **ECONOMIC RESTRUCTURING AND CHANGE**

The nature of economic restructuring and change occurring in the planning area can be seen by focusing on areas of significant income gain or loss since the late 1980s. The 1980s was a difficult period for many rural areas of Montana and the western United States largely because this was a difficult period for many natural resource sectors and industries. Agricultural producers were strained by low commodity prices and high costs of production. The wood products industry was hit by housing construction downturns linked to nationwide recessions, increased national competition from southern U.S. softwood manufacturers and increased global competition, largely by Canadian wood products manufacturers and suppliers. These factors along with growing constraints on timber supply from relatively slow-growing Northern Rockies national forests led to a decade and a half of industry consolidation and decline. Many mineral mining sectors have been plagued by low prices, curtailing considerable mining activity and exploration.

But, while some sub-sectors of the economy have declined or stagnated, others have grown and these differential rates of growth and change within the economy have translated into significant economic change and restructuring.

For Beaverhead County between 1987 and 1997, transfer payments grew by 33 percent, while investment income grew by 21 percent and labor earnings by 26 percent. Of the \$19 million in labor income gains between the late 1980s and late 1990s, service sector expansion accounted for over \$8 million followed by F.I.R.E. sector expansion of over \$6 million. All government and mining both had gains of over \$3 million followed by construction. Declines were concentrated in durable goods manufacturing - largely a fall-off in wood products. Railroad transportation also fell significantly.

Between 1987 and 1997, transfer payment income for Madison County grew by 50 percent while investment income grew by 32 percent. Labor income from all sources grew by only 22 percent. And of the \$9.7 million in labor income gains, growth in services and construction labor earnings together accounted for over \$8 million of this gain. The biggest loss was by the mining sector where labor earnings by industry workers fell by nearly \$6 million. Farm and ranch net earnings fell by over \$1.5 million.

## **ECONOMIC WELL-BEING**

Several different measures are used in gauging levels of and changes in area economic well-being. Perhaps the most commonly used indicator for this is area per capita income. Per capita income is moderately higher for residents of Beaverhead County than for those in Madison County. In 2000 per capita income was \$19,154 in Beaverhead in 1996 inflation-adjusted dollars and \$17,832 in Madison. Per capita income levels tend to be considerably higher in urban areas than in rural ones, such as these two counties.

Another way of measuring area economic well-being is median income. Median incomes are systematically estimated every ten years as part of the decennial Population Censuses. Household median income in Madison County rose from \$24,000 in 1979 to \$27,000 in 1989 and to \$28,000 in 1999. In Beaverhead County median household income was \$25,460 in 1979, \$25,600 in 1989, and \$26,900 in 1999. So, using a slightly different measure of economic well-being favors Madison County over Beaverhead County, unlike in per capita income comparisons.

Another measure of economic well-being is the poverty rate. Poverty rates are estimated for local areas periodically. The number of individuals living in households with incomes below what is necessary for basic sustenance are estimated, but these estimates do not consider wide variations in area cost of living. The poverty rate in Madison County rose from 14 percent in 1979 to 18 percent in 1989, and then fell back to 12 percent in 1999. In Beaverhead County the poverty rate rose from 11 percent to 18 percent between 1979 and 1989, then declined to 17 percent in 1999. The poverty rate statewide in Montana in 1999 was 14 percent.

Collectively, these measures indicate some deterioration or only modest improvements in area economic well-being in the two counties during the 1980s and improvements or recoveries during the 1990s for the most part. A more complete examination of these and other conditions and trends in the study area is contained in the report's appendices.

**DIRECT BLM CONTRIBUTIONS TO AREA ECONOMIC ACTIVITY**

DFO operations and management in the area make a direct contribution to area economic activity by employing people who reside in the area and by expending dollars on other non-personnel needs. Management of BLM lands in the two counties is largely carried out through a professional and administrative staff that operates from the BLM office in Dillon. In recent years, expenditures by this office have risen to over \$3 million.

DFO personnel and expenditures increased in recent years, largely as a result of additional effort necessary to undertake the Resource Management Plan revision and update. However, these staff levels will be largely maintained in the future, with these resources extended into other areas of need. Total labor earnings received by employees of federal civilian departments and agencies working and residing in Beaverhead County where the DFO is located totaled \$11.9 million in 2000, with the \$1.57 million received by BLM personnel representing about 14 percent of this total.

In areas of the United States where the federal government has a large presence in the ownership of land, efforts are made to off-set or reduce the impacts this may have on local governments in the form of lost local tax revenues. Components of local government – schools, city and county government, fire districts, etc. depend heavily upon local property taxes for their support. Payments in lieu of taxes or PILT payments are made to counties to compensate them for federal lands that are exempt from local property taxes. Payment amounts are based upon a complex formula that considers among other things revenue sharing from the previous year, county population, and acreage of a county in federal ownership.

The BLM administers the PILT program for all federal agencies and payments distributed through it take into consideration all federal lands, not just those administered by BLM itself. These PILT payments add to revenues that these counties routinely collect through local property tax levies. PILT payments to Beaverhead County in 2001 totaled \$476,624 and represented about 7 percent of local ad valorem property taxes. PILT payments attributable to BLM lands totaled \$153,320. PILT payments to Madison County in 2001 totaled \$435,001 and represented nearly 5 percent of local ad valorem property taxes. PILT payments attributable to BLM lands in the county total \$103,374. **Table 50** shows PILT payments between 1990 and 2003.

**Table 49  
Dillon Field Office Expenditures**

<i>Fiscal Year</i>	<i>Personnel</i>	<i>Other</i>	<i>Total</i>	<i>FTE Positions</i>
1999	\$1,081,500	\$ 856,900	\$1,938,400	NA
2000	1,514,700	752,200	2,267,200	25.8
2001	1,571,700	1,290,800	2,862,400	26.5
2002	1,932,200	1,275,500	3,207,700	32.4
2003	2,133,300	1,160,200	3,293,500	36.6

Source: BLM State Office, Billings

**Table 50**  
**Payments in Lieu of Taxes to Madison and Beaverhead Counties**

	<i>Madison Co.</i>		<i>Beaverhead Co.</i>	
	<i>Total PILT Amt.</i>	<i>BLM Portion</i>	<i>Total PILT Amt.</i>	<i>BLM Portion</i>
1990	\$ 210,199	\$ 50,679	\$ 216,612	\$ 70,085
1991	225,357	53,977	261,169	84,387
1992	200,690	48,273	204,896	66,207
1993	218,599	52,704	215,856	69,758
1994	215,621	52,031	233,397	75,408
1995	226,745	54,781	262,961	84,960
1996	225,379	54,455	251,974	81,326
1997	257,595	62,220	273,102	88,144
1998	249,966	59,902	250,159	80,617
1999	278,323	66,420	298,936	96,320
2000	295,573	70,240	321,656	103,556
2001	435,001	103,374	476,624	153,320
2002	457,383	108,544	502,724	162,095
2003	487,840	115,076	513,222	165,053

Source: BLM State Office, Billings

## KEY INDUSTRIES IN THE PLANNING AREA AFFECTED BY BLM MANAGEMENT

### *Key Industry: Agriculture and Livestock Production*

One of the area's foremost industries is production agriculture and, in particular, livestock production. Among Montana's 56 counties, Beaverhead County is Montana's largest cattle producer and Madison County is in the top ten. The most recent Census of Agriculture (2002) indicated that the two-county area had 934 farms and ranches and nearly 56 percent of these (519 operators) were engaged in cattle production, with total current cattle numbers of about 333,000 head. The area produces very few "fat cattle," or grain fed cattle fattened for market. Calves and feeder steers are mainly produced and sold, along with beef cows or breeding stock. This type of cattle industry requires large expanses of grazing land. Sheep and lambs also are produced in the area with about 21,000 head and 79 operators.

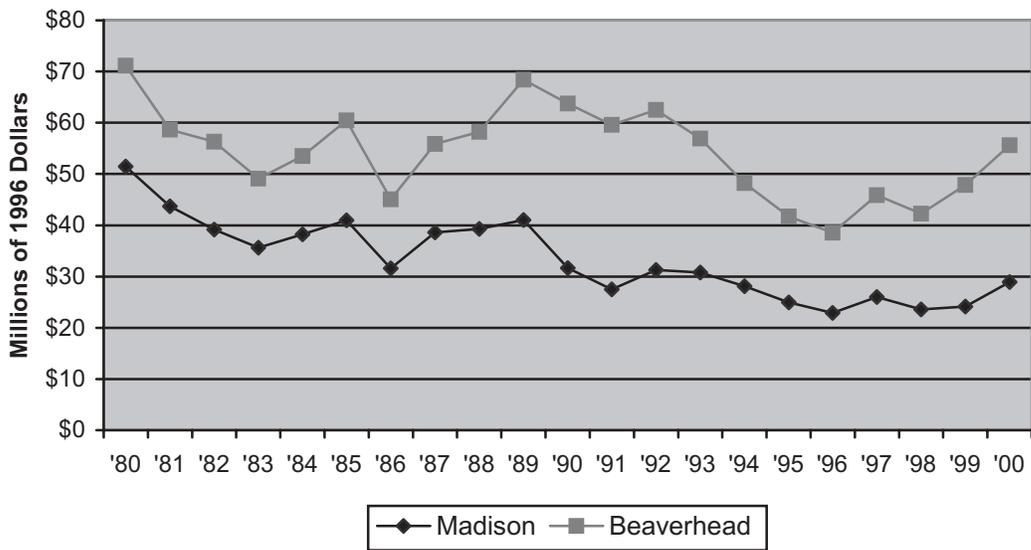
Livestock sales are the single largest source of cash receipts by agricultural producers in the area. In 2002, farms and ranches have produced and sold products and commodities totaling \$187 million annually as measured by cash receipts, with receipts from livestock sales accounting for 45 percent of these total cash receipts annually. Cattle prices rise and

fall based on market conditions which are influenced by numerous factors. **Figure 5** shows these fluctuations.

Year-to-year variability in sales largely reflects cattle price fluctuations. For example, calf prices have risen from around \$60 per hundredweight (Cwt.) in 1996 to more than \$100 in late 2002. Recent high prices are in part the result of a temporary ban on Canadian cattle imports resulting from an isolated case of Mad Cow disease in that country. However, cattle prices are volatile, as can be seen in the **Figure 6**, and are expected to fall in the near-term given the confirmation of an isolated case of Mad Cow disease in a Washington state herd.

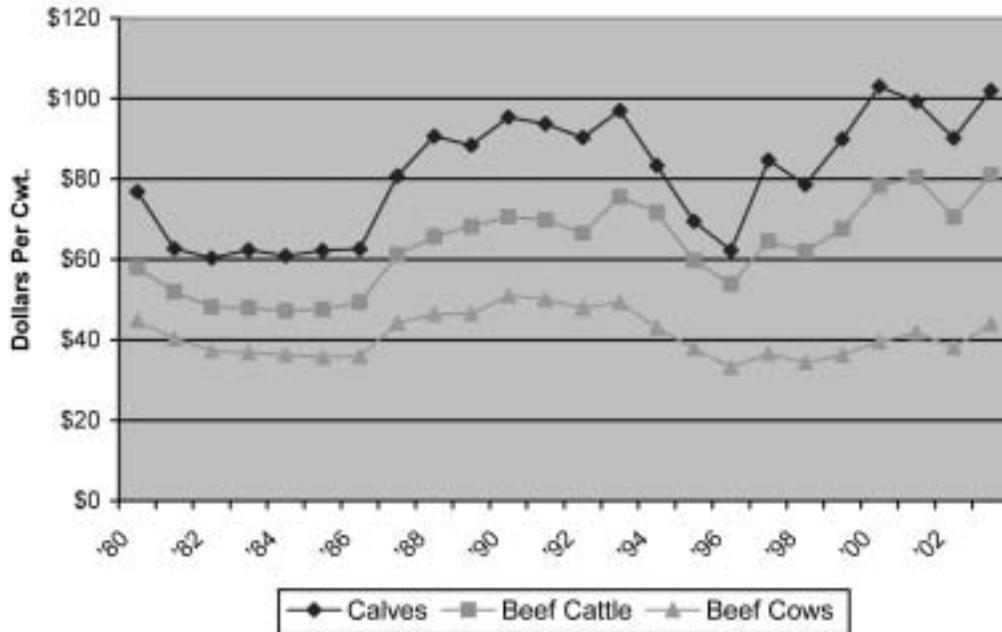
BLM's major contribution to the area's livestock industry is largely through provision of area grazing land, which accounts for about 21 to 22 percent of all area grazing land, according to BLM estimates. Private land in the planning area accounts for twice as much grazing acreage as BLM lands do, and grazing is also provided on lands administered by the Forest Service and to a lesser extent, the State of Montana. Currently, grazing on BLM involves 268 livestock operators grazing on 425 separate allotments, which is roughly half of all livestock producers in the area.

**Figure 5**  
**Livestock Annual Cash Receipts in Madison and Beaverhead Counties**



Source: REIS labor income data, Bureau of Economic Analysis, U.S. Dept. of Commerce

**Figure 6**  
**Cattle Prices Received in Montana**



Source: Montana Agricultural Statistics, National Agricultural Statistics Service (NASS)

AUMs are authorized by BLM on an annual basis. The established preference limit for AUMs in the planning area is 113,219. This preference is the maximum number of AUMs that ordinarily could be offered under ideal forage conditions. However, actual use AUMs ranging between 80,938 and 84,450 are what has been used in recent years due to factors such as drought, financial limitations on the part of operators, or implementation of grazing practices to improve range conditions. As a result, an average of 80,938 AUMs have been authorized annually between 1992 and 2001. **Table 51** provides AUM actual use numbers by year between 1992 and 2001.

<i>Year</i>	<i>Preference</i>	<i>Authorized (%)</i>
1992	113,219	78,973 (70%)
1993	113,219	76,704 (68%)
1994	113,219	78,176 (69%)
1995	113,219	80,227 (71%)
1996	113,219	83,691 (74%)
1997	113,219	82,829 (73%)
1998	113,219	84,450 (75%)
1999	113,219	81,558 (72%)
2000	113,219	82,443 (73%)
2001	113,219	80,328 (71%)

Source: BLM DFO records

The number of cows that could be grazed on BLM land year-round based on an average of 81,000 AUMs would total about 6,750 head, which is about three percent of the area's entire cattle/calf inventory.

Livestock producers operate within thin margins of profitability and from one year to the next may slip into negative net earnings. In the midst of this financial stress, federal grazing land is particularly valuable because of the low grazing fees assessed for the use of this land. Fees charged by BLM for grazing are calculated using the formula required under BLM grazing regulations found at 43 CFR 4130.8-1(a)(1) and are considerably less than those charged for private grazing land. In 2003 the statewide average fee for private grazing land was \$16 per AUM based on Montana Agricultural Statistics, National Agricultural Statistics Service figures, and the minimum fee charged on Montana State Lands was \$5.48 per AUM, which is up from a minimum of \$4.88 per AUM several years ago (D. Mousel, MT DNRC, personal communication 2003). BLM and the Forest Service use the same formula to get a charge of \$1.43 in 2004.

Based on the formula, BLM and Forest Service lands are the least expensive grazing lands available to area ranchers. Because of this, access to and use of these federal lands for grazing purposes is highly coveted by area cattle producers as a source of relatively inexpensive forage, even though additional management costs are usually incurred to use these lands.

#### **Key Industry: Forest Products**

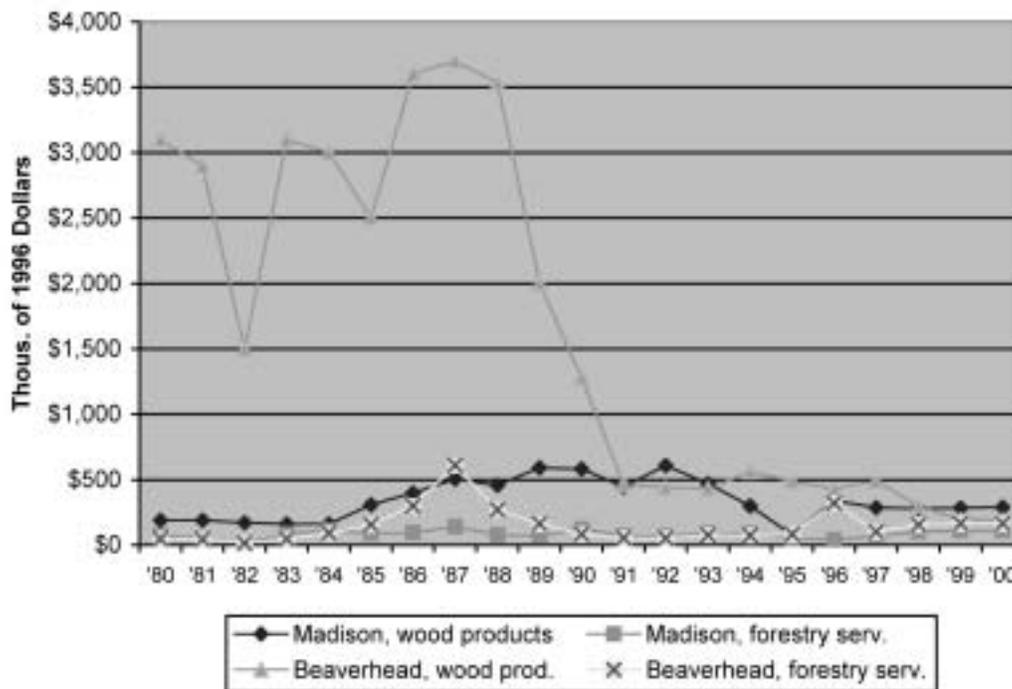
At present, the wood products industry in the two-county area is relatively small and DFO's contribution to this relatively small industry is likewise small in scope. Labor income data compiled by the U.S. Department of Commerce indicate that workers employed in various aspects of lumber and wood products manufacturing and logging earned only about \$290 thousand in 2000 in Madison and only \$190 thousand in Beaverhead. Persons employed in forestry services earned another \$110 thousand and \$165 thousand in Madison and Beaverhead Counties, respectively. This industry has shrunk considerably from where it was in the late 1980s and early 1990s.

As shown in **Figure 7**, the industry declined precipitously in Beaverhead County between 1987 and 1991, falling from \$3.7 million in labor earnings to \$470 thousand. Much of this decline can be attributed to significant cutbacks in logging activity on area national forests including the Beaverhead and Deerlodge National Forests.

Detailed data on the forest products industry in Montana and the larger region are compiled almost every five years by the University of Montana's Bureau of Business and Economic Research and U.S. Forest Service. The most recent report done in 1999 indicated that there were only three active lumber manufacturing facilities in Beaverhead County – two log home manufacturers and one post and pole manufacturer. Madison County had four log home manufacturers and two post and pole producers (BBER 2001). More recent estimates by DFO staff indicate that the industry has shrunk further to one area sawmill that produces dimension lumber and custom flooring, another mill producing insulation-filled logs for log home construction, and one post and pole manufacturer.

However, according to BLM staff, in past years when DFO timber sales were much larger than recently, virtually all of these sales went to large out-of-county producers, such as mills in Deerlodge in Powell County, Townsend in Broadwater County, and Livingston in Park County. Regional demand, beyond the two-county area, is estimated at well over 200 million board feet a year, with four large sawmills within 200 miles of Dillon. The 1998 census of the wood products industry by the Bureau of Business Research estimated that less than 20 percent of timber production originating in Beaverhead County went to production facilities in nine counties including Beaverhead and Madison Counties. Over 70 percent went to processors in Granite and

**Figure 7**  
**Area Forestry-related Labor Earnings**



Source: REIS labor income data, Bureau of Economic Analysis, U.S. Dept. of Commerce

Ravalli Counties. For Madison County the census estimated that less than 3 percent of all timber originating in the county went to processors in a nine-county area including Madison and Beaverhead Counties (BBER 2001). Most of the timber being produced in the study area is destined for production facilities outside of the area.

The periodic forest industry surveys by the Bureau of Business Research and the Forest Service also provide estimates of total timber production by county. The combined totals for Beaverhead and Madison Counties were 13 million board feet (MMBF) in 1981, 34 MMBF in 1988, 14 MMBF in 1993, and 13 MMBF in 1998. According to DFO staff, annual DFO timber sales during these survey years were 359 thousand board feet (MBF) in 1981, representing less than 3 percent of the 1981 total; 150 MBF in 1988, representing less than half of one percent of the annual total; and 44 MBF in 1993, representing less than half of one percent of the total. In the last survey year, 1998, the DFO total was zero.

**Table 52** shows logging and timber production activity on DFO-BLM lands since 1980 in thousands of board feet (MBF). The acres of BLM land affected by this cutting activity also are shown, as is the sales value of these timber sales in current or non-inflated dollars. The first two columns in the table show the annual volume of timber cut on the Beaverhead-Deerlodge National Forest, two-thirds of

which lies within the two-county area, and estimates of countywide timber production that are made every five years as part of regular censuses of Montana's wood products industry. DFO shares of these census estimates also are shown.

Over the 24-year period between 1980 and 2003, DFO timber sales totaled 22,210 thousand board feet (MBF). This is a relatively small share of the area's total timber production, and is equal to 3.2 percent of the timber coming from the area's single largest source of wood materials – the Beaverhead-Deerlodge National Forest. The average annual BLM sale during this period is 925 MBF affecting about 130 acres each year. The largest annual amount in recent years was sold in 2001 and totaled more than 1.5 MMBF, affected 551 acres, and generated sales revenue to BLM of nearly \$192 thousand which went into the U.S. Treasury – about \$60 per MBF of timber.

The most recent estimate of timber production within the two-county area is for 1998 at 13,000 MBF. The DFO average of 925 MBF a year is equal to about 7 percent of this two-county total. Cutting activity on the Beaverhead-Deerlodge National Forest has risen slightly more recently and it is probable that the volume of cutting in the two-county area has risen as well to around 14,000 or 15,000 MBF.

**Table 52**  
**Area and DFO Timber Sales Activity**

<i>Year</i>	<i>B-D N.F. MBF Vol./a</i>	<i>2-County MBF Vol./b</i>	<i>DFO-BLM MBF Vol./c</i>	<i>DFO-BLM Acres Affected</i>	<i>DFO-BLM Sales Value</i>
1980	41,700	n.a.	782	100	\$7,937
1981	43,100	13,000	359	29	3,087
1982	15,800	n.a.	2,738	195	34,071
1983	50,900	n.a.	2,678	346	28,703
1984	52,600	n.a.	None		
1985	46,700	n.a.	5,557	775	62,591
1986	58,500	n.a.	910	184	29,154
1987	50,300	n.a.	1,088	103	45,336
1988	47,500	34,000	150	23	5,520
1989	42,100	n.a.	227	40	15,657
1990	40,200	n.a.	None		
1991	21,200	n.a.	3,225	315	263,556
1992	17,300	n.a.	983	122	158,263
1993	14,900	14,000	44	10	3,520
1994	20,600	n.a.	347	59	76,524
1995	15,200	n.a.	181	25	21,720
1996	13,600	n.a.	1,352	207	328,026
1997	12,400	n.a.	None		
1998	14,300	13,000	None		
1999	15,200	n.a.	None		
2000	12,800	n.a.	None		
2001	10,600	n.a.	1,534	551	191,592
2002	15,600	n.a.	None		
2003	15,000 estimate	n.a.	55	55	5,225
<b>Totals</b>	<b>688,100</b>		<b>22,210</b>	<b>3,139</b>	<b>\$1.28 mil.</b>
<b>24- yr. Average</b>			<b>925</b>	<b>131</b>	

Sources:a/Region 1, Forest Service, Timber sales program statistics; b/ Bureau of Business Research, U. of MT., Mt. Forest Products Industry Census; and c/ Dillon Field Office, BLM

Labor earnings in the two-county area in 2000 by those employed in area wood products manufacturing of all types was under \$500 thousand annually and earnings by those employed in private forestry services was under \$300 thousand annually. These earnings are much less than what they were in the mid and late 1980s, prior to considerable consolidation and decline in the industry. At the state-level, comparing annual levels of total labor earnings by wood products industry workers with estimates of industry sales taken from periodic industry censuses, the ratio of labor earnings to sales has fallen from over 45 percent in the late

1970s and late 1980s to around 33 percent in the mid and late 1990s. Based upon this ratio, the value of sales from wood product industry employment in the two-county area would approximate \$1.5 million. Adding to this the value of forestry services, the total value of production by the wood products and forestry industry in the two-county area can be estimated at under \$2 million annually.

**Key Industry: Mining**

Mining has a long history in the two-county area, particularly in years past when there was extensive hard rock min-

ing in the area including the mining of gold and silver. However, the planning area’s mining industry is presently modest in size, with the largest component being “non-fuels/non-metals” mineral production as shown in **Figure 8**. There is very little labor income generated locally in metal mining or oil and gas exploration and extraction. Talc production is currently the only significant mineral producing activity in the area. It is occurring at the Treasure Mine located on BLM and patented claims and the Regal Mine located on private estate. There is currently only one metal producing mine in the area – a small placer gold operation near Bannack.

The mining industry has been largely expanding over the course of the last twenty years in Beaverhead County, while contracting in Madison County. Mining workers in Beaverhead County earned about \$2 million in 1980. In more recent years, this has reached \$8 to \$10 million annually, with this growth almost entirely concentrated in non-metals/non-fuels mineral mining. Mining workers in Madison County earned as much as \$7.5 million in 1988, but this fell to less than a half a million dollars in the mid-90s and rose to only \$1.3 million in 2000.

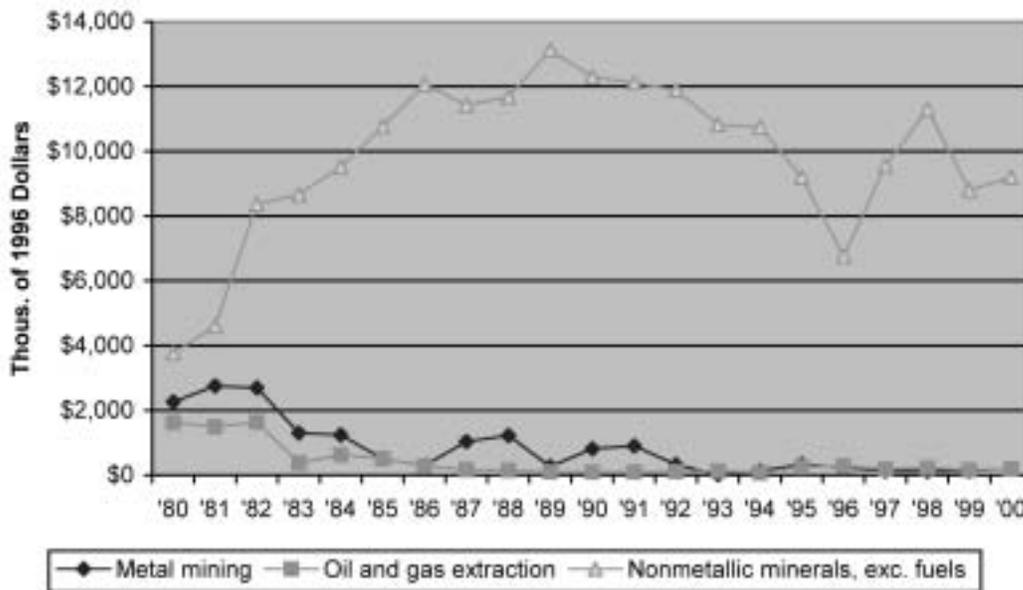
There is currently very little mineral mining activity on any BLM lands in the study area. However, some mineral prices and oil and gas prices have risen significantly in the last few years, which is generating some interest in potential area exploration. There is no area coal production and development potential is very low, according to BLM staff. Coalbed natural gas potential also is considered very low. The area has no oil and gas wells in production and there

has been very little exploration drilling. However, BLM estimates that around 190,000 acres in the planning area has moderate potential for oil and gas development. Because of this, the primary activity to be evaluated under this economic study is the projection regarding potential oil and gas development.

A report was recently done for the U.S. Forest Service examining the requirements of oil and gas exploration and development in Montana’s Lewis and Clark National Forest area (USDA-FS 1997c). That report generally describes the types of activities necessary for oil and gas development, which are generally applicable to what would be involved in the study area. Oil and gas exploration and development involves five stages: (1) preliminary investigation (surveys and seismic and other testing), (2) exploratory drilling (initial drilling in areas of greatest potential using large drilling rigs and sometimes involving some new road construction for access), (3) development, (4) production, and (5) abandonment. According to the report, wells that go to depths of 20,000 feet or more can take 400 to 500 days to drill. More modest wells of 6,000 to 8,000 feet take around 120 days and drilling occurs 7 days a week, 24 hours a day.

After well drilling is complete, testing follows to determine whether production may be feasible. If commercial quantities of oil or gas are present, the well is completed as a producer. This is done at considerable cost, involving construction of facilities to store and transport the oil or gas including pipelines. The life of a producing well then ranges from 25 to 40 years.

**Figure 8**  
**Area Mining Industry Sub-sectors**



Source: REIS labor income data, Bureau of Economic Analysis, U.S. Dept. of Commerce

BLM projects that six wildcat exploration wells could be drilled in the planning area within the next 10 to 15 years, with four of these dry holes and the other two resulting in gas discoveries. Two wells would then be drilled for each discovery to “step-out”, or more fully determine, the extent of the discoveries. In order to reach the depths of potential oil and gas resources in the area, these wells would need to be drilled beyond 5,000 feet.

**Key Industry: Travel, Tourism and Recreation**

The area in and around Madison and Beaverhead Counties is one of Montana’s most highly valued areas for a wide range of recreation activities including hunting and fishing, rafting and canoeing, hiking and camping, and general recreation. These activities are done by large numbers of both area residents and non-residents and can be seen as anchoring the primary components of the area’s larger travel and tourism industry.

DFO staff estimate that there are roughly 335,000 visits annually to BLM lands in the planning area by persons involved in fishing and hunting, camping, floating, hiking, and general recreation. These activities occur in this area because of the large expanses of open and relatively undeveloped lands, including federal and state lands, and because of the quantity of fish and wildlife sustained by habitats and ecosystems within these lands. It is impossible to separate the varying contributions made to area hunting, fishing, and outdoor recreation by BLM lands since the fish and wildlife they sustain generally move freely across varying jurisdictions and boundaries. However, DFO managed lands account for about 15 percent of the area’s entire land base and, as such, can be generally attributed with contributing or helping sustain at least an equal proportion of the area’s land-based tourism and recreation industry.

Hunting activity in the area serves as one indicator of the contribution that recreation activities make to the planning area economy. The Montana Fish, Wildlife and Parks Department (FWP) has divided the state into seven regions and the planning area lies within Region 3. Beaverhead and Madison Counties make-up about 60 percent of the area contained in Region 3. FWP also compiles more detailed statistics on hunting activity by hunting district. Each county roughly includes eight hunting districts. FWP also has been conducting periodic surveys of hunter expenditures, with the most recent survey done for 2002. The surveys are carefully conducted in order to provide sample data that is representative of hunter expenditure patterns statewide. Using these statewide norms as a guide, expenditures by resident and non-resident hunters are estimated. However, while these estimates provide some sense of the scope of economic activity associated with area hunting, the estimates include all hunter expenditures in the state while hunting and there is no way of determining what proportion of these expenditures are made in the area where the hunting is taking place.

**Table 53** shows counts of hunters and FWP estimates of total hunter days associated with hunting elk, deer, and antelope in these sixteen districts. Hunting license revenue associated with big game hunting in the two-county area and expenditures based on total hunting days is estimated at the bottom of the table.

In 2002 there were 40,530 persons that engaged in big game hunting in the two-county area for an estimated total of 216,427 hunting days. License revenues totaled an estimated \$4.5 million, with non-durable expenditures such as food, lodging, fuel, and guide services adding over \$23 million. These expenditure estimates do not include durable purchases for items like guns and other equipment.

In addition to these big game categories, FWP data on upland game bird hunting in the two counties indicate that these hunters totaled 1,550 in 2002 for a total of 11,835 hunter days. Resident upland bird hunters spend about \$52.08 each day while hunting and non-residents spend over \$308 daily.

Considering the full range of hunting activity in the area, annual expenditures by all hunters (big game and upland game bird) using the area probably approach \$30 million annually, and license fees add over \$4.5 million to State of Montana coffers.

While the counts of hunting activity in the area are large, they are dwarfed by even larger counts of angler activity tied to the area’s highly valued fishing streams and lakes. FWP data on the number of “angler days” spent fishing streams and lakes in Madison and Beaverhead Counties place these at 600,000 to 850,000 a year, with expenditures by these anglers estimated at between \$45 and \$65 million annually. Combining estimates for all hunters and anglers, these expenditure could be expected to total almost \$100 million annually. While these expenditures are not all occurring in the two-county area, those that do result in considerable economic activity and income infusion into local area retail businesses, restaurants and food stores, motels and other lodging facilities, and local area guide services. If the percentage of land managed by BLM in the two-county area is used to reflect a proportional contribution to the travel, tourism and recreation economy, BLM’s contribution could be estimated at \$15 million annually.

Growth and change in an area’s lodging industry also provides one indicator of economic activity associated with travel and tourism. Since 1987 the State of Montana has been imposing a lodging industry tax of 4 percent of receipts. Total lodging industry receipts for each of the counties can be estimated using this tax data.

**Figure 9** shows that Madison County lodging industry revenue has steadily grown from under \$1.4 million in 1990 to more than \$2.3 million in 2002. In Beaverhead County, lodg-

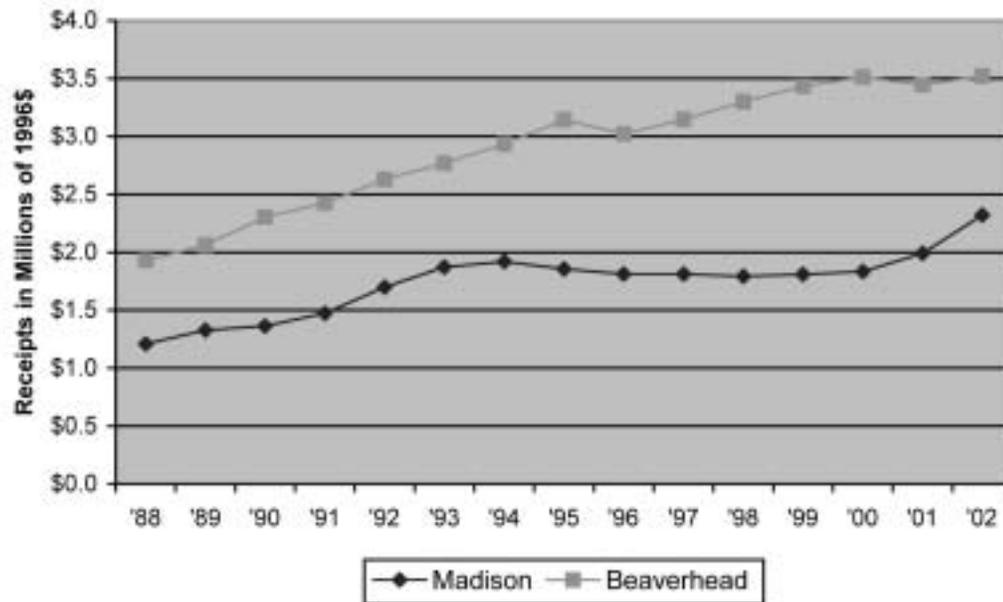
**Table 53  
Large Game Hunting Activity in Beaverhead and Madison Counties in 2002**

Hunting Dist.	Elk Hunters		Deer Hunters		Antelope Hunters	Elk Hunter Days		Deer Hunter Days		Antelope Days	Total Hunters	Total Hunting Days
	Residents	Non-res.	Residents	Non-res.		Residents	Non-res.	Residents	Non-res.			
Beaverhead												
300	836	268	341	74	377	3,479	1,116	1,819	339	1,123	1,896	7,876
302	524	343	350	225		2,523	1,575	1,834	1,033		1,442	6,965
321	1,513	352	352	107	334	7,737	2,184	2,183	607	842	2,658	13,553
325	1,137	321	925	235		5,765	1,733	5,286	1,221		2,618	14,005
328	812	373	244	141		4,564	1,885	1,372	842		1,570	8,663
329	1,561	617	519	329	174	8,331	3,418	2,914	1,912	549	3,200	17,124
331	1,787	505	1,180	221		12,846	2,718	8,108	1,335		3,693	25,007
332	1,441	568	358	188		8,783	3,078	1,991	1,164		2,555	15,016
	9,611	3,347	4,269	1,520	885	54,028	17,707	25,507	8,453	2,514	19,632	108,209
Madison												
320	866	242	1,381	205	223	5,784	1,116	8,286	933	671	2,917	16,790
322	423	163	1,241	161		2,310	753	5,272	668		1,988	9,003
323	896	364	238	124		4,232	2,102	1,083	654		1,622	8,071
324	2,033	836	507	225		11,392	4,593	2,908	1,043		3,601	19,936
326	771	353	774	248		3,475	1,841	3,524	1,067		2,146	9,907
327	1,428	422	195	111		7,141	2,262	1,051	735		2,156	11,189
330	1,169	605	544	392	389	6,037	3,273	2,960	2,133	923	3,099	15,326
333	917	162	2,146	144		5,597	827	10,945	627		3,369	17,996
	8,503	3,147	7,026	1,610	612	45,968	16,767	36,029	7,860	1,594	20,898	108,218
2-county totals	18,114	6,494	11,295	3,130	1,497	99,996	34,474	61,536	16,313	4,108	40,530	216,427
Hunting License Fees per Hunter	\$16.00	\$628.00	\$13.00		\$14.00	Estimated Expenditures Per Hunter Day		\$51.79	\$143.68	\$82.92		
Total License Revenues	\$289,824	\$4,078,232	\$146,835		\$20,958	Total Expenditures	\$6,682,733	\$10,827,939	\$3,186,949	\$340,635	\$4,535,849	\$23,382,108

Note: Non-residents licenses (Big Game Combo, covering elk, deer, upland birds, and seasonal fishing - \$628 general with lottery drawing and a 50% chance of getting a permit, or \$1,100 for a guaranteed license through an outfitter). Resident licenses (\$16 for an Elk tag, \$13 for a Deer tag, and \$14 for an Antelope tag/non-resident Antelope tag is \$203). Daily expenditures for hunter categories are compiled through systematic surveys by MFWP and are expenditures for non-durables only (lodging, food, fuel, etc.). Expenditures for durables (guns, equipment, etc.) are not included. Expenditure data are for 2002.

Source: Montana Fish, Wildlife and Parks (personal communications with MFWP staff regarding sub-district data files)

**Figure 9**  
**Area Lodging Industry Receipts**



Source: Bed tax revenue data, Montana Dept. of Revenue

ing industry receipts grew from \$2.3 million in 1990 to over \$3.5 million in 2002. Labor earnings by workers employed by hotels, motels, and other lodging establishments in Madison County have risen from less than one million dollars in the mid-80s to just under \$2 million annually more recently. Lodging labor earnings also are generally expanding in Beaverhead County, rising from less than one million dollars in 1990 to about \$1.8 million in 2000. Labor earnings for eating and drinking establishments have risen, reaching \$2.2 million in 2000 in Madison and \$2.5 million in Beaverhead. Workers employed by amusement and recreation service providers earned \$1.3 million in Madison in 2000, up considerably from levels of one million or less annually prior to 1997. These workers earnings also are up in Beaverhead County, totaling about \$1 million annually in recent years. Trends in a variety of sub-sectors heavily influenced by travel and tourism related activity indicate that this is largely a gradually expanding segment of the area economy.

Studies by the University of Montana's Institute for Tourism and Recreation Research (ITRR) have estimated that roughly \$1.5 billion is spent statewide by nonresidents visiting Montana. This is about \$1,740 for every resident of the state. Little data has been prepared at the county level, although ITRR recently prepared a research report on tourism potential in Beaverhead County. Using survey data on nonresident visitation in Montana for 1998, the report concluded:

- In 1998 over 3.8 million travel groups visited Montana and, of those, approximately 500,000 (13 percent) traveled through Beaverhead County.
- In Beaverhead County nonresident visitors spent about \$18.6 million or about \$2,072 per county resident. Non-resident travel groups to Beaverhead County tended to spend at least one night there on average, spent an average of \$90 per day while in Montana and stayed an average of 4 nights in the state.
- Travelers to Beaverhead County tended to stay in Montana longer than statewide and over half of these visitors were in Montana for vacation, recreation, and/or pleasure.
- Primary attractions for travelers to Beaverhead County were the mountains, rivers, fishing, uncrowded areas, and Glacier National Park (passing through to visit the Park).
- Visitors to Beaverhead County spent most of their money on fuel, lodging, and in restaurants and bars.

Source: *Beaverhead County Explores Tourism Potential*, Institute for Tourism and Recreation Research, University of Montana, January, 1999

#### **Summary**

The biggest contributions to area economic activity from BLM management and land use in Beaverhead and Madison Counties are tied to agriculture and use of BLM land for livestock grazing and production, and recreation and tour-

ism where BLM land is directly used by many recreationists for hunting, fishing, and other types of recreation.

The forest products industry in the two-county area is relatively small, and the mining industry contributions are only slightly greater. Expenditures for exploration and drilling for oil and gas resources could approach \$12 million based on projections, and there would be additional benefits to local employment and local governmental revenues if some gas production is achieved, however, these would be limited in scope.

The two-county combined economy is relatively diverse (as indicated by the number of economic sectors) and stable (as indicated by relatively low seasonal unemployment, stable population, lack of fluctuating income growth). The local economy does not indicate a dependency on one or a few industries that dominate the economy. In 2000, economic diversity within the two-county economy was indicated by economic activity in 128 industry sectors; 80 of these sectors had output greater than \$1 million. A check of economic dependency indicates that 20 industry sectors had industry output greater than \$10 million and 28 sectors had employment in excess of 100 (based on data from USDA, Forest Service, Beaverhead Deerlodge Draft Forest Plan Revision, IMPLAN analysis, Sept. 15, 2004). The total number of jobs and the total amount of labor income stimulated by casual and authorized uses on BLM lands amount to about 5 percent of the total jobs and 7.6 percent of the total labor income reported in 2000 in Beaverhead and Madison counties.

## ENVIRONMENTAL JUSTICE

### (BLM Critical Element)

#### Laws, Regulations, and Policies

- Executive Order 12898 (Environmental Justice)
- BLM Instruction Memorandum 2002-164 (Guidance to Address Environmental Justice (EJ) in Land Use Plans and Related National Environmental Policy Act (NEPA) Documents)

Executive Order 12898, Environmental Justice, requires that Federal agencies “identify and address the... disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations.” BLM has recently developed an instruction memo containing guidance for evaluating environmental justice issues in land use planning (IM No. 2002-164).

## Affected Environment

Environmental justice refers to the fair treatment and meaningful involvement of people of all races, cultures and incomes with respect to the development, implementation and enforcement of environmental laws, regulations, programs and policies. It focuses on the consideration of environmental hazards and human health to avoid disproportionately high and adverse human health or environmental effects on minority and/or low-income populations. Black/African American, Hispanic, Asian and Pacific Islander, American Indian, Eskimo, Aleut, and other non-white persons are defined as minority populations by the Interagency Working Group convened under the auspices of the Executive Order. Low-income populations are defined as persons living below the poverty level based on total income of \$13,359 for a family household of four based on the 2000 census.

None of the defined minority populations represented more than 3 percent of the population in Beaverhead or Madison County based on 2000 census numbers. There are no Indian Reservations located in or in close proximity to the planning area. Members of the Shoshone-Bannock Tribes of the Fort Hall Reservation (approximately 110 miles to the south of the planning area) and the Confederated Salish-Kootenai Tribes of the Flathead Reservation (approximately 180 miles to the north of the planning area) are known to use resources on public lands in the planning area for cultural (and to a lesser extent subsistence) purposes. The Fort Hall Reservation (Idaho) had a 2000 American Indian population of 3,648 and the Flathead Reservation had a 2000 American Indian population of 6,999. See the sections on *Cultural* and *Tribal Treaty Rights* for more information.

In 1999, 14.6 percent of the persons living in the state of Montana had incomes below the poverty level. This compares to 12.1 percent for Madison County and 17.1 percent for Beaverhead County. The average per capita income was \$17,151 for the State compared to \$16,944 for Madison County and \$15,621 for Beaverhead County.

## HEALTH AND SAFETY

There are three main topics under this section: Abandoned Mine Lands, Debris Flows, and Hazardous Materials. Each of these topics is discussed separately.

### Abandoned Mine Lands (AML)

#### Laws, Regulations, and Policies

BLM Abandoned Mine Lands (AML) are managed, remediated, and administered under the following major laws and guidance:

- Federal Land Policy and Management Act of 1976
- National Environmental Policy Act of 1969 (42 U.S.C. 4321)
- National Oil and Hazardous Substances Pollution Contingency Plan
- Surface Mining Control and Reclamation Act
- Comprehensive Environmental Response Compensation and Liability Act
- Clean Water Action Plan: Restoring and Protecting America's Waters
- BLM Instruction Memorandum 2000-012, "*Policy and Procedures for Prioritizing and Funding Abandoned Mine Land Cleanup Projects Under the Clean Water Action Plan*," issued October 27, 1999. Extended on July 18, 2000 under IM-2000-166
- BLM Instruction Memorandum 2000-182, "*Mitigating and Remediating Physical Safety Hazards at Abandoned Mine Land Sites*," issued August 24, 2000.

Reclamation activities at AML sites incorporate federal and state cleanup requirements. The standards, requirements, criteria, or limitations used to conduct reclamation activities are commonly referred to as applicable or relevant and appropriate requirements (ARAR) and are described in detail in **Appendix I**.

The Western Montana Zone (WMZ) staff located in the Butte Field Office conducts the AML program for the Dillon Field Office (DFO), Butte Field Office and Missoula Field Office. Abandoned mine land sites in the planning area are identified and prioritized with other sites located on public lands in western Montana. The priority for reclamation is based on threats to human health and the environment as well as risks to the public from physical safety issues.

## Affected Environment

The BLM's Abandoned Mine Lands (AML) program is a relatively new program that addresses the environmental and safety hazards associated with AML sites on public lands. Old mine workings are found throughout Montana on lands administered by the BLM, Forest Service, the State of Montana, and private lands patented under the 1872 Mining Law.

These mineral rich mining districts had little environmental protection from early mining practices. Federal land management agencies had no requirements for performing reclamation at the time most of these mines were abandoned on public lands. Their closures were often inadequate or non-existent. Today, low mineral prices and exhausted lodes have left many abandoned adits shafts, and pits. While most of these mines are small and their waste is inert, some abandoned mines are a threat to human health and the environment as well as a risk to the public from safety hazards associated with the abandoned mines.

## GOALS

The BLM's Strategic Plan calls for remediating 375 AML sites nation-wide. The BLM's 10-year goal is to eventually evaluate every known AML site on public lands and address all environmental and physical safety hazards present. The Dillon Field Office will continue to assess and characterize all known AML sites on their existing inventory as well as sites that were missed during the initial inventory. The Dillon Field Office does not have the staff or funding available to immediately address the reclamation of all AML sites and will continually prioritize all sites based on risks to human health and safety and the environment.

The BLM's priority for reclamation of environmentally contaminated sites is based on risk assessments that address threats to human health and the environment. Abandoned mine land sites that impact water quality are usually a greater concern and receive a higher priority for reclamation than sites that do not impact water quality.

The BLM's priority for addressing physical safety threats to the public are AML sites where (1) a death or injury has occurred (and the site has not already been addressed) or (2) where the mine is situated on or in immediate proximity to developed recreation sites and areas with high visitor use.

BLM policy requires managers to exercise discretion and consider potential impacts to physical safety and environmental risks at AML sites in future recreation management area designations, land use planning assessments, and all other applicable use authorizations.

## HAZARDS/RISKS

There may be some hazards and risks to human health and the environment at abandoned mine sites. Some of the threats to human health and the environment are a result of acid drainage, heavy metal contamination, metal contaminated tailings impoundments, stored chemicals, and leaking containers. An alteration or loss of natural habitat for many native wildlife species can occur because of changes in vegetation or aquatic habitat as a result of soil loss or changes in the chemical composition of soils near AML sites. Abandoned mine lands may also impact surface and ground water flows and water quality. Impacts to water quality are generally the result of contaminated sediments or metal salts that can affect human health, fisheries, wildlife, and vegetation. Air pollution from contaminated dust can occur on tailings impoundments and waste rock piles near abandoned mill sites. There may also be releases or potential releases of hazardous substances from waste materials and acid drainage beyond AML sites.

Physical safety risks associated with abandoned mines are open features including adits, shafts pits, and highwalls; unstable and decayed support structures in mines and buildings; deadly gases and lack of oxygen; explosives and toxic chemicals.

### AML INVENTORY

In 1995, the DEQ, Mine Waste Cleanup Bureau completed an inventory and preliminary assessment of what was thought to be the 300 worst AML sites in the State of Montana (Pioneer Technical Services 1995). In 1997, the BLM, in cooperation with the Montana Bureau of Mines and Geology (MBMG), completed an inventory of all AML sites on public lands that were thought to be a threat to human health or the environment. Since completion of the DEQ and MBMG inventories, the WMZ Office has identified the hazards at most AML sites and prioritized the sites for reclamation on public lands in western Montana

In Beaverhead and Madison Counties there are 441 mine sites on or near BLM lands that have been identified in the BLM's inventory. Mine sites that are near BLM lands and could be a threat to human health or the environment on adjacent public lands are also identified in the BLM inventory. Until a more thorough reclamation investigation is completed on a specific mine site, any site that may impact public land, will remain on the inventory list. Currently 11 sites in the planning area are listed as having environmental issues. The sites of environmental concern are Rochester/Nez Perce (includes 6 mine sites), Ermont (includes 4 mine sites), and the Short Shift. Four additional mines (the Broadway, Victoria, Buckeye, and Boaz) are located predominantly on private lands and may impact adjacent public lands. Currently, 28 of the listed mines are known to have physical safety concerns. These 28 mines contain 197 dangerous features such as open adits or shafts. While the number of mines with environmental problems has been identified through the BLM's inventory, mines with safety hazards may not have been found during the initial inventory. The BLM staff and the public frequently report new sites that will require assessment and prioritization based on risks to human health and the environment.

### RECLAMATION ACTIVITIES

Reclamation funding was first acquired in 1997. Since that time the BLM has been actively reclaiming hard rock AML sites that have significant environmental problems and restoring contaminated watersheds in Western Montana. Many of the sites that have been reclaimed, or still need to be reclaimed, involve mixed land ownerships and the work will require the cooperation of numerous private, federal and state landowners.

Abandoned mine lands that are a threat to human health and the environment are reclaimed under the guidelines of the National Oil and Hazardous Substance Pollution Contingency Plan (NCP). These reclamation projects are considered non-time critical removal actions. An engineering evaluation/cost analysis (EE/CA) is generally written for all removal actions and used to analyze mitigation alternatives for a site. The EE/CA discusses the environmental issues and impacts for abandoned mine land reclamation. A risk assessment and the cost of reclamation for each alter-

native identified in the EE/CA are used in the evaluation of alternatives and selection of a preferred alternative that protects human health and the environment. Additional criteria used to analyze and select a reclamation alternative are: overall protection; compliance with regulation; short and long-term effectiveness; reduction in toxicity, mobility, or volume; implementability; cost agency acceptance; and community acceptance. Reclamation activities at AML sites incorporate federal and state cleanup requirements.

Abandoned mine land sites that are not a threat to human health and the environment, but may be a risk to the public because of physical safety issues, are reclaimed under the guidelines of the National Environmental Policy Act (NEPA).

Two basic types of reclamation activities are commonly used for abandoned mine sites. The first type of reclamation that is commonly used is on-site or off-site removal of waste sources to a mine waste repositories and revegetation of all disturbed areas. A second type of reclamation that is often used is in-place reclamation with subsequent revegetation. Removal activities are designed to eliminate a source of waste from a site and are often conducted to alleviate the most acute or toxic contaminated materials. In-place reclamation activities are designed to minimize, stabilize, or mitigate the contaminated materials to reduce exposure and risks to the public.

On-the-ground actions the BLM may take to deal with physical safety hazards that are a risk to the public include posting warning signs and fencing, permanent closures of adits and shafts, backfilling of high walls, drainage of impoundments, removal of leftover equipment and debris, and revegetation to help offset erosion and improve stability. If a site is not an extreme hazard, a sign or fence may be all that is necessary to reduce the risks from safety hazards to the public.

The reclamation and remediation of AML sites is often complex due to a number of factors. Factors that often impact the reclamation of AML sites include the high cost of reclamation at many sites, legal liability, the complex issues such as chemistry of the waste materials left on site, and the fact that many projects are a mix of public and private land. Many projects are the result of much effort and negotiations on the part of the land management agencies, the regulatory agencies, and the adjacent landowners.

### POTENTIALLY RESPONSIBLE PARTIES

The BLM's policy is to identify potentially responsible parties (PRPs) who are liable for hazardous substance releases affecting BLM lands or resources. After a PRP is identified, the BLM must ensure that the PRP remediates and reclaims the abandoned mine site, or reimburses BLM for costs incurred to clean up the hazardous substance release. If a there is no feasible PRP present, the BLM and/or the State will

fund the reclamation of AML sites that are a threat to human health or the environment.

### **WATERSHED APPROACH**

Several years ago, the Department of the Interior adopted a “watershed approach” for dealing with abandoned mines and water quality issues. Using this approach, the States take the lead in identifying and setting priorities for cleaning up polluted watersheds, and then the Federal land management agencies and the State work with private landowners to coordinate cleanups by leveraging their funds.

The watershed approach provides a mechanism to address the complex, inter-related issues that are critical to water resource protection. It addresses water issues that cross jurisdictions and political boundaries, integrates concerns about water quality and water quantity, and brings together issues from all of the physical sciences. The watershed approach is the most cost effective and efficient method to remediate water quality impacts from abandoned mines. It enables cooperating federal and state agencies to more effectively target appropriate solutions to problems impacting water quality, and aquatic and human resources, by using a risk-based site assessment. It also pools limited funding sources.

### **CURRENT ACTIVITIES IN THE PLANNING AREA**

The Rochester Mining District and Ermont Mining District are two abandoned mine sites in the planning area that are scheduled for remediation and reclamation in the next several years. Both of these sites are relatively extensive and pose a potential risk to surface and ground water due to residual metals and chemicals in the tailings and waste dumps. There are also numerous human safety risks from such things as open shafts and adits, highwalls, and other physical hazards. Both sites will be major projects and involve a substantial amount of funding for site characterization, planning, and reclamation.

In addition to the two watersheds mentioned above, the AML program has several other smaller watersheds and sites that are being evaluated for potential hazards and risks to the public. The AML program will continually evaluate hazards, analyze risks, and re-prioritize sites as necessary, and respond to dangers associated with abandoned mines in the DFO.

#### ***Public Awareness***

In addition to field projects, the BLM works in cooperation with other Federal and State agencies to conduct a public awareness campaign to warn visitors about the dangers AML sites can pose. The objective is to raise awareness of AML safety risks and concerns among middle school-aged children and teachers. The BLM publishes an educational brochure explaining to the public the high risks of exploring AML sites, with the bottom-line message of “*Stay Out and Stay Alive!*”

## **Debris Flows**

There are no known areas of public land in the planning area subject to debris flows therefore this plan will not address this concern.

## **Hazardous Materials □ (including BLM Critical Element Wastes, □ Hazardous and Solid) □**

### **Laws, Regulations, and Policies**

Major authorities guiding the BLM’s hazardous materials management program include the following:

- National Environmental Policy Act of 1972 (42 U.S.C. 4321)
- Federal Land Policy and Management Act of 1976 (43 U.S.C. 1701 et seq.)
- Emergency Planning and Community Right-to-Know Act of 1986 (42 U.S.C. 11001)
- Pollution Prevention Act of 1990 (42 U.S.C. 13101)
- Comprehensive Environ. Response, Compensation, and Liability Act (1980, as amended) (42 U.S.C. 9601 et seq.)
- Resource Conservation and Recovery Act of 1976, as amended (42 U.S.C. 6901 et seq.)
- Toxic Substances Control Act of 1976 (15 U.S.C. 2601 et seq.)
- Clean Water Act of 1972, as amended (33 U.S.C. 1251 et seq.)
- Clean Air Act of 1970, as amended (42 U.S.C. 7401 et seq.)
- Uranium Mill Tailings Radiation Control Act of 1978, as amended (42 U.S.C. 2014 et seq.)
- Safe Drinking Water Act of 1974, as amended (42 U.S.C. 300 et seq.)
- Nuclear Waste Policy Act of 1982 (42 U.S.C. 10101 et seq.)
- Transportation Safety Act of 1974; Hazardous Materials Transportation Act amendments of 1976 and 1990 (49 U.S.C. 1801 et seq.)
- Atomic Energy Act of 1954 (42 U.S.C. 2001f)
- Federal Insecticide, Fungicide, and Rodenticide Act of 1975 (7 U.S.C. 136 et seq.)
- Recreation and Public Purposes Act of 1926, as amended in 1988 (43 U.S.C. 869)
- Occupational Safety and Health Act of 1970 (29 U.S.C. 651 et seq.)

The Hazardous Materials program coordinator for the Western Montana Zone (WMZ) office, located in Butte, addresses hazardous materials management (HMM) issues. The Dillon Field Office (DFO) employs one Collateral Duty Hazardous Materials Specialist that spends a limited amount of time

dealing with hazardous materials issues. When the public or DFO staff discover a hazardous materials problem, the DFO specialist works with the Butte HMM coordinator and the Dillon staff specialists to resolve the problem.

The hazardous materials staff works closely with law enforcement to try to find the person or persons responsible for hazardous materials dumping or spilling. If the person(s) is discovered, penalties can range from paying for the cost of clean up to criminal charges. The BLM works with the Montana Department of Environmental Quality on hazardous materials issues. The BLM coordinates with the Montana Department of Environmental Quality, Water Quality Bureau, Mine Waste Cleanup Bureau, and other State or Federal agencies as needed.

Hazardous Materials Management staff members seldom sample or cleanup hazardous materials from a site. The BLM usually contracts cleanup to highly qualified contractors that specialize in this type of work. When an incident is reported, BLM staff will take the initial report, view the site from a distance, and coordinate the cleanup with a qualified contractor.

**Affected Environment**

Hazardous materials on public lands can come in many different forms. Hazardous materials on public lands can be a threat to human health and the environment and costly to remediate.

The HMM program focuses on immediate threats to public health and the environment from spills, dumping, discovery of explosives, etc. The Abandoned Mine Lands (AML) program focuses on the longer term clean up of mine related waste materials that may be considered hazardous to human health and the environment. If hazardous materials are present at abandoned mine sites they are most often considered non-time critical removal actions under the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) rather than emergency removal actions that are typical of many hazardous materials problems. The AML program also focuses on physical safety dangers from open shafts, adits, and pits.

**GOALS**

The goals of the Montana/Dakotas BLM hazardous materials management program are to:

- Prevent the occurrence of hazardous materials/waste incidents on public land.
- Prevent illegal dumping of hazardous wastes on public lands.
- Ensure protection of human health and the environment when dealing with hazardous materials/wastes on public lands and BLM facilities.

- Minimize the generation or release of hazardous wastes and pollution on BLM public lands and BLM facilities.
- Remediate or remove existing hazardous sites such as problematic mines, landfills, or dumps.

**POTENTIAL SOURCES OF HAZARDOUS MATERIALS**

Hazardous materials or hazardous material sites can be generated from the activities described in **Table 54**.

<b>Table 54 Activities and Associated Hazardous Materials</b>	
<i>Potential Hazard</i>	<i>Examples</i>
Hazardous materials associated with historic and active mine operations	<ul style="list-style-type: none"> <li>• Acid rock drainage</li> <li>• Chemicals associated with processing ore or used in laboratories (ie. cyanide)</li> <li>• Explosives such as dynamite, ammonium nitrate, caps, and boosters</li> <li>• Heavy metals</li> <li>• Asbestos</li> </ul>
Military operation	<ul style="list-style-type: none"> <li>• Unexploded ordinances</li> <li>• Aircraft wreckage</li> </ul>
Illegal dumping	<ul style="list-style-type: none"> <li>• Unauthorized landfills</li> <li>• Dumping of barrels or other containers with hazardous substances on public land</li> </ul>
Illegal activities	<ul style="list-style-type: none"> <li>• Drug Labs</li> <li>• Wire burn sites</li> </ul>
Spillage of hazardous materials	<ul style="list-style-type: none"> <li>• Materials spilled from overturned trucks or train cars</li> </ul>
Oil and gas activities	<ul style="list-style-type: none"> <li>• Hydrogen sulfide gas</li> <li>• Oil spills</li> </ul>
Facilities on public land either federal or private (under a right-of-way)	<ul style="list-style-type: none"> <li>• Leaky underground storage tanks</li> <li>• Asbestos</li> </ul>

**HAZARDOUS MATERIALS INCIDENTS IN THE DILLON PLANNING AREA**

The largest number of hazardous materials incidents occurring in the planning area is associated with mining activities, both past and present. The planning area has seen ex-

tensive mining over the past 150 years and as a result has generated potential for hazardous materials. Due to the absence of reclamation laws and other regulations up until about the mid 1970s, numerous mines have been abandoned with no reclamation. While most of these mines are small and their waste is inert, some abandoned mines are a threat to human health and the environment as well as a risk to the public from hazardous materials and mine wastes.

Examples of emergency response incidences that have occurred on lands managed by the DFO are generally associated with mine sites that contain old dynamite, barrels of chemicals, or chemical spills. Other incidents, not related to mining, include unexploded military ordinances, vehicle accidents and plane crashes. Although most incidences in the planning area to date have been relatively minor, it is impossible to predict the possibility and degree of incidences in the future.

Landfills are another area of concern for the Dillon Field Office. While the BLM no longer permits landfills on public land, a few previously permitted but now closed landfills exist on or near public land. Limited BLM oversight existed during the lifespan of these landfills, and potential does exist for hazardous chemicals (if present) to possibly leach out of the landfills into the ground water. Numerous unpermitted small dumping sites that have occurred on public land over the years also have the potential to leach hazardous chemicals. Many are in remote areas and have been dumping spots for ranches, farms, and area residents. All these sites may contain pesticides, herbicides, petroleum products, paints, and other chemicals. If a problem is identified, BLM will work to remove the contaminants(s) or remediate the problem.

The BLM's policy is to identify potentially responsible parties (PRPs) who are liable for hazardous substance releases affecting BLM lands or resources. After a PRP is identified, the BLM will ensure that the PRP cleans up the hazardous substance, or reimburses BLM for costs incurred to clean up the hazardous substances release.

## INDIAN TRUST RESOURCES

There are no lands in the planning area formally held in trust by the federal government. However, the Dillon Field Office maintains a government-to-government relationship with tribal governments in the use and protection of resources on public lands. The exercise of off-reservation treaty rights and management of cultural properties is discussed in the Chapter 3 sections on *Cultural Resources* and *Tribal Treaty Rights*.

## SOCIAL CONDITIONS

### Laws, Regulations, and Policies

BLM is required to integrate social science information in the preparation of informed, sustainable land use planning decisions. Section 102 of NEPA requires Federal agencies to "insure the integrated use of natural and social sciences...in planning and decision making". BLM has recently developed an instruction memo containing guidance for social and economic analysis in land use planning (IM No. 2002-167). Also see the section on *Environmental Justice* in this chapter.

### Affected Environment

#### INTRODUCTION

The first two sections under Social Conditions discuss some of the social trends and changing attitudes that affect public land management. The third section focuses on Beaverhead and Madison counties in southwestern Montana. The last section discusses some of the individuals and groups who could be affected by the different alternatives.

#### SOCIAL TRENDS

The movement of people from urban into rural areas in western Montana began in the 1980s and is continuing into the 21<sup>st</sup> century. This migration reflects a reversal of the rural-to-urban pattern found in most of the U.S. prior to the 1970s. In scenic areas, particularly those suitable for recreation, ranches are being sold for recreation uses or subdivided for homes. Some in-migrants buy smaller lots to ranch or farm but do not depend on an economic return from the property. The population in-migration has increased contacts between longtime rural residents and newcomers whose beliefs and values may challenge the existing way of life. Long-time residents may feel uncomfortable with the resulting change in their way of life, making it a less desirable place for them to live.

Another trend is the increasing popularity of public lands for recreation. A comprehensive report on recreation by Cordell et al. (1999) indicates demand in the Rocky Mountain West for the following activities will increase substantially (in days of demand) by the year 2020: non-consumptive wildlife activities (49%), sightseeing (41%), visiting historic places (40%), fishing (28%), developed camping (25%), primitive camping (15%), off-road driving (20%), hiking (20%), horseback riding (14%), hunting (10%), and backpacking (7%).

Another issue is maintaining access to public lands if access through private lands is required to reach the public lands. In addition, the loss of access to some private lands, for the general public, is putting more pressure on public lands. These changes are linked to the pursuit of a quality

recreation experience and occur for a variety of reasons such as the following:

- Lands are purchased for recreation and home sites and closed to others.
- Lands are leased to outfitters for exclusive use and closed to others.
- Lands are closed to avoid problems with safety, fire risk, cut fences, spreading weeds, litter and open gates.

One trend that is occurring in the nation, state, and field office is the aging of the population. In 2000, 14 percent of the population in Beaverhead County, and 17 percent of the population in Madison County, were 65 years and over. In the state as a whole, the percentage of population 65 years and over is expected to increase to 25 percent in 2025. The percentage of people over 65 is actually increasing more rapidly in states like Montana because young people are more likely to leave for advanced education, military service and employment opportunities not available locally.

### CHANGING ATTITUDES

Changes in the management of public lands is just one aspect of a broader debate on environmental issues and resource management that is occurring locally, nationally and globally. Social values for lands and natural resources take many forms such as commodity, amenity, environmental quality, ecological, recreation, spiritual, health, and security (Stankey and Clark 1991). In the past, natural resource management has tended to emphasize commodity values. The emerging emphasis on other values has forced a re-evaluation of the commodity emphasis. Stankey and Clark's (1991) report states, "A new focus on the part of the public involves a shift from commodities, and services to environments and habitats. The public is much more concerned about forests as ecosystems than they have been previously and is more concerned with having access to decisions about them."

A nationwide survey conducted in 1997 by Roper Starch Worldwide (1998) offers some interesting information on attitudes toward environmental regulation. Respondents were asked whether they thought environmental laws and regulations had gone too far, had not gone far enough, or had achieved the right balance. Almost three times as many respondents thought laws and regulations had not gone far enough (47%) as those who thought laws and regulations had gone too far (16%). Just over a quarter of the respondents (26%) thought that the laws had struck the right balance. In contrast to the nation as a whole, 29 percent of the respondents living in rural areas and 27 percent of the respondents living in the West stated that environmental regulation had gone too far.

When similar questions were asked at the national level in 1998 regarding the current regulation of specific environmental issues, the following percentages thought regulations

had not gone far enough: water pollution (69%), air pollution (62%), wild or natural areas (52%), wetlands (46%), and endangered species (42%). Conversely, the following percentages thought regulation of specific environmental issues had gone too far: endangered species (18%), wetlands (9%), wild or natural areas (10%), air pollution (8%), and water pollution (5%). However, over one quarter (26%) of the respondents living in the West thought endangered species laws had gone too far.

A growing counter movement has become more outspoken in the West, particularly in rural areas. In places where land use had been unrestricted, there is increasing concern regarding the control and management of public lands. People with these concerns feel that change in public land management is being driven by government officials and environmental advocacy groups who do not have a true understanding of the lands or the people living nearby who depend upon these lands for their livelihood and recreation. There is particular concern about the loss of traditional uses of the land such as livestock grazing and cross-country vehicle use. People with these concerns seek to balance what they consider to be "environmental extremism" with economic and human concerns. They may feel that local elected officials, who deal with their problems on a daily basis, are better equipped to make decisions about public lands.

### BEAVERHEAD AND MADISON COUNTIES

(The population figures in the following section are from the U.S. Census Bureau).

In 2002, the population of Beaverhead County was estimated to be 9,009. This figure represented a decline of 2 percent since 2000, which followed a 9 percent increase between 1990 and 2000. Beaverhead population peaked in 1996 at 9,343. Decreases since then have been due primarily to out-migration. Beaverhead County is the largest county in Montana and is also one of the most sparsely settled with 1.7 persons per square mile. There are two incorporated communities in Beaverhead County (Dillon and Lima). Butte, located 65 miles north of Dillon, is the closest major city to most Beaverhead County residents. The population of Beaverhead County is projected to increase by .5 percent to 1 percent per year, which would result in a population of 9,400 to 9,750 by 2010.

The population of Beaverhead county is 96 percent white, compared to 91 percent for the state as a whole. Education levels are slightly higher than for the State (89 percent of Beaverhead County residents over 25 have graduated from high school). Thirteen percent of the residents are 65 and older, compared to a State figure of 14 percent. The average per capita income of \$16,000 is slightly lower than the State figure of \$17,000 and 17 percent of the population has an income below the poverty level (compared to 15 percent for the State). The unemployment level of 2 percent in 1990 was lower than the State as a whole.

Beaverhead County residents feel a strong connection between place, lifestyle and community identity. One important distinction is between rural area and town residents, with both groups having their own sense of identity. Rural residents, primarily ranchers, are a distinct group with a common lifestyle and common economic pressures and problems. Townspeople are more diverse in their occupations and lifestyles and may distinguish people more by their occupation and tenure in the community (USDA-FS 2002).

There do not appear to be persistent or intense social conflicts among community groups other than tensions between some newcomers and those who hold different positions about natural resource use or management. Natural resource-use issues have been a source of conflict in Beaverhead County. Examples include such issues as grazing, timber cutting, off-road vehicle use and wilderness areas (USDA-FS 2002). Community groups have formed to address these problems and to work with federal agencies, primarily BLM and the Forest Service, to resolve conflict issues and to provide input regarding planning. These conflicts may increase in the future if in-migration results in a more diverse population.

A survey completed by a random sample of Beaverhead County residents in 1995 (A&A Research 1995), offers some insight into how Beaverhead County residents view their community and public lands. Residents gave the following responses most frequently when asked what they liked best about living in Beaverhead County: small town and low population, the people, the scenery and landscape, outdoors and open space, mountains, the rural lifestyle, fishing and recreation. Over one third of the respondents indicated growth concerned them a great deal and nearly one-half indicated it somewhat concerned them. Problems, issues, and/or concerns facing the County at the present time (1995) were: growth, road maintenance, funding of services, tax-related issues, planning and zoning, public lands, employment, water-related issues, and substance abuse. When asked about the kinds of things public lands should be used for, the most frequent responses included: grazing and ranching, recreation, logging and timber, multiple use, hunting, maintain public access for all, fishing and mining.

Another survey conducted in 2002 (Beaverhead County Planning Board 2002), also provided information about attitudes toward land use in Beaverhead County. When asked how important each feature was in describing Beaverhead County, the following features were seen as most important: the mountains (90 percent indicated they were extremely important or important), open space (84%), rural life (82%), agriculture (80%), wildlife (80%), and sense of community (72%). Respondents were also asked to rate items in terms of their importance in guiding planning efforts in Beaverhead County. The items that were rated most important were: water rights (89 percent indicated they were extremely important or important), private property rights

(84%), containing noxious weeds (83%), small businesses (82%), the ranching/farming heritage (80%), environmental quality (78%), and development of natural resources (71%).

There are numerous rural communities in Beaverhead County. Dillon, the county seat and retail and service center, had a 2000 population of 3,752 people. This was a decline of 6 percent from 1990, although the area around Dillon sustained substantial residential growth in areas that have been subdivided for housing. Dillon is the center for most county services and offers an array of services including a large hospital and a college with over 1000 students. Lima, a small ranching community located about 50 miles south of Dillon, is the other incorporated community in Beaverhead County. Its 2000 population of 242 represented a 6 percent decline from 1990. There are several other small, unincorporated communities with public lands nearby.

In 2002, the population of Madison County was estimated to be 7,005. This represented an increase of 2 percent from 2000, which followed an increase of 14 percent between 1990 and 2000. These increases were due to in-migration. Madison County is also one of the most sparsely settled counties in Montana with 1.9 persons per square mile. There are four incorporated communities in Madison County (Ennis, Virginia City, Twin Bridges and Sheridan). Madison County is adjacent to Gallatin County, which was the fastest growing Montana County in the 1990s. Bozeman, in Gallatin County, the closest major city to most Madison County residents, is located about 50 miles northwest of Ennis. The population of Madison County is predicted to increase by 1 to 2 percent per year, which would result in a population of 7,500 to 8,050 by the year 2010. **Table 55** compares the population and growth in Beaverhead and Madison counties.

The population of Madison county is 97 percent white, compared to 91 percent for the state as a whole. Education levels are slightly higher than for the State (90 percent of Madison County residents over 25 have graduated from high school). Seventeen percent of the residents are 65 and older, compared to a State figure of 14 percent. The average per capita income of \$17,000 is the same as the statewide figure and 12 percent of the population has an income below the poverty level (compared to 15 percent for the State). The unemployment level of 3 percent in 1990 was lower than the State as a whole.

The demography of Madison County suggests it is a “changing place” (USDA-FS 2002). This county experienced one of the fastest growth rates in Montana in the 1990s and is adjacent to the fastest growing county (Gallatin) during that time period. Madison County also has a lower percentage than the state of persons under 18 and a higher percentage of persons 65 years and older, and a high percentage of personal income from dividends, interests and rents. Both of

**Table 55**  
**Beaverhead and Madison County Populations**

	<i>Beaverhead County</i>	<i>Largest Community in Beaverhead County (Dillon)</i>	<i>Madison County</i>	<i>Largest Community in Madison County (Ennis)</i>
2002 population	9,009	NA	7,005	NA
% Increase/decrease in population from 1990 to 2000	9% decrease	6% decrease	14% increase	9% increase
% Increase/decrease in population from 2000 to 2002	2% decrease	NA	2% increase	NA
Projected % increase/decrease in population per year	.5%-1% increase	NA	1%-2% increase	NA
Projected Population in 2010	9,400 to 9,750	NA	7,500 to 8,050	NA
Persons per square mile	1.7	NA	1.9	NA

these factors suggest the in-migration of retirees to the county. Eighty-eight percent of the population lives in areas classified by the Bureau of the Census as rural-nonfarm. This reflects the presence of numerous subdivisions that have developed in the last 15 years. Residents are aware of the changes that can result from growth and there is an ongoing effort to respond to the social and cultural demands that can occur with growth. Length of residence is an important element in the sense of community in Madison County. The “old family” residents of each geographic area represent the agricultural base and the history of the area. Newcomers may be seasonal or full-time residents. Seasonal newcomers are perceived as less integrated than newcomers who live in the county year round. Responses to newcomers express both real concerns about practical problems and also the values and sense of community of Madison County. These concerns are based on the growth in the Madison and Ruby Valleys where the agricultural/ranching lifestyle is highly valued.

As ranches and farms are sold for subdivision or to absentee owners, ranchers may have fewer options to graze livestock, which may result in increased costs and decreased viability of either continuing their operations or passing them on to their children. The presence of newcomers is influencing how long-term residents perceive their present and anticipate their future, as well as how they define their identity as community members.

The population and services in Madison County are distributed among several communities. Ennis, which has become a center for recreation activities, is the largest community in Madison County. However, it is home to just 12 percent of the county population. Ennis had a 2000 population of

840, which represented an increase of 9 percent from 1990. Although the ranching communities of Sheridan and Twin Bridges are located within 9 miles of each other in the Ruby Valley they have distinct identities. In 2000, Sheridan had a population of 659 while Twin Bridges had a population of 400. These figures represent increases of 1 percent and 7 percent respectively, since 1990. Virginia City, which is the county seat of Madison County, is located in a historic mining area and draws tourists from all over the United States. Its 2000 population was 130, which represented an 8 percent decline from 1990. There are several other small, unincorporated communities with public lands nearby. In addition, there has been substantial subdivision development in Madison County.

Small towns such as Dillon and Sheridan are unique places with shared values and a relationship with nearby farm and ranchlands. Quality of life issues such as a slower pace of life, low crime rates, high levels of interpersonal trust, volunteerism rather than government as a basis for resolving community problems, opportunities for community involvement, a sense of belonging and a high value placed on the quality of nearby surroundings motivate people to live in these communities (USDA-FS 2000). Schools and athletic activities are an integrating force in these communities where people interact around common interests and concerns—their children. Small towns are often service centers for nearby agricultural communities. Local retailers in these communities may struggle because of competing retail services available in larger nearby communities such as Butte and Bozeman. Many of the smallest communities are losing population and having difficulty maintaining their local businesses and services. Residents of these communities may be very concerned about the economic survival of

their communities. On the other hand, residents of communities where in-migration is occurring may be concerned about preserving their current lifestyle in light of newcomers with different values.

Small rural communities can be tied to BLM and public lands in a variety of ways. Local businesses and governments depend upon the employees to maintain a population base for businesses and public services. Use of public lands for livestock grazing, recreation activities, minerals development and other activities can provide employment and help maintain related businesses. In addition, the local residents depend upon the public lands for recreation and open space.

### **AFFECTED GROUPS**

Discussions of affected groups are included to facilitate the assessment of social impacts. The following individuals and groups will be discussed: livestock permittees, recreationists, and groups and individuals who give a high priority to resource protection or resource use. It should be noted that these discussions generalize and simplify the members' actual values and attitudes. In addition, this format is not meant to imply that these groups are mutually exclusive and examples of households fitting into all categories are likely to be present. For instance, some ranchers engage in recreation and are particularly concerned about the environment. Recreationists may engage in motorized and nonmotorized types of recreation, and may have high levels of concern about environment. In addition, people's attitudes and interests may change over time.

#### ***Livestock Permittees***

Ranching is an important part of the history, culture and economy of Beaverhead and Madison Counties. In 1997 there were 360 farms in Beaverhead county and 460 farms in Madison County. ("Farms" refer to both farms and ranches.) While the number of farms increased slightly between 1992 and 1997 in both counties, the acreage in farms declined about 15 percent. During the same time period, the average farm size declined 23 percent in Madison County and 18 percent in Beaverhead County. These figures indicate that the subdivision of farms and an increase in "hobby farms" is occurring in both counties. Two hundred and sixty-eight livestock operators in the field office area graze livestock on public lands.

There are many challenges facing ranchers today including changes in federal regulations, economic issues and changing land use. Ranchers and permittees may face increasingly stressful social situations as they try to balance their traditional lifestyles with demands from government agencies and other public land users such as recreationists.

One of the main concerns expressed during scoping was the potential effect of designation of special areas including ACECs and Wild and Scenic Rivers. Other concerns ex-

pressed recently by ranchers (USDA-FS 2002) include: noxious weeds, balancing competing uses, continued access to federal grazing, loss of ranchlands, and concerns about OHVs. OHV concerns include weeds being brought into the field office from other areas where weeds are not controlled, uncontrolled use of 4-wheelers on public lands, and that OHV use associated with allotment management on public lands may be restricted in the future.

#### ***Permitted Outfitters and Guides***

Some outfitters and guides are ranchers or farmers who use recreation as a means to economic diversification. Others operate full-time or seasonal businesses as outfitters and employ some local residents as guides. There are also independent guides who have their own clients, both local and from outside the region. There are approximately 30 outfitters and guides permitted by the Dillon Field office. The majority of BLM permits are for big game hunting but permits for horseback trips and fishing also exist. The main issue with outfitter and guide permits is that many people perceive them to unfairly deny access to the general public and do not want additional permits to be issued.

#### ***Recreationists***

Recreation is a component of most lifestyles in the study area. The substantial recreational opportunities for fishing, hunting, hiking, horseback riding, OHV use, skiing and sightseeing are an important element of the overall quality of life for residents. Many people have either moved to these counties or stayed in these counties because of the recreation opportunities. Recreationists are very diverse groups of people and changes in recreation management can affect the people who engage in the various activities very differently. They tend to organize into interest groups; most recreational activities have at least one group that advocates for their activity.

In addition to local recreation use, Madison and Beaverhead Counties attract visitors from all areas of the United States for fishing, hunting and other recreational activities. A 1998 study of Beaverhead County (ITRR 1999) indicated approximately 500,000 travel groups visiting Montana traveled through Beaverhead County. Over half of these visitors to Beaverhead County were in Montana for vacation, recreation or pleasure. The primary attractions to Montana of these visitors were the mountains, rivers, fishing, uncrowded areas, and Glacier National Park, and the primary activities they participated in included watching wildlife, nature photography, and visiting historic & interpretive sites.

Comments received on recreation during the scoping period included the following concerns: loss of hunting and fishing access, maintaining or increasing access to BLM lands, restricting or maintaining OHV use, the negative effects of OHV/motorized travel on other resources, and enforcing OHV regulations.

***Forest Products Industry***

In the decades before the 1990s, timber mills were scattered across western Montana producing lumber, plywood, chips and other wood products. Stoltze Mill in Dillon, which closed in 1990, was among the first of many mill closures in western Montana during the 1990s. Today only a few very small family owned and operated mills are in operation. In 1999, Beaverhead County had approximately 80 people and Madison county had approximately 30 people employed in the timber industry (USDA-FS 2002). The connection of lifestyle, occupation and place results in a complex identity for loggers. The loss of a job for a logger is thus more than missing a paycheck—it also means changing a valued way of life. One effects of the mill closures is a feeling that they have been “let down” by the Forest Service because they did not “stand-up” to environmentalists and others who want to manage the forests as preserves. Loggers often describe themselves as people who care about forests and forest health and that their hands-on knowledge is an important but under-valued asset (USDA-FS 2002).

Issues of concern to those involved in the forest products industry include the threat of noxious weeds, balancing competing land uses, fuel hazard reduction, and salvaging dead trees. In addition, members of the forest products industry and others have expressed concerns that special interests seem to come before local interests (USDA-FS 2002).

***Individuals and Groups Who Give a High Priority to Resource Protection***

A variety of local, regional and national level individuals, and organizations along with their members and supporters, have shown a great deal of interest in this plan through input received during the scoping process. Many of their comments focused on wildlife and water issues and special area designations. Concerns regarding wildlife included: the development of habitat management plans for key/umbrella species, the effects of livestock grazing on wildlife, protection of specific species such as sage grouse and the Axolotl salamander, establishment of ecological reserves, and wildlife corridors and habitat fragmentation. Water concerns included: watershed protection and enhancement, overgrazing and damage to nearby lakes and streams, water quality, riparian values and watershed integrity. In addition, some organizations nominated many areas for special designation such as ACECs.

These groups indicate the condition of resources on public lands is important to their supporters because they value these resources for wildlife, recreation, education, scenic qualities, wilderness, open space, and a variety of other reasons. Seasonal residents and new year-round residents to Madison and Beaverhead counties, and others living in more urbanized surroundings counties such as Gallatin and Butte-Silver Bow may support these ideas because they want to protect their lifestyles.

***Individuals and Groups Who Give a High Priority to Resource Use***

Many individuals and groups are concerned about limitations being put on the availability of public lands for commercial uses such as livestock grazing, mineral development, timber harvest, oil and gas development, etc. These people indicate public lands need to be managed to be as productive as possible and that the survival of local economies and communities depends upon these industries. Employment in the mining, forestry, and oil and gas industries is seen as adding high paying jobs to the local economies. In addition, some mentioned that others need to recognize that their lifestyle depends on resources gained through livestock production, timber production, and mining. These groups also tend to feel that development can occur without destroying the resource if appropriate mitigation measures are implemented.

## **TRIBAL TREATY RIGHTS (including BLM Critical Element Native American Religious Concerns)**

**Laws, Regulations, and Policies**

BLM coordination or consultation with Native Americans, as it pertains to treaty rights and trust responsibility, is conducted in accordance with the following direction:

- Bureau Manual Handbook H-8160-1 – General Procedural Guidance for Native American Consultation (Washington Office Information Bulletin No. 95-57; November 15, 1994).
- Executive Order No. 13084 – Consultation and Coordination with Indian Tribal Governments, May 14, 1998.
- Government-to-Government Relations with Native American Tribal Governments (Memorandum signed by President Clinton; April 29, 1994).
- Order No. 3175 – Departmental Responsibilities for Indian Trust Resources (Section 2 of Reorganization Plan No. 3 of 1950 – 64 Stat. 1262; November 8, 1993).

Treaties are negotiated contracts made pursuant to the Constitution of the United States and are considered the “supreme law of the land.” They take precedence over any conflicting state laws because of the supremacy clause of the Constitution (Article 6, Clause 2). Treaty rights are not gifts or grants from the United States, but are bargained-for concessions. These rights are grants-of-rights from the tribes, rather than to the tribes. The reciprocal obligations assumed by the Federal government and Indian tribes constitute the chief source of present-day Federal Indian law.

The United States and represented agencies, including the BLM, have a special trust relationship with Indian tribes because of these treaties. As a Federal land managing agency, the BLM has the responsibility to identify and consider potential impacts of BLM plans, projects, programs, or activities on Indian trust resources (e.g., fish, game, and plant resources—see **Glossary**). When planning any proposed project or action, the BLM must ensure that all anticipated effects on Indian trust resources are addressed in the planning, decision, and operational documents prepared for each project. The BLM also has the responsibility to ensure that meaningful consultation and coordination concerning tribal treaty rights and trust resources are conducted on a government-to-government basis with Federally recognized tribes.

## Affected Environment

Native American Indians inhabited southwestern Montana, including the lands now managed by the Dillon Field Office, for thousands of years prior to European contact. They hunted, fished, gathered plant foods, buried their dead, and conducted religious ceremonies on lands within the planning area since time immemorial. The map in **Appendix O** depicts the intersect of three major culture areas in the planning area. The lands managed by the Dillon Field Office are within the historical/traditional culture use area of the Shoshone-Bannock Tribes of the Fort Hall Reservation and the Confederated Salish-Kootenai Tribes of the Flathead Reservation. Both tribes continue to express interest in, and concern over, public lands within the planning area. During the 1850's and 1860's, treaties were negotiated with the tribes in the northwestern United States in order to acquire Indian lands for homesteading. The settlement of the northwestern United States by non-Indians led to the collapse of the Tribal Nations as they were previously known, including their economic, social, cultural, religious, and governmental systems.

On July 16, 1855, the confederated tribes of the Flathead, Kootenay (*sic*), and Upper Pend d' Oreilles Indians and the United States signed the *Treaty with the Flatheads, etc., 1855*, referred to as the Hell Gate Treaty (12 Stat. 975). Isaac I. Stevens, who was Governor and Superintendent of Indian Affairs, facilitated this treaty, as well as others in the Pacific Northwest. In the Hell Gate Treaty, the tribes relinquished ownership of millions of acres of land to the United States. The treaty also guaranteed a permanent homeland for the confederated tribes, which has become known as the

Flathead Reservation in northwestern Montana. Article 3 of the treaty also retains the Tribes' "...privilege of hunting, gathering roots and berries, and pasturing their horses and cattle upon open and unclaimed land."

On July 3, 1868, the Eastern Band Shoshone and Bannock Tribes and the United States signed the *Treaty with the Eastern Band Shoshoni and Bannock, 1868*, commonly known as the Fort Bridger Treaty (15 Stat. 673). In the Fort Bridger Treaty, the Tribes relinquished ownership of approximately 20 million acres to the United States, and were guaranteed a permanent homeland, which has become known as the Fort Hall Indian Reservation in southeastern Idaho. Article 4 of the treaty also retains the Tribes' rights to hunt, fish, and gather natural resources, and provides other associative rights necessary to effectuate these rights on the unoccupied lands of the United States. **Appendix O** contains copies of the Hell Gate and Fort Bridger treaties.

Since the BLM manages portions of the "unoccupied lands" that are within the traditional use areas of these tribes, the BLM has a trust responsibility to provide the conditions necessary for Indian tribal members to satisfy their treaty rights. Treaty rights in the planning area are extended not only to the Shoshone-Bannock Tribes and Confederated Salish and Kootenai Tribes, but also to other Federally recognized tribes, which may have treaty language that extends their rights to lands in this area.

Members of the Shoshone-Bannock Tribes, the Confederated Salish and Kootenai Tribes, and other Federally recognized tribes exercise their hunting, fishing, and gathering rights on at least state and Federal lands outside the boundaries of their reservations. Currently, Native American tribes are not dependent on commodity resources from lands managed by the Dillon Field Office for their economic livelihood. However, they do rely on BLM public lands resources for subsistence and cultural purposes. Tribal treaty rights pursued on public lands within the Dillon Field Office include fishing for resident game fish species, hunting both large and small game, and gathering various natural resources for both subsistence and medicinal purposes. Currently, there is little specific information available on the exact species sought or locations used by Native Americans exercising their treaty rights within the boundaries of the planning area.