



**East Grasshopper Watershed Environmental Assessment**  
DOI-BLM-MT-B050-2011-010-EA  
Dillon Field Office  
June 25, 2012



**The East Pioneer Mountains, as seen from Badger Pass, June 2011.**



# Table of Contents

<b>List of Tables .....</b>	<b>ii</b>
<b>List of Figures.....</b>	<b>ii</b>
<b>Chapter 1: Purpose of and Need for the Proposed Action.....</b>	<b>1</b>
1.1 Introduction and Background .....	1
1.2 Purpose and Need .....	2
1.3 Issues.....	5
1.4 Scope of this Environmental Analysis – Scope, Plan Conformance, Critical Elements, and Issues .....	11
1.5 Decisions to be Made.....	13
1.6 Applicable Legal and Regulatory Requirements .....	14
1.7 Coordination Requirements .....	14
<b>Chapter 2: Description of Alternatives .....</b>	<b>15</b>
2.1 Process Used to Formulate Alternatives .....	15
2.2 Alternatives Considered but Eliminated from Further Analysis.....	15
2.3 Description of Alternatives .....	17
2.4 Summary and Comparison of Proposed Alternative Actions .....	38
<b>Chapter 3: Affected Environment.....</b>	<b>43</b>
3.1 General Setting.....	43
3.2 Description of Affected Issues, Resource Concerns and Critical Elements .....	44
3.3 Resource Concerns.....	57
3.4 Description of Relevant Non-Affected Resources.....	63
<b>Chapter 4: Environmental Consequences .....</b>	<b>69</b>
4.1 Introduction.....	69
4.2 Predicted Effects of Alternatives .....	69
4.3 Cumulative Effects for All Alternatives .....	107
<b>Chapter 5: List of Preparers - Consultation/Coordination.....</b>	<b>114</b>
5.1 List of Preparers.....	114
5.2 Consultation/Coordination.....	115
<b>Glossary of Terms .....</b>	<b>116</b>
<b>References Used or Cited .....</b>	<b>121</b>

## Appendices

- Appendix A – East Grasshopper Watershed Maps
- Appendix B – East Grasshopper Watershed Monitoring Plan
- Appendix C – East Grasshopper Watershed Biological Evaluations

## List of Tables

1.1	Authorized Officer’s Determination of Standards by Grazing Allotment.....	3
1.2	Critical Elements of the Human Environment.....	12
2.1	Grazing Allotments Summary .....	20
2.2	Conifer Treatments Proposed Under Alternative B within the Baldy Mountain Allotment.....	28
2.3	Comparison of Alternatives by Allotment.....	39
2.4	Comparison of Forest and Woodland Treatments by Alternative .....	42
2.5	Comparison of Travel Management Actions by Alternative .....	42
3.1	Summary of Acres by General Cover Type within the East Grasshopper Watershed .....	44
3.2	Fish Species Present In Streams on BLM-Administered Lands within the East Grasshopper Watershed .....	47
3.3	East Grasshopper Vegetation Project EA Projects and Current Status.....	53
4.1	Summary of Proposed Projects on All Grazing Allotments by Alternative .....	83
4.2	Comparative Effects of All Alternatives on Issue #1: Riparian, Wetland, and Aquatic Health and Associated Species.....	102
4.3	Comparative Effects of All Alternatives on Issue #2: Upland Health, Sagebrush Steppe Habitat and Associated Species.....	103
4.4	Comparative Effects of All Alternatives on Issue #3: Special Status Fish and Wildlife Species Habitat .....	105
4.5	Comparative Effects of All Alternatives on Resource Concern #1: Wilderness Characteristics.....	106
4.6	Comparative Effects of All Alternatives on Resource Concern #2: Recreation and Travel Management .....	106
4.7	Comparative Effects of All Alternatives on Resource Concern #3: Socioeconomics .....	106
4.8	Comparative Effects of All Alternatives on Resource Concern #4: Cultural Resources .....	106
4.9	Comparative Effects of All Alternatives on Resource Concern #6: Special Status Plant Species Habitat.....	106

## List of Figures

2.1	A road within the Reservoir Creek Custodial allotment that is proposed to be undesignated .....	25
2.2	Willow canopy along Reservoir Creek reach #1594. The proposed fence would follow arrows along the boundary of BLM-administered land .....	33
2.3	Comparison of Proposed Alternatives by Allotment.....	39

3.1	Functional Condition, by Proportion of Miles, for Streams within the East Grasshopper Watershed .....	45
3.2	Uplands in the Road Agent Rock, Bannack, and Frenchie BLM grazing allotments, July 2011 .....	50
3.3	Taylor-Buffalo Allotment showing 1984 and 2010 upland photo comparisons .....	51
3.4	Regional climate summary of spring temperatures (March-May) for the West North Central Region (MT, ND, SD, WY), from 1895-2007 .....	68
3.5	Regional climate summary of spring temperatures (March-May) for the West North Central Region (MT, ND, SD, WY), from 1991-2005 .....	68

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# Chapter 1: Purpose of and Need for the Proposed Action

## 1.1 Introduction and Background

The East Grasshopper Watershed (EGW) is located in Beaverhead County, Montana and drains portions of the East Pioneer mountain range. The watershed lies within Townships 6-9 South and Ranges 10-13 West, Montana Principal Meridian (MPM).

The approximate boundary of the watershed includes public lands administered by the Bureau of Land Management (BLM) from the Big Hole Divide in the west to Frying Pan Basin in the east, and from the southern U.S. Forest Service (USFS) boundary of the East Pioneer Mountains south to Grasshopper Creek. The watershed boundary, shown on the East Grasshopper Area map (Map 1), follows grazing allotment boundaries and includes some allotments that are only partially within the watershed. Technically, the assessed area is not a distinct watershed. Watersheds are defined and designated on maps by natural topographical boundaries (i.e., ridgelines, drainages). Grazing allotment boundaries have been determined by previous BLM decisions based primarily on land ownership and these artificial boundaries may not follow topographical features. Therefore, some of the grazing allotments in the watershed may fall within one or more watersheds or hydrologic units. Grazing allotments located within the EGW may have been assessed along with other planning efforts (e.g., Beaverhead West, East Pioneers).

Within the EGW there are approximately 120,396 total acres of land, of which 80,237 (about 67%) are public lands administered by the BLM. Of the total BLM-administered lands within the EGW, 79,000 acres are allotted for livestock grazing and 1,237 acres are unleased. No acres are categorized as unallotted (unavailable for livestock grazing). This report addresses only land health conditions on public lands administered by the BLM.

In 2011, an interdisciplinary team (IDT) assessed BLM administered land in the EGW for the five Standards of Rangeland Health. The Standards are: **Upland Health, Riparian Health, Water Quality, Air Quality, and providing for Biodiversity**. The EGW Assessment Report described the condition/function of resources within the assessment area to the Authorized Officer. The EGW Assessment Report and the Authorized Officer's Summary and Determination have been made available to the public and may be reviewed at the Dillon Field Office (DFO), or on the internet at [http://www.blm.gov/mt/st/en/fo/dillon\\_field\\_office.html](http://www.blm.gov/mt/st/en/fo/dillon_field_office.html).

The condition/function and recommendations in the EGW Assessment Report, along with comments received through public scoping, have been used to develop management alternatives (Chapter 2). The alternatives are designed to initiate progress towards Proper Functioning Condition (PFC) and address site specific resource concerns. This Environmental Assessment (EA) was completed in accordance with established procedures to analyze and implement allotment, landscape or site specific changes.

Resource management on a watershed basis facilitates decisions and projects on a landscape scale. It is the BLM's intent to implement management cooperatively, and all proposed changes will be initiated through the BLM's decision process.

## 1.2 Purpose and Need

The BLM's Dillon Field Office proposes to improve land health and enhance biodiversity in the EGW by:

- Restoring, enhancing and/or maintaining riparian, wetland and aquatic habitats through revised livestock grazing management, construction and/or maintenance of structural projects, road maintenance (including stream crossing and culvert improvements), and/or implementation of vegetative treatments.
- Restoring, enhancing and/or maintaining sagebrush steppe habitat (species composition, vigor and structure) through revised livestock grazing management, structural projects and/or implementation of vegetative treatments.
- Restoring, enhancing and/or maintaining habitat for Special Status fish, wildlife and plant species.
- Mitigating resource impacts from recreational activities while providing access to public lands through modifications to motorized travel route designations.
- Eradicating new and containing/controlling existing noxious weed and invasive species

In addition, the BLM proposes to renew term grazing permits within the EGW and initiate projects to provide forest products. As a result of resource conditions documented in the EGW Assessment Report, management alternatives will be analyzed that may modify the mandatory terms and conditions of some grazing permits. In addition, as the result of this process the BLM may combine, divide, or eliminate grazing allotments.

This EA is in direct response to land health condition/function and recommendations identified in the EGW Assessment Report. In that document, the IDT described several causal factors, which, when combined, negatively impact the biological, physical, and ecological processes in the EGW. As a result, the Authorized Officer determined that one or more of the Land Health Standards were not met in eight of the sixteen grazing allotments.

The Fundamentals of Rangeland Health and Land Health Standards require the BLM to initiate management actions that ensure, "Watersheds are in, or are making significant progress toward, properly functioning condition, including their upland, riparian-wetland, and aquatic components..." if an assessment determines one or more of the Land Health Standards are not being met (43 CFR 4180.1(a)).

Table 1.1 shows the Authorized Officer's determination of each standard in each grazing allotment in the EGW.

**Table 1.1: Authorized Officer's Determination of Standards by Grazing Allotment.**

Allotment Name, Number, Category <sup>1</sup> , & BLM Acres	Are Land Health Standards Being Met?					Primary Resource Concerns Causing Failure to Achieve BLM Standard
	Upland	Riparian Wetland	Water Quality	Air Quality	Bio-diversity	
Baldy Mountain, 30037, (I), Acres: 8,098	YES	NO	NO <sup>2</sup>	YES	NO	Impacts to riparian areas by livestock in reaches 16, 1572, 1575 and 1591. Sediment issues and undersized and damaged culverts causing problems in several reaches. Juniper encroachment along reach 1564.
Bannack, 30015, (I), Acres: 6,697	YES	N/A	N/A	YES	YES	All BLM Standards for healthy rangelands being met.
Bannack Road, 20619, (C), Acres: 69	YES	N/A	N/A	YES	YES	All BLM Standards for healthy rangelands being met.
Buffalo Creek, 30617, (C), Acres: 829	NO	NO	*	YES	NO	Reduced composition, cover and vigor of cool-season bunchgrasses. Byproducts of supplemental feeding in wetland area 1570.
***Cross, 30033, (I), Acres: 3,480	YES	N/A	N/A	YES	YES	All Rangeland Health Standards are met.
Ermont, 10598, (M) , Acres: 136	YES	YES	*	YES	YES	All Rangeland Health Standards are met.
Flying N, 20724, (I) , Acres: 102	YES	N/A	N/A	YES	YES	All Rangeland Health Standards are met.
Frenchie, 10121, (M), Acres: 11,737	YES	NO	*	YES	YES	Localized infestations of noxious and non-native plants. Livestock impacts to Frenchie Place Spring #1597. Road maintenance has caused problems on reach 1551.
Millpoint, 10751, (C), Acres: 734	YES	N/A	N/A	YES	YES	All Rangeland Health Standards are met.
Red Mine Isolated, 30609, (C), Acres: 15	YES	N/A	*	YES	YES	All Rangeland Health Standards are met.
Reservoir Creek AMP, 30030, (I), Acres: 13,010	YES	YES	NO <sup>2</sup>	YES	YES	Reservoir Creek reach 1594 was rated FAR Static and contributing to water quality impairment.
Reservoir Creek Custodial, 20723, (C), Acres: 263	NO	N/A	N/A	YES	YES	Reduced composition, cover and vigor of cool-season bunchgrasses in M1 pasture.

Allotment Name, Number, Category <sup>1</sup> , & BLM Acres	Are Land Health Standards Being Met?					Primary Resource Concerns Causing Failure to Achieve BLM Standard
	Upland	Riparian Wetland	Water Quality	Air Quality	Bio-diversity	
Road Agent Rock, 00759, (C), Acres: 296	YES	N/A	N/A	YES	YES	All Rangeland Health Standards are met.
Stonehouse, 30005, (M), Acres: 26,581	YES	NO	NO <sup>2</sup>	YES	YES	Impacts to riparian area by livestock. Rattlesnake Creek reach 1566 was rated FAR Static and is contributing to water quality impairment of Rattlesnake Creek. Hummocking and compaction at 1559 and 1576.
Taylor-Buffalo, 10122, (I), Acres: 5,738	NO	NO	NO <sup>2</sup>	YES	NO	Impacts to riparian reaches by livestock. Reduced composition, cover and vigor of cool-season bunchgrasses. Taylor Creek reach 1553 was rated FAR Static and contributing to Taylor Creek's water quality impairment.
Taylor Creek, 10745, (I), Acres: 1,215	YES	YES	NO <sup>2</sup>	YES	YES	Taylor Creek reach 1552 was rated as PFC. BLM mgt. is not contributing to Taylor Creek's water quality impairment.
Unleased, Acres: 1,237	YES	N/A	N/A	YES	YES	All Rangeland Health Standards are met.
<sup>1</sup> Allotment Category: I = improve, M = maintain, C = custodial <sup>2</sup> The Montana Department of Environmental Quality (DEQ) has the responsibility for making water quality determinations and has completed its evaluation of 303(d)-listed streams. * Tributary streams in the EGW are not on the 303(d) list, are not priority streams, and are not scheduled to be evaluated by the DEQ. *** Cross Allotment is a Resource Reserve Allotment for the Field Office. The use of this allotment will be to provide temporary grazing to rest other allotments to allow for more rapid attainment of rangeland health.						

Dyce Creek, East Fork Dyce Creek, West Fork of Dyce Creek, Grasshopper Creek, Rattlesnake Creek, Reservoir Creek, Taylor Creek and Horse Prairie Creek flow through BLM administered land, have been evaluated by Montana Department of Environmental Quality (DEQ) and beneficial use support determinations have been completed. These creeks do not meet one or more Beneficial Uses and TMDLs are required. Probable sources and probable causes are listed in the EGW Assessment Report on pages 35 & 36.

The Authorized Officer determined that livestock grazing impacts are contributing to one or more of the Standards not being met in five grazing allotments. Pursuant to 43 CFR 4180.2(c), livestock-caused failure to meet any of the Standards mandates the BLM to change the terms and conditions of the grazing permit/lease for the applicable grazing allotment prior to the next grazing season and implement actions that will result in significant progress toward fulfillment of the Standards. Further, BLM guidance stipulates that if other actions are necessary and cannot

be implemented before the next grazing season interim adjustments will be made prior to the next grazing season and a schedule for final changes must be developed and documented (H-4180-1). Allotments requiring livestock management changes to address specific resource problems are: Baldy Mountain, Buffalo Creek, Reservoir Creek Custodial, Stonehouse and Taylor-Buffalo.

## 1.3 Issues

### Identification of Key Issues and Resource Concerns

**Key Issues.** Key issues are used to drive development of alternative ways to achieve the purpose and need. The effects to these issues are analyzed in detail. Differences in these effects are used to measure the trade-offs between alternative actions.

**Resource and Social Concerns.** Resource and social concerns (resource concerns) do not necessarily drive the development of alternatives, but are used to analyze and disclose the effects of various actions in relation to the resource concern. Issues and resource concerns were identified through the Watershed Assessment and scoping process.

Not all key issues or resource concerns identified below are applicable to all allotments and the unleased tract in this EA. Site specific issues and concerns are shown in Chapter 3 and the EGW Assessment Report.

Four primary land health issues and eight additional resource concerns are shown below. A brief description or explanation and management objectives for each key issue and resource concern are included. Progress toward meeting some objectives can be quantifiably measured upon completion, e.g. acres of prescribed burns completed. Others, like reducing stream bank impacts and increasing deep-rooted riparian vegetation, are evaluated over time by long term trend indicators such as relative changes in riparian composition and cover and/or channel width/depth ratio.

A range of management alternatives to address these key issues and resource concerns are described in Chapter 2. Analysis in Chapter 4 will answer the question of how each alternative will affect each of the key issues and resource concerns listed below.

Additional information about methodologies and documented resource issues and concerns can be found in the EGW Assessment Report which is available at the Dillon Field Office or on the internet at [http://www.blm.gov/mt/st/en/fo/dillon\\_field\\_office.html](http://www.blm.gov/mt/st/en/fo/dillon_field_office.html).

#### 1.3.1 Key Issues

##### **Issue #1: Riparian, Wetland, Aquatic Health and Associated Species**

One of the Western Montana Standards for Rangeland Health is “Riparian and Wetland Areas are in Proper Functioning Condition (PFC).” PFC is defined as the ability of a stream or wetland to perform its riparian functions. These functions include sediment filtering, bank building, water storage, aquifer recharge and hydrologic energy dissipation. Streams or wetlands that are

categorized as Functional-At-Risk (FAR) with an upward trend also meet the riparian health standard. The methods and procedures used to determine riparian health in the EGW are discussed in the EGW Assessment Report.

**Objectives:**

- Increase composition and cover of deep-rooted riparian species along stream channels and spring/wetland areas (reduce bare ground)
- Increase vigor and regeneration of willows
- Maintain/enhance existing aspen and promote successful regeneration of aspen.
- Improve the ability of streams to develop stable channel dimensions, (width/depth), patterns (sinuosity), and profiles (slope) within natural ranges of variability.
- Stop head cuts and restore vertical channel stability
- Reduce sediment inputs into streams generated by human activities
- Maintain/enhance habitat for cold water fisheries in occupied streams within the watershed

**Issue #2: Upland Health, Sagebrush Steppe Habitat and Associated Species** “Uplands are in PFC” is identified as one of the Western Montana Standards for Rangeland Health. The determination of upland health was based on the evaluation of three criteria: degree of soil stability and watershed function, nutrient cycles and energy flows, and available recovery mechanisms. The indicators used to determine upland health are discussed in the EGW Assessment Report.

In the EGW, upland health was rated as PFC in 13 of the 16 grazing allotments, and the unleased parcel of land under existing management. Three allotments did not meet the upland health standard due primarily to changes in the biotic community (ie reduced vigor, cover and composition of perennial, cool season bunchgrasses). Objectives related to sagebrush habitat are also included below under Key Issue #3: Special Status Fish and Wildlife Species.

**Objectives:**

- Maintain or increase composition and cover of native perennial cool season bunchgrasses
- Restore/maintain open sagebrush communities in habitats that are currently becoming dominated by Rocky mountain juniper and/or Douglas-fir.
- Improve browse cover, composition and availability on mule deer winter range

**Issue #3: Special Status Fish and Wildlife Species Habitat**

Special Status Species (SSS) include federally listed Threatened, Endangered, Proposed Species, Candidate Species and BLM Sensitive Species. See the Biological Evaluations (BE) for a list of Threatened and Endangered (T&E) species, Special Status plants, wildlife, and fish in Appendix C. Special Status Species are discussed in the EGW Assessment Report, as well as chapters 3 and 4 of this EA. Objectives to improve habitat are also included in Issues #1 and #2 above.

**Objectives:**

- Maintain existing sagebrush habitat so that 75% or more of big sagebrush communities provide vegetative composition and structure for sagebrush obligate species.
- Maintain sage grouse nesting/early brood rearing canopy cover of 15-25% sagebrush
- Maintain an average of 6 to 7 inches herbaceous understory within site potential within sage grouse nesting/early brood rearing habitat.
- Maintain or increase composition of highly nutritious forbs (e.g. composites and legumes) in sage grouse nesting/early brood rearing habitat.
- Prevent nonnative trout invasion into Dyce Creek
- Improve fish habitat by reducing sediment input into Dyce Creek
- Maintain 6 inches of sedge and/or herbaceous vegetation along stream banks along the greenline (within site potential).

**Issue #4: Noxious and Invasive Species**

Spotted knapweed, houndstongue, Canada thistle, black henbane, common mullien, and cheatgrass occur within the EGW. These noxious and invasive species can affect upland health, riparian health and biodiversity.

**Objectives:**

- Reduce the composition of noxious and invasive vegetative species within the watershed.
- Mitigate the spread of noxious and invasive plants into, within, or from the watershed and specifically mitigate the spread of noxious weed seeds from the Badger Pass Gravel Pit.

**1.3.2 Resource Concerns**

**Resource Concern #1: Wilderness Characteristics**

There are no designated wilderness areas within the EGW. The northwest corner of the Henneberry Ridge Wilderness Study Area (WSA) extends into the EGW totaling approximately 750 acres within the watershed boundary. These lands are managed in accordance with the *Interim Management Policy (IMP) for Lands Under Wilderness Review* (BLM Handbook H-8550-1).

Recently published BLM policy (BLM Instruction Memorandum No. 2011-154) also emphasizes that, “Section 201 of FLPMA requires the BLM to maintain on a continuing basis, an inventory of all public lands and their resources and other values, which includes wilderness characteristics”. In accordance with this direction, an inventory was conducted of all lands within the EGW that met the minimum criteria for wilderness characteristics set forth in that policy. That inventory resulted in one area being identified as having wilderness characteristics. That area, known as the Cold Spring Creek inventory unit (#MT-050-031), includes approximately 12,854 acres of BLM managed land southwest of Dillon between Grasshopper Creek and Highway 278, east of the Bon Accord Road. These lands were determined to satisfy

the minimum criteria for lands with wilderness characteristics (LWC), including; size, naturalness, and outstanding opportunities for solitude. By policy, any activities proposed to occur within this area would have to be considered for their impacts on these wilderness characteristics.

**Objectives:**

- Maintain wilderness characteristics of the Henneberry Ridge Wilderness Study Area
- Analyze the impacts of BLM actions in the Cold Springs Unit (LWC)

**Resource Concern #2: Recreation and Travel Management**

Recreational use within the EGW occurs year round, including horseback riding, hiking, big game hunting, bird hunting, recreational driving, fishing, wildlife-viewing (especially sage grouse viewing near the Reservoir Creek lek), snowmobiling, and cross-country skiing. Two big game outfitters are permitted to guide commercial big game hunting in the area, and one outfitter provides commercial horseback rides within the EGW. All of these commercial outfitters use this area lightly, spending the bulk of their time outside the EGW boundary.

**Objectives:**

- Effectively implement the Dillon RMP Travel Management Plan
- Revise motorized route designations as necessary to correct mapping errors and improve route designations
- Reduce unauthorized (non-designated route travel) motor vehicle use which occurs most frequently during the hunting season.
- Maintain motorized wheeled vehicle access to those areas where it already exists, and improve access to public land where appropriate and where opportunities are currently limited.
- Reduce resource impacts caused by recreationists, including spread of noxious weeds.

**Resource Concern #3: Socioeconomics**

Many ranches that hold BLM grazing leases/permits have developed operations dependent on a combination of public land forage and private land resources.

Utilization of timber resources from public lands has historically resulted in an economic benefit to southwest Montana. The potential for utilization of commercial forest products still exists.

Non-commercial hunting and fishing opportunities on BLM administered public lands in the EGW provide an important economic contribution to the local economies of Dillon, Grant and Jackson. Also, the BLM currently authorizes 3 commercial recreational operators to utilize public land in the watershed.

**Objectives:**

- Continue to contribute to the local economy by providing an opportunity for sustainable uses on public land including livestock grazing, utilization of forest products, and recreational activities.
- Recover economic value of dead/dying timber before it is lost due to decay, where physically and economically feasible.

**Resource Concern #4: Cultural Resources**

A detailed summary and description of the cultural resources occurring on each allotment in the EGW is on file in the Dillon Field Office.

**Objectives:**

- Preserve and protect significant cultural resources and ensure that they are available for appropriate uses by present and future generations.
- Reduce imminent threats from natural or human-caused deterioration, or potential conflict with other resource uses.
- Ensure that all authorizations for land and resource use avoid inadvertent damage to federal and nonfederal cultural resource in compliance with Section 106 of the National Historic Preservation Act.

**Resource #5: Visual Resources**

Visual resources within this planning area are managed in three different visual resource management (VRM) classes for various levels of protection of existing visual resources. While the majority of the planning area is managed as VRM Class III, portions near mining activity around Argenta and Grasshopper Creek have been identified for VRM Class IV, and the Henneberry Ridge WSA is managed as VRM Class I.

According to BLM Handbook H-8431-1 (*Visual Resource Contrast Rating*), the visual resource management objective for the majority of the area (VRM Class III) 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." VRM Class IV allows for management activities which require major modifications to the existing landscape, and are typically reserved for areas with existing disturbances typical of those with substantial mining activity, like those areas surrounding Argenta and Bannack.

Henneberry Ridge WSA is managed according to VRM Class I objectives. "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."

**Objectives:**

- Partially retain the existing character of the area outside WSA. Management activities may attract attention but should not dominate the view of the casual observer.

- Preserve the existing character of the landscape. Keep any changes to characteristic landscape very low so as not to attract attention within the Henneberry Ridge WSA.

### **Resource Concern #6: Special Status Plant Species Habitat**

Special status plant species include federally listed Threatened, Endangered, and BLM sensitive plant species. See the Biological Evaluations (BE) on Threatened and Endangered (T&E) species, Special Status plants in Appendix C for additional information. Special status plant species are discussed in the EGW Assessment Report, as well as chapters 3 and 4 of this EA.

#### **Objective:**

- Maintain or enhance habitat for sensitive plant species and provide ample opportunity for reproduction and seedling establishment

### **1.3.3 Key Issues and/or Resource Concerns considered, but Eliminated**

#### **Water Quality and Total Maximum Daily Loads (TMDL)**

The State of Montana's Department of Environmental Quality (DEQ) is responsible for making Beneficial Use Support determinations through a formal process known as Sufficient Credible Data. The BLM does not make Beneficial Use determinations. Water quality and beneficial uses in the East Grasshopper watershed will be examined when DEQ completes a watershed based Water Quality Restoration Plan (WQRP) and TMDL. Watershed Assessment data and information is routinely shared with DEQ. Montana DEQ is currently developing the TMDL for the Beaverhead Watershed which includes the EGW. BLM IDT members are included on the Technical Advisory Group.

All Montana streams and wetlands are covered under the Clean Water Act and the Montana Water Quality Act. Listed or TMDL streams and wetlands are covered under section 303d of the Federal Clean Water Act. All other streams and wetlands are covered under the anti-degradation provisions of both the Clean Water Act and the Montana Water Quality Act. Both Federal and State legislation for water quality protection and restoration require the use of Best Management Practices (BMPs). Grazing and Forestry BMPs intended to conserve and restore Riparian, Wetland, Aquatic, Upland and Forest and Woodland Habitats meet the 303d and anti-degradation provisions of State and Federal water quality legislation. The alternatives developed in Chapter 2 include a variety of BMPs.

The BLM recognizes that water quality may be affected by the alternatives, and decided that effectiveness of BMPs intended to improve water quality would be adequately addressed by analyzing the predicted effects of the alternatives on Key Issues #1 -Riparian, Wetland, and Aquatic Habitat and Associated Species, and #2 - Upland Habitat and Associated Species.

#### **Soil Compaction**

Soil compaction was rated as none to slight on the upland sites assessed during upland health assessments in the watershed, but was noted as a localized concern in some localized riparian and wetland areas. The ID team agreed that soil compaction wasn't an issue in upland habitats and that it would be adequately analyzed under Key Issues and changes in riparian/wetland

vegetation cover, composition and vigor will be measured as a surrogate to measure soil compaction in riparian and wetland areas.

## **1.4 Scope of this Environmental Analysis – Scope, Plan Conformance, Critical Elements**

### **1.4.1 Scope**

The scope of the proposed action includes authorizing livestock grazing, implementing vegetation treatments, prescribed burning, and minor changes in travel management within the EGW. Proposed vegetation treatments are designed to restore specific habitat types on public lands. The proposed action may also include installation, construction, removal or modification of fences, water developments, road maintenance (including maintenance, removal or addition of culverts and hardened crossings).

The proposed action addresses several program areas that affect land health. It is not an all-inclusive management plan or a programmatic EA.

### **1.4.2 Conformance with BLM Land Use Plans, Programs, and Policies**

This document is tiered to the Dillon Resource Management Plan (RMP), approved in 2006, and the management alternatives considered are in conformance with the RMP. Applicable guidance is in the Record of Decision (ROD) and Approved Dillon RMP, which may be accessed on the internet at <http://www.mt.blm.gov/dfo/rmp/index.html>.

The ROD identified goals, objectives, land use allocations, and management actions for each program area on public lands managed by the BLM Dillon Field Office. All alternatives in this EA, except the No Action Alternative, propose treatments in support of these identified actions, allocations, and objectives.

The proposed actions are in conformance with FLPMA, the Taylor Grazing Act, the Standards for Rangeland Health and Guidelines for Grazing Management (43 CFR 4180), the Interim Management Policy for Lands Under Wilderness Review (BLM Handbook H-8550-1), BLM policies and Federal regulations.

All treatments of invasive species in the proposed action will conform to all applicable guidance and standards set forth in the Vegetation Treatments Using Herbicides on BLM Lands in 17 Western States Programmatic EIS approved on September 29, 2007 and the Noxious Weed Control on Public Lands EA (MT-050-08-12) approved April 2008, to which this EA is tiered.

The goals, objectives and management recommendations in the Memorandum of Understanding and Conservation Agreement for westslope cutthroat trout in Montana, the BLM's National Sage Grouse strategy. The Management Plan, Conservation strategies for Sage Grouse in Montana, and the 2010 Nonpoint Source Memorandum of Understanding were also considered during alternative development.

Alternatives developed for this EA meet the Greater Sage-Grouse Interim Management Policies and Procedures developed by the BLM in December, 2011.

National and state policies are also designed to protect public health and safety. The proposed AML actions would be conducted within the parameters of the Surface Mining Control and Reclamation Act and the Montana Strip and Underground Mine Reclamation Act, as well as IM 2007-096 which directs the BLM to prioritize and address hazards associated with AML sites and IM 2008-190 which directs the BLM to identify and report AML sites and hazards and to implement immediate temporary or permanent measures to mitigate known dangerous sites.

The No Grazing Alternative analysis in the Mountain Foothills Environmental Impact Statement (EIS) was also reviewed and considered in preparation of this document and is incorporated by reference.

### 1.4.3 Critical Elements of the Human Environment

Critical Elements of the Human Environment, as defined by BLM Manual 1790-1 are considered below in Table 1.2, along with other applicable resources/programs. The watershed assessment and scoping process indicated which Critical Elements or resources may be affected by the alternatives.

**Table 1.2: Critical Elements of the Human Environment**

Critical Element	Not present	Present, but not affected	May be affected*	Comments
Abandoned Mine Lands		X		Abandoned Mine Lands (AML) work in southwest Montana is conducted under an ongoing zoned program which incorporates Dillon, Missoula, and the Butte Field Offices of the BLM. AML issues are generally divided into two categories- those with environmental issues and those with physical safety problems. Any project associated with AML will be analyzed under a separate Environmental Assessment.
Air Quality			X	Prescribed burning may result in short term air quality deterioration. Prescribed burning is done in accordance with the MT/Dakotas Fire Management Plan and is coordinated with MT DEQ and the MT/ID Airshed Group. During prescribed fire season, the Smoke Monitoring Unit supports the Montana/Idaho Airshed Group to prevent/reduce the impact of smoke on area communities, especially when it could contribute to a violation of national air quality standards.
Areas of Critical Environmental Concern (ACEC)	X			
Cultural Resources			X	See features common to all alternatives in section 2.3.1, and a broader discussion of Cultural Resources in section 3.3.4.
Environmental Justice		X		No low income or minority groups would be disproportionately affected.

Critical Element	Not present	Present, but not affected	May be affected*	Comments
Farmland (prime or unique)		X		Prime or unique farmland will be conserved through actions that address Land Health Standards
Floodplains <sup>1</sup>			X	Discussed under Issue # 1 – Riparian, Wetland and Aquatic Health.
Hazardous and Solid Wastes	X			
Invasive Non-native Species			X	Discussed under Key Issue #4 - Noxious and Invasive Species.
Native American Religious Concerns	X			Tribes familiar with the area have expressed no religious concerns.
T&E species			X	See BE for T&E and Sensitive Species in Appendix C, or in EA file DOI-BLM-MT-B050-2011-010-EA at the Dillon Field Office.
Water Quality (drinking or ground)			X	Discussed under Issue # 1 – Riparian, Wetland and Aquatic Health.
Wetlands/Riparian Zones			X	Discussed under Issue # 1 – Riparian, Wetland and Aquatic Health.
Wild and Scenic Rivers	X			
Wilderness			X	A portion of the Henneberry Ridge WSA is within the watershed. The Cold Spring Creek LWC unit is within the watershed.
* An “X” in this box means that the resource is further evaluated in the affected environment and environmental impacts sections.				
<sup>1</sup> Floodplains are part of stream systems. Actions which improve streams and riparian habitats will comply with Executive Order 11988 in that they are designed to restore and preserve the natural and beneficial values served by floodplains.				

## 1.5 Decisions to be Made

The BLM is preparing this EA to allow the Authorized Officer to make a reasoned and informed decision regarding improving riparian health, improving upland health (including sagebrush steppe habitat), completing vegetative treatments, enhancing biodiversity, adjusting motorized route designations, and revising or renewing term grazing permits. Revised grazing permits would contain appropriate terms and conditions to initiate significant and measurable progress towards achieving the Standards and established goals and objectives within the EGW.

The Dillon Field Manager will choose the alternative that best addresses resource concerns identified by the BLM and issues identified through scoping, and allows for multiple use.

The Dillon Field Manager must also determine if a selected alternative is a major Federal Action that significantly affects the quality of the human environment. If he determines that it is, then an EIS must be prepared before the EGW management plan can proceed.

Implementation of the Decisions issued as a result of this EA will begin in 2013, but full implementation may take several years and is subject to budget constraints. The decisions will

be implemented in consultation and coordination with the affected permittees, the agencies having lands or managing resources within the area, and other interested parties. As with all similar BLM decisions, affected parties will have an opportunity to protest and/or appeal these decisions.

## **1.6 Applicable Legal and Regulatory Requirements**

- Title 43, Code of Federal Regulation, Part 4100
- Taylor Grazing Act of June 30, 1934, as amended
- Sikes Act of 1960, as amended (Habitat improvement on Public Land)
- National Historic Preservation Act of 1966, as amended
- Carlson-Foley Act of 1968 (Weed Control on Public Lands)
- National Environmental Policy Act of 1969 (NEPA)
- Endangered Species Act of 1973
- Federal Noxious Weed Act of 1974, as amended in 1988, 1994
- Federal Land Policy and Management Act of 1976 (FLPMA)
- Fishery Conservation and Management Act of 1976
- Clean Water Act of 1977
- Public Rangelands Improvement Act of October 25, 1978
- Fish and Wildlife Improvement Act of 1978
- Mountain Foothills EIS of 1980
- State of Montana Streamside Management Zone Law of July 1991
- National Fire Plan of 2000
- Healthy Forests Initiative of 2002
- Healthy Forests Restoration Act of 2003
- Dillon Resource Management Plan of 2006
- Greater Sage-Grouse Interim Management Policies and Procedures No. 2012-043

## **1.7 Coordination Requirements**

According to 43 CFR subparts 4110, 4120, 4130 and 4160, coordination requirements include affected permittees or lessees, the interested public, the State having lands or responsible for managing resources within the area, other Federal or State resource management agencies, and the Resource Advisory Council.

“Interested public” means an individual, group or organization that has submitted a written request to the Authorized Officer to be provided an opportunity to be involved in the decision making process for the management of livestock grazing on specific grazing allotments, or has submitted written comments to the Authorized Officer regarding the management of livestock grazing on a specific allotment.

Following the EGW Assessment Report and Determination of Standards, BLM met with other federal agencies, state agencies, lessees and the interested public while developing this EA. A full list of persons and agencies consulted is in Chapter 5.

## **Chapter 2: Description of Alternatives**

This chapter describes the alternative development process, alternatives considered but eliminated from further analysis, and alternatives carried forward and fully analyzed. As many as three management alternatives will be fully analyzed: the No Action Alternative (continuation of current management) and up to two action alternatives. Alternatives may apply to individual allotments (e.g., grazing management changes), or across a broader landscape (e.g., noxious and invasive species mitigation). Based on identified issues, combinations of allowable use levels, grazing systems, stocking rates, vegetative treatments and program specific projects, were discussed at length and carefully considered during scoping and the formulation of the management alternatives by the IDT.

### **2.1 Process Used to Formulate Alternatives**

The development of management alternatives for the Watershed was guided by provisions of FLPMA and NEPA, as well as planning criteria listed in Chapter 1, and public input received during scoping. Other laws, as well as BLM planning regulations and policy, also directed alternative considerations and focused the alternatives on appropriate watershed-level decisions. Chapter 1 discusses the issues and resource concerns considered during the alternative development. The Affected Environment (Chapter 3) discusses existing resource conditions related to the issues and resource concerns identified in Chapter 1.

### **2.2 Alternatives Considered but Eliminated from Further Analysis**

Alternatives that would not make significant progress toward meeting the objectives of the proposed action (section 1.2), or are not consistent with the intent of current BLM legal and regulatory requirements or policy, are not fully analyzed in this document. Alternatives that propose exclusive production or protection of one resource at the expense of other resources are not considered. FLPMA mandates the BLM to manage public lands for multiple use and sustained yield. This eliminates alternatives such as closing all public land to livestock grazing, oil and gas leasing, or managing only for wildlife values at the exclusion of other considerations. In addition, resource conditions do not warrant watershed-wide prohibitions of any specific use. Each alternative considered in this EA allows for some level of support, protection, and/or use of all resources present in the planning area. The following alternatives were considered, but eliminated from detailed study.

#### **2.2.1 Elimination of Livestock Grazing on BLM Administered Lands in the East Grasshopper Watershed**

Eliminating livestock grazing from all BLM administered lands in the watershed was considered, but eliminated from detailed study for the following reasons:

- Eliminating livestock grazing from all BLM administered lands in the watershed does not meet the purpose and need of this EA.

- Resource conditions within the EGW do not warrant elimination of livestock grazing on a watershed-wide basis (i.e., livestock grazing was a contributing causal factor on only 5 of 16 grazing allotments).
- A “No Grazing” alternative was previously analyzed in the Mountain Foothills EIS (March 1980). In February 1981, the “Mountain Foothills Rangeland Management Program Summary” summarized the analysis for this alternative as follows:

*The alternative assumed elimination of domestic livestock grazing from approximately 955,000 acres of public land. No new AMPs would have been implemented, and all existing AMPs would have been terminated. Because private and public lands are intermingled throughout large portions of the study area (only 14 percent of the study area is public land), extensive fencing would have been needed to control livestock trespass on public lands. It was estimated that, on worst-case basis, 2,700 miles of fence, which would cost about \$6,000,000 (1978 dollars), would have been necessary to exclude livestock from public lands. An additional \$41,600 would have been needed to alter existing fences to meet deer and antelope specifications. The monitoring of public land use would have become a major BLM workload. Range developments would not have been constructed or maintained unless they were necessary for other resource programs such as wildlife or watershed.*

*This alternative was not selected because of the extreme adverse social and economic impacts it would have had on the local area. Elimination of livestock grazing would have reduced the income of all 370 ranch families that lease BLM grazing. The overall net reduction in income to the 216 ranch operations would have totaled \$1,862,680 annually, a 13 percent reduction from the present total income level. At least 18 of these operations probably would have been forced out of business.*

*The extensive fencing required by this alternative could have caused substantial problems in wildlife movement. This alternative would have resulted in the greatest short-term improvement in erosion condition and slight improvement in ecological range condition. Most wildlife habitat would have improved to satisfactory condition; however, the total elimination of livestock grazing and the expenditure of public funds to the degree identified in this alternative would not have been justified on a multiple use basis.*

As of May 2012, the monetary values presented in the 1981 analysis have increased 350 percent (BLS 2012).

- The recently updated and approved Dillon RMP identifies 80,237 acres of public land in the EGW as open to livestock grazing and no lands that are unavailable or closed to livestock grazing. Therefore, an allocation of this level of use has been analyzed and approved for this watershed in the Land Use Plan.
- Due to the intermixed land ownership pattern in the allotments included in the EGW, at approximately 150 miles of fence at an average cost of \$9,000 per mile (\$1,350,000 total) would need to be constructed between private and/or state land and BLM administered

land to effectively implement a “No Grazing” alternative on BLM administered land. This figure does not include fencing around parcels that are essentially unavailable to livestock due to topography. Surveying and constructing approximately 150 miles of fence along BLM boundaries would be cost prohibitive and cause an unacceptable level of barrier/ entanglement hazards for big game and collision hazard for sage grouse within the EGW.

## **2.3 Description of Alternatives**

### **2.3.1 Features Common to All Alternatives, Including the No Action**

#### **Livestock Management**

Term grazing permits/leases for nine allotments that were determined **not** to have resource issues or concerns relating to current livestock management, or where no management changes are proposed under Alternatives B and/or C, will be reissued. These allotments are: Bannack, Bannack Road, Cross, Ermont, Flying N, Millpoint, Red Mine Isolated, and Road Agent Rock. The term grazing permit for the Taylor Creek allotment will also be reissued, although an allotment boundary adjustment between the Taylor-Buffalo and Taylor Creek allotments is analyzed in Alternative B.

The BLM encourages, and if warranted will require, the use of temporary electric fence, livestock supplement (e.g., salt, protein block) placement, riding, and herding as a means of improving livestock distribution in all alternatives. When used, livestock supplement should be placed on ridges or terraces at least ¼ mile from the nearest livestock water source.

The following actions will be taken regarding existing range improvement projects:

- All water developments and troughs that are no longer in use will be abandoned and infrastructure removed, but spring enclosure fences may be retained and maintained.
- Annual maintenance will be performed to assure that water developments, including spring boxes, pipelines, troughs, valves, shutoff devices, and enclosures, are functioning properly.
- Wildlife escape ramps will be installed in all water troughs.
- Existing BLM fences that impede wildlife movement will be modified or rebuilt to BLM specifications on a prioritized schedule.
- Dysfunctional fences will be removed, modified, or rebuilt. Unnecessary fences will be removed.

#### **Travel Management and Roads**

Travel management will be implemented as prescribed in the Dillon RMP. Roads identified as open to public use will be signed with a white arrow symbol on a flexible sign post. Roads not identified as open to public use will be:

- Left unsigned unless there is evidence of regular use.
- Signed closed if there is evidence of regular use.

- If signing is ineffective at discouraging use, roads would be obliterated to the extent possible (made unnoticeable), at least at the intersection with an open route, or physically closed when continued use is causing significant unacceptable resource impacts or user conflicts.

### **Noxious and Invasive Species**

Management of noxious weeds will continue in cooperation with Beaverhead County, federal and state agencies, private landowners and other partners. All invasive species on the Montana state noxious weed list will be treated to the degree financial resources allow. Areas where private landowners cooperate, participate, and support the BLM's weed management strategies, are given a higher priority for treatment.

### **Special Status Species**

Activities that disturb mineral soil (such as blading, plowing, ripping, etc.) may not be allowed within the boundaries of populations of special status plant species. In habitats likely to support rare plants, field inspections would be conducted to search for special status plant species prior to authorizing surface disturbing activities. If rare plants are found in the course of the botanical survey, adverse impacts would be mitigated through project redesign or abandonment.

In conjunction with Montana Audubon and FWP, the BLM will continue monitoring the sage grouse leks in the EGW and will identify fences in close proximity of leks and large wintering concentrations that need to be marked to reduce collisions. On allotments with sagebrush habitat throughout the EGW, BLM will maintain existing sagebrush habitat so that 70% or more of big sagebrush communities provide vegetative composition and structure for sagebrush obligate species. BLM will maintain nesting/early brood rearing canopy cover of 15-25% sagebrush and an average of 6 to 7 inches herbaceous understory within site potential, and maintain or increase composition of highly nutritious forbs (e.g. composites and legumes) in nesting/early brood rearing habitat.

Incorporate applicable design and mitigation measures in water development projects to help reduce mosquito production and potential for West Nile virus through modifying and eliminating mosquito breeding sites as outlined in BLM Information Bulletin (IB) No. MT-2011-033.

In cooperation with MT FWP, continue monitoring WCT populations, at least every 5 years, in the Dyce Creek drainage.

Term grazing permits/leases shall be amended in migration/dispersal corridors to state that depredation losses from wolves are possible.

### **Wilderness**

The Henneberry Ridge Wilderness Study Area will continue to be managed in accordance with the *Interim Management Policy for Lands Under Wilderness Review* (BLM Handbook H-8550-1) to ensure that those wilderness characteristics that existed at the time of the 1979 wilderness inventory will remain unimpaired until such time as Congress either designates the area as wilderness, or releases it from further consideration.

Lands within the EGW were evaluated for the presence of wilderness characteristics, and one area consisting of approximately 12,854 acres south and east of the Bon Accord Road, referred to as the Cold Springs Creek unit (#MT-050-031), was identified as having wilderness characteristics in accordance with the most recent policy guidance. Activities proposed to occur within this area will be evaluated to consider their impacts to wilderness characteristics.

### **Recreation**

Dispersed recreational activities will continue to be managed consistent with other resource management objectives. Special Recreation Permits will continue to be considered on a case-by-case basis with the exception of big game hunting. Outfitted big game hunting will continue to be limited to existing permits and use levels. Opportunities for big game hunting, wildlife viewing, horseback riding, and other backcountry recreation would be maintained.

### **Cultural Resources**

As required by Section 106 of the National Historic Preservation Act, a Class III cultural resource inventory is required prior to the implementation of any proposed range or habitat improvement projects. Should significant cultural resources be identified, adverse impacts would be mitigated through project abandonment or redesign. Care would be taken to avoid and protect significant cultural resources and any standing structures (should they occur) during the course of any proposed project. In addition, personnel from the BLM should be notified of the presence and location of any cultural resources encountered by contractors or lessees during the course of operations on public lands.

### **Conifer Treatments**

- Cones may be collected on five needle pine trees (whitebark and/or limber pine) suspected to be resistant to white pine blister rust and will be sent for testing to determine their resistance level. Additional cones may be collected as funding and cone crops allow. This seed may be sent to the national seed bank and genetic restoration program and/or incorporated into an office-wide operational collection that has been banked for future management efforts.
- Pheromones (e.g., verbenone, MCH) may be applied to selected areas where trees are determined to be at risk to bark beetle attack (refer to Pheromone Use in the Dillon Field Office EA #DOI-BLM-B050-2011-007-EA).

### **Monitoring**

Under all alternatives, resource monitoring will be implemented to measure progress toward meeting site-specific objectives. Monitoring will be done according to the monitoring plan shown as Appendix B.

### **2.3.2 Description of Alternative A - No Action (Continuation of Current Management)**

No Action is defined as the continuation of current management. This alternative will be analyzed to serve as baseline information for the Authorized Officer to make a reasoned and informed decision.

## Livestock Grazing Management

Under Alternative A, livestock management would continue under the current Terms and Conditions in 14 grazing allotments with two allotments, Cross and Reservoir Creek AMP, returning to a grazing management system that are independent of each other (Table 2.1).

**Table 2.1: Grazing Allotment Summary**

Allotment Name, Number, and Category <sup>1</sup>	Livestock Number & Kind <sup>2</sup>	Season of Use	Grazing System <sup>3</sup>	BLM Stocking Rate	BLM AUMs	BLM Acres	Acres in Other Ownership <sup>4</sup>	Total Acres
Baldy Mountain, 30037, (I)	200 C	05/15-09/15	RR	11.2	726	8,098	ST=655; PVT=2,436	11,189
Bannack, 30015, (I)	282 C	05/10-06/24	RR	16.3	354	6,697	ST=1,756; PVT=384	8,837
	282 C	06/25-06/30	RR		56			
Bannack Road, 20619, (C)	6 C	11/01-12/01	DS	11.5	6	69	0	69
Buffalo Creek, 30617, (C)	11 C	04/01-01/31	CU	7.5	111	829	ST=81	910
Cross , 30033, (I)	375 C	05/16-08/25	RR	8.3	419	3,480	PVT=242	3,722
Ermont, 10598, (M)	145 C	06/06-08/31	RR	4.1	33	136	0	136
Flying N, 20724, (I)	2 C	05/16-10/31	CU	9.3	11	102	0	102
Frenchie, 10121, (M)	103 C	10/01-03/31	DS	9.7	530	11,737	ST=742; PVT=1,418	13,897
	147 C	10/01-03/31	DS		686			
Millpoint, 10751, (C)	12 C	05/15-12/02	CU	9.2	80	734	0	734
Red Mine Isolated, 30609, (C)	1 C	05/15-09/30	CU	3.0	5	15	0	15
Reservoir Creek AMP, 30030, (I)	625 C	05/16-08/31	RR	8.5	1,531	13,010	ST=5,060; PVT=356	18,426
Reservoir Creek Custodial, 20723, (C)	6 C	07/01-12/31	CU	7.3	36	263	PVT=803	1,066
Road Agent Rock, 00759, (C)	7 C	05/01-10/25	CU	7.2	41	296	PVT=605	901
Stonehouse, 30005, (M)	600 C	05/10-06/25	RR	12.4	824	26,581	FS=376; ST=2,967; PVT=5,114	35,038
	600 C	11/10-12/31	RR		852			
	200 C	05/10-06/25	RR		219			
	200 C	11/10-12/31	RR		243			
Taylor-Buffalo, 10122, (I)	200 C	06/01-06/25	SL	15.7	164	5,738	PVT=274	6,012
	200 C	05/25-06/24	SL		202			
Taylor Creek, 10745, (I)	140 C	11/01-12/01	DS	8.5	143	1,215	FS=97; ST=46; PVT=3	1,361
<b>BLM Totals</b>	<b>3,262 C</b>			<b>AVG = 10.9</b>	<b>7,269</b>	<b>79,000</b>	<b>23,415</b>	<b>102,415</b>

<sup>1</sup>Allotment Category: I=improve, M=maintain, C=custodial  
<sup>2</sup>Livestock Kind: C=cattle  
<sup>3</sup>Grazing System: SL=season long, RR=rest rotation, DS=dormant-season use, CU=custodial use  
<sup>4</sup>Other Ownerships: FS=US Forest Service, ST=Montana DNRC, PVT=Private

Under this alternative, forage from the Cross allotment would be assigned on an office-wide priority need basis to replace forage lost when an allotment in the Dillon Field Office is rested or a pasture within an allotment is rested. For example, forage from Cross allotment could be used by a permittee who had a wildfire reduce forage on their BLM allotment or on an allotment that

has a BLM sensitive plant or animal that requires resting or improving resources on the allotment. No new range improvement projects would be constructed under this alternative.

Under the No Action Alternative, all other currently authorized activities (e.g., recreation permits, mineral development) would continue as permitted. No changes to travel management designations or other vegetative treatments would be implemented under the No Action Alternative. Treatment of noxious weeds would continue as in the past with roads, trails, and washes (i.e., spread vectors) being the primary targets. An average of 25 acres would be treated with herbicides annually within the EGW under the No Action Alternative.

### **2.3.3 Features Common to All Action Alternatives**

This section covers proposed actions and project design features that would be implemented regardless of the action alternative or combination of alternatives chosen by the Authorized Officer.

#### **Administrative Actions**

- The management category of the Flying N and Taylor Creek allotments would be changed from improve (I) to maintain (M).

#### **Livestock Management**

- Livestock management changes would be initiated during the 2013 grazing season. Full implementation, which is dependent on other proposals (e.g., rangeland projects), may take up to five years, due to financial, logistical, or other constraints.
- AUMs reduced from current active use would be held in suspended non-use on the revised term grazing permits/leases.
- Annual utilization guidelines on cool-season bunchgrasses would be 50% (to maintain plant health/vigor) or when riparian stubble height averages:
  - four inches on non-fisheries and non-native fisheries streams;
  - six inches on WCT streams on the greenline; or,
  - three inches on the floodplain by reach, whichever occurs first.

These annual use guidelines would be added to the terms and conditions of the term grazing permits/leases, and would be applicable to all allotments included in the EGW as a tool to determine moves between pastures and/or off the allotment, and in conjunction with long term trend data to determine management effectiveness.

- With prior approval, flexibility would be authorized for the season of use on each allotment if annual weather conditions and forage production warrant. The turnout date may be adjusted up to seven days earlier than specified on the permit, due to yearly variations in weather affecting forage production. Livestock may need to be removed from a specific pasture prior to the maximum number of days specified in the grazing schedule. If this occurs, the time allocated in subsequent pastures would be adjusted proportionally. Conversely, if annual production is unusually high, livestock may be allowed to remain in a given pasture for up to seven additional days and the remainder of the rotation schedule adjusted accordingly.
- After consultation with the BLM, and written approval, permittees/lessees may be required to adjust the pre-planned pasture grazing sequence (AMP) due to drought or

other unforeseen natural events. Also, with prior approval, more livestock may be grazed for a shorter period within the authorized season of use. However, the maximum authorized AUMs, or season of use, as specified in the term grazing permits/leases cannot be exceeded by allowing this flexibility.

- Permittees or lessees shall provide reasonable administrative access across private and leased lands to the BLM for the orderly management and protection of the public lands.

### **Conifer Treatments**

- State of Montana Best Management Practices (BMPs) and the Streamside Management Zone (SMZ) laws would be followed for all treatments or road activities in or near riparian areas. Guidelines as described in the Montana SMZ law (available at <http://www.mt.nrcs.usda.gov/technical/ecs/forestry/technotes/forestryMT18/>) would be the minimum standard design features unless alternative practices authorizations are obtained.
- Where commercial treatment units are implemented through a timber sale, standard timber sale contract provisions which provide protection from erosion, sedimentation, and soil compaction would be adhered to. The timber sale contract would be made available to the general public upon advertisement of the sale.
- If market conditions permit, biomass material may be removed from within commercial treatment units. Sufficient residual biomass material would be left on site to maintain nutrient recycling and desirable micro-site conditions.
- Existing roads which are not designated open routes may be used for commercial harvest treatments, and would be physically closed following completion of use.
- Conifer Treatment units would be monitored for noxious weeds and cheatgrass, and treated if necessary.
- Conifer Treatment units in suitable habitat would be surveyed for goshawk and great gray owl nesting prior to implementation. If a goshawk or great gray owl nest is found in a treatment unit, timing stipulations would be enforced to avoid disturbing nesting activity.
- Off road vehicles and equipment would be required to be pressure washed to remove weeds and weed seeds prior to starting operations.
- Pre-treatment weed inventory/control and post treatment weed control would be completed within each unit.

### **Noxious and Invasive Species**

- Any new noxious weed infestations would be targeted for prompt eradication before they have a chance to get well established.
- Seed head weevils, *Larinus minutus*, root boring weevils, *Cyphocleonus achates*, and root boring moths, *Agapeta zoegana*, would be released as biological control agents on larger infestations of spotted knapweed to reduce the plant's competitiveness and help control the spread of knapweed by reducing seed production.
- When a biological control becomes available for houndstongue it would be considered for release on infestations within the watershed.
- Aerial application of herbicides would not occur during migratory bird nesting, which is generally between April 15<sup>th</sup> and August 1<sup>st</sup>, depending on the current year's weather and its effect on timing of nesting. Aerial application would occur prior to mule deer and elk arrival on winter range to avoid disturbing these species.

### **Special Status Species**

- If after one grazing cycle (3 years) measurable progress isn't being made along specific riparian reaches in the Dyce Creek pastures, the following three riparian exclosures would be constructed: 1) along reach 1564, approximately ½ mile of East Fork Dyce Creek at Sec. 26, T. 6 S., R. 12 W.; 2) along reach 1571 approximately ¾ mile of East Fork Dyce Creek at Sec. 26, T. 6 S., R. 12 W.; and 3) along reach 1591, approximately ¾ mile of West Fork Dyce Creek at Sec. 26, T. 6 S., R. 12 W.

### **Water Developments**

- All applicable State and Federal Permits would be obtained and the terms and conditions applied.
- Spring sources and associated riparian wetland habitat would be fenced to exclude livestock use on developed springs.
- Flow measurements would be gathered at springs proposed for new development. Springs that have inadequate flows to provide a reliable water source for authorized livestock, while maintaining existing wetland/riparian habitat would not be developed. Adequate water would be left at the spring source to maintain wetland hydrology, hydric soils, and hydric vegetation.
- No new roads would be authorized as a result of water developments. Permit/lease holders may be authorized to travel along pipeline routes to perform maintenance as defined in the term grazing permit/lease.
- All old materials (pipeline, troughs, head boxes, etc.) would be cleaned up and removed when springs are redeveloped, maintained or abandoned.
- Soil disturbance resulting from pipeline installation would be seeded with a native seed mix during the fall, following construction.
- State of Montana Water Right laws and administrative procedures would be followed in applications for Water Rights on Public Land. The BLM would limit maximum flow rates to 35 gallons per minute or less and maximum volumes to 10 acre-feet or less for new developments. The BLM would submit proposed changes to Montana DNRC and comply with Public Notice requirements for changes to existing water rights. Approvals would be obtained prior to construction where additional Stock Tanks resulting in new points of use are to be added to existing systems and changes to existing water right claims would occur. Applications for new water rights would be after construction in most cases. The BLM is committed to respect water rights of all parties and will not knowingly infringe on other water rights holders.

### **Stream Crossings**

- All applicable State and Federal Permits would be obtained and all permit conditions would be followed for construction of stream crossings.
- The most appropriate stream crossings (e.g., culverts, hardened crossings or temporary bridges), would be selected based on site specific conditions and potential impacts, including: floodplain fill, economics, road safety as well as impacts to stream channel and vegetation.
- Temporary and/or permanent culverts would be adequately sized to maintain stream dimensions, patterns and profiles.

## **Fences**

- Any new or replacement boundary fences would normally be a four-wire fence and any new interior (pasture) fences would normally consist of three wires, constructed in conformance with BLM Fencing Handbook H-1741-1.
- High tensile electric fences would be considered in areas where they may provide an effective alternative to traditional barbed wire construction. These would also be constructed in conformance with BLM Fencing Handbook H-1741-1.
- Fences around springs or tanks would be modified to prevent avian predators from using posts as hunting perches. Modifications include installing spikes or cone-tops to wood posts, replacing wood posts with metal t-posts, and using metal t-posts instead of wood posts and jack and rail, where practical.
- Based on topography, new fences in sage grouse core habitat within a ¼ mile of active sage grouse leks or known winter concentrations will be marked with vinyl markers to make them more visible and reduce collisions.

## **Travel Management**

Minor changes would be made to the designated motorized routes to correct mapping errors and refine the travel management decisions reflected in the 2006 Dillon RMP and to address certain resource management issues. See maps 3, 5, 7, and 10 in Appendix A for the following route changes.

A route providing access to sage grouse viewing opportunities southwest of Argenta, near the Ermont mine, would designate an additional 1.3 miles open to motorized wheeled vehicles. This route was not included in the original inventory that preceded the RMP travel designations, and would be added under routine plan maintenance in accordance with Action 8 under the Travel Management and OHV Use section of the RMP (p. 61). An additional 0.9 miles of road would be designated open following the powerline access route northeast from the county road that leads to Argenta, to access other open routes in Frying Pan Gulch. And an additional 0.2 mile segment west of the Badger Mine would make logical connections of other routes in the area.

South of Badger Pass, approximately 1.6 miles of road would be designated open just west of the gravel pit, and extending south to other open routes. Approximately 2 miles of road previously designated open would be closed, including one road segment shown open that does not exist east of Road Agents Rock, and approximately 1.6 miles of powerline access road between two pieces of private property west of McDowell Spring. Both of these spur routes are very lightly traveled, and neither is legally accessible from the Bon Accord road across private property. About 0.6 miles of existing road would be designated open, north of Puddles Spring.

Approximately 1.7 miles of designated route between Hwy 278 and the Taylor Creek road would be closed to motorized vehicles. This route is grown over with sagebrush, is virtually inaccessible from a drop-off on the Taylor Creek Road, and is seldom, if ever used for public recreation. Another route approximately 0.3 miles long, running north from Hwy 278 up Taylor Creek was designated open, but does not exist, and would not be accessible across private lands adjacent to the highway. This mapping error will be corrected to remove the route from the roads database. One other mapping error would be corrected in this area, south of the highway,

simply showing the designated open route on the correct alignment, and deleting the incorrect one from the roads database.

Approximately  $\frac{3}{4}$  mile of road near the Reservoir Creek sage grouse viewing area would be designated seasonally open during April to motorized vehicles to provide the public an opportunity to view strutting sage grouse. This arrangement was negotiated with the local sage grouse working group, and has been managed that way since just after the RMP was signed. This EA would make this management more permanent.

Approximately two miles of road, within the Reservoir Creek Custodial allotment, would be undesignated as an open road to the public. This road is seldom used and not visible on certain portions of it. Often, this road is saturated with groundwater from Reservoir Creek and is not physically passable. A BLM-maintained road runs parallel to this road about a  $\frac{1}{2}$  mile to the south which most recreationists prefer driving.



**Figure 2.1: A road within the Reservoir Creek Custodial allotment that is proposed to be undesignated.**

Other minor route designation adjustments would be made in the area of the Taylor-Buffalo allotment, north of Reservoir Creek, to better reflect the existing use on these roads.

Within the watershed planning area, a total of 8.5 miles of road officially designated open to motorized use would be “un-designated” or closed, while a total of 9 miles of road previously closed to motorized use would be designated open. Nearly all of these changes are to correct mapping errors and refine decisions of the routes designated in the Dillon RMP in 2006.

### 2.3.4 Description of Alternative B

#### Livestock Management

Changes to livestock grazing management are being proposed for seven grazing allotments. Current or historic livestock use has been determined to be one of the causal factors for at least one Rangeland Health Standard not being met on five of these allotments, which include the Baldy Mountain, Buffalo Creek, Reservoir Creek Custodial, Stonehouse, and Taylor-Buffalo allotments. Two additional allotments, Cross and Reservoir Creek AMP, passed all Rangeland Health Standards, but have grazing management changes and projects proposed to improve livestock distribution, increase water amount available to the livestock watering system or to encourage livestock to use watering sources that are away from Watson Creek. In addition to the actions described above under 2.3.3, one or a combination of the following actions would be implemented: administrative changes, modification of grazing management plans, the construction or modification of range improvement projects, and/or the implementation of vegetative treatments. Please refer to allotment maps 2-10 in Appendix A for the location and extent of the proposed livestock grazing management changes and rangeland improvement projects.

#### Baldy Mountain #30037 (map #2, 3, & 4)

##### *Grazing Management:*

Livestock Number & Kind	Begin Date	End Date	% Public Land	AUMs
200 C	05/15	09/15	89	726

The permitted grazing use would remain the same as under Alternative A, but the grazing rotation would be changed as follows:

Year	Pasture			
	Red Mine	Baldy Mountain (East Fork Dyce Creek)	Baldy Mountain (West Fork Dyce Creek)	Sheep Canyon
2013	05/15 – 07/15	08/16 – 09/15	07/16 – 08/15	SLACK
2014	05/15 – 07/15	REST	REST	SLACK
2015	REST	05/15 – 06/14	06/15 – 07/15	SLACK

Under this grazing rotation, the Red Mine pasture would be grazed in the spring for two consecutive years and be completely rested the third year. The Baldy Mountain pasture would continue to be grazed on an early-late-rest schedule and grazing use along the East and West Forks of Dyce Creek would be limited to when greenline stubble height guidelines are met, or 30 days each. The privately-owned Shearing Shed pasture would be removed from the allotment, but would still be used as part of a four-pasture rotation.

##### *Structural Projects:*

- Construct about 3 miles of three-strand fence along the ridge between the East and West Forks of Dyce Creek.
- Construct an enclosure at the spring and ponds in the, SW<sup>1</sup>/<sub>4</sub>SW<sup>1</sup>/<sub>4</sub>NE<sup>1</sup>/<sub>4</sub> Sec. 34, T. 6 S., R. 12 W. and coordinate with the private landowners to install a headbox and water troughs.

- Expand the exclosures at Dyce Creek, El Ante, El Venado and La Gallina Springs and replace the existing water troughs with 1,000-gallon water troughs at each location. Relocate the replacement troughs at El Ante and La Gallina away from the wetlands.
- If feasible, reconstruct the Red Mine Pipeline.
- Develop the spring in the NE $\frac{1}{4}$ SE $\frac{1}{4}$  Sec.15, T. 6 S., R. 12 W. and install a 1,000-gallon water trough.
- If feasible, construct up to 2 miles of pipeline and pump water from ponds on the West Fork of Dyce Creek to two locations on the ridge, between the East and West Forks, and install 1,000-gallon water troughs at each site.
- Initiate stream channel restoration on approximately 50 feet of the East Fork of Dyce Creek in the SE $\frac{1}{4}$  Sec. 14, T. 6 S., R. 12 W., upstream of stream crossing #4, (reach 1572) where past stream excavation has greatly over widened the stream channel and is contributing sediment.
- Construct a riparian exclosure along approximately  $\frac{3}{4}$  mile of East Fork Dyce Creek in SE $\frac{1}{4}$  Sec. 14, T. 6 S., R. 12 W. (reach 1572) to improve riparian function and improve WCT habitat.

*Travel Management:*

- Stream crossing #3 would be hardened using a soils stabilization system (e.g., GeoWeb) and water bars would be installed on the approaches to divert sediment away from the stream.
- Close the portion of the East Fork Dyce Creek road on the east side of the drainage in SE $\frac{1}{4}$  Sec. 14, T. 6 S., R. 12 W. prior to stream crossing #4 to reduce sedimentation issues in high value WCT habitat. This would close approximately 0.4 mile of currently open road to motor vehicles.
- Pursue obtaining a public road easement through private land on the existing East Fork Dyce Creek Road, located in Sec. 23, T. 6 S., R. 12 W. If a road easement is obtained, stream crossing #2 would be improved with an oversized culvert, set below stream bed grade, water bars would be installed prior to stream crossing #2, to divert sediment originating from road runoff, and other road maintenance issues could also be addressed.

*Conifer Treatments:*

Individual unit names, size and objectives are shown on Table 2.2 below, and unit locations are shown on Map 4.

Up to 1219 acres of non-commercial mechanical/prescribed fire treatments are proposed under Alternative B in the Baldy Mountain allotment (El Ante Rx, Dyce Creek Spring Rx, Garrett Hill Rx, and Middle Dyce Rx treatment units). Treatment would focus on areas where conifers have most noticeably expanded into sagebrush/grassland compared to historic aerial photographs and field reconnaissance. The primary goal would be to kill/remove 60% or more of conifers less than 30 feet tall. Treatment methods would be a combination of cutting (lop and scatter) and/or prescribed fire. Actual prescribed fire treatment boundaries within the units identified on Map 4 would be based on topographic features such as ridges and drainages, and man-made features such as trails and roads. When using prescribed fire to reduce conifer expansion into sagebrush habitat, an emphasis would be placed on maintaining 50% or more of the mature sagebrush canopy cover on a drainage (HUC 6) basis.

**Table 2.2: Conifer Treatments Proposed Under Alternative B within the Baldy Mountain Allotment.**

Unit Name	Acres	Objective(s)	Treatment Type(s)
El Ante Rx	397	Reduce conifer expansion into sagebrush/grassland	Non-commercial mechanical/ Broadcast Rx fire
Dyce Creek Spring Rx	377		
Garrett Hill Rx	165		
Middle Dyce Rx	280		
Super Mahogany #1	1581	Reduce conifer shading and protect mahogany from browse.	Non-commercial mechanical
Mahogany #2	136		
Mahogany # 3	98		
Dry Gulch	312	Salvage and sanitation of insect/disease-affected stands	Commercial harvest
Dyce Creek Riparian-Conifer Removal	30	Reduce conifer expansion into riparian area and adjacent aspen stands	Non-commercial mechanical

One season of rest from livestock grazing may be needed prior to burning to allow sufficient growth of fine fuels (grasses) to ensure a successful burn. Generally, two growing seasons of rest from livestock grazing would be required following burns to allow regrowth and reestablishment of vegetation in the treated areas. Temporary fencing or hot tape (electric fence) may be used to allow the appropriate rest before or after a prescribed fire treatment. A burn plan would be prepared and approved prior to implementing prescribed fire treatments, and units would be burned as fuel and weather conditions allow. The implementation of prescribed fire treatments would occur over the next 10 years. Fire managers would coordinate the timing of prescribed fire treatments (seasonally) and the area treated per year to minimize public resource use conflicts. Fire managers and wildlife biologists would coordinate the timing of prescribed fire treatments (seasonally and yearly), and the acres treated per year to minimize conflicts with wildlife use.

Up to 1815 acres of mountain mahogany habitat in the Baldy Mountain allotment would be treated to reduce Douglas-fir and Rocky Mountain juniper competition and maintain winter big game habitat. The primary objective of the treatment would be to allow existing mountain mahogany plants access to full sunlight, and to temporarily protect young mahogany from some browsing by arranging residual slash. This would be completed utilizing only hand operated tools (e.g., chainsaws). Trees to be cut within the treatment unit would be all Douglas-fir less than 30 feet in height. Rocky Mountain juniper with a 12-inch or less diameter root crown would be selectively removed with a focus on leaving them in random clumps to provide thermal cover for wintering mule deer. No limber pine would be cut and treatments would not occur during big game winter use.

Commercial removal of wood products (e.g., sawlogs, firewood) would be allowed on up to 312 acres (Dry Gulch treatment unit), 273 acres of which are in the Baldy Mountain allotment, and 39 acres of which are in the Holland-Carroll Isolated allotment of the Beaverhead West Watershed (see Map 4). Actual harvested area would be within the unit identified, but may not cover the entire area within unit boundaries. Up to 1.0 miles of new temporary road would be allowed to be constructed for the removal of wood products, and would be constructed to the minimum standard required for safe transport of merchantable material. Any new roads constructed would be physically closed to preclude vehicle use post-harvest. In stands composed

primarily of lodgepole pine, the silvicultural prescription would focus on the salvage harvest of dead and dying trees, removing up to 95% of trees affected by mountain pine beetle. Where scattered healthy Douglas-fir and spruce trees occur in stands composed primarily of lodgepole pine, these trees would be left. In mixed conifer and Douglas-fir stands, green trees would be thinned across all diameters, with focus on leaving those with healthy crowns and minimal budworm damage, to create a residual stand with an average basal area of 80ft<sup>2</sup>/acre with a range from 20-100ft<sup>2</sup>/acre. Hand or machine falling and ground-based yarding would be used. Harvest would not occur during big game hunting seasons (October 15-December 1).

The removal of conifers from the riparian area and adjacent upland areas is proposed under Alternative B along up to 2½ miles of the Dyce Creek drainage, within the Baldy Mountain allotment (Dyce Creek Riparian treatment unit). The goal would be to kill/remove 100% of conifers within the riparian zone, but a range of 80-95% conifer mortality would be considered successful. Treatments would cut and/or girdle conifers with chainsaws and/or other hand tools, focusing on aspen stands within the riparian area (up to 100 feet from the stream centerline on each side of the stream), as well as adjacent upland aspen stands outside the 100 foot corridor. The felled conifers would be oriented along the stream bank to help mitigate potential erosion and stream banks impacts by authorized livestock and wild ungulates. Felled trees would not be left within the stream channel. No new roads or stream crossings would be constructed to complete this treatment. These treatments may be followed by seeding with an appropriate native seed mix depending on the current canopy cover of conifers and herbaceous understory composition and cover. Post treatment management would include a minimum of two growing seasons of rest from livestock use to allow vegetative response from existing or seeded understory vegetation. Tools such as orienting the felled conifers along the stream, temporary fencing or hot tape may be used to allow the appropriate rest post treatment.

**Bannack # 30015** (map #5)

*Structural Projects:*

- Repair the Hangman’s Gulch Spring Enclosure (SE¼SW¼SE¼ Sec. 31, T. 7 S., R. 11 W.). Reconstruct or remove the development, depending on whether it will produce an adequate water supply.

**Buffalo Creek #30617** (map #6)

*Grazing Management:*

Livestock Number & Kind	Begin Date	End Date	% Public Land	AUMs
11 C	04/01	01/31	100	111

The permitted grazing use would remain the same as under Alternative A, but the 75 AUMs available in the Hayes Creek pasture would only be available every third year. In the other two years, only 36 AUMs would be available. The remaining parcels in this allotment would continue to be managed on a custodial basis.

*Structural Projects:*

- One mile of four-strand fence would be constructed along the southern boundary of Sec. 19, T. 7 S., R. 12 W.
- A half mile of fence would be removed from the SE¼ Sec. 19, T. 7 S., R. 12 W.

- The BLM boundaries in the NE<sup>1</sup>/<sub>4</sub>NE<sup>1</sup>/<sub>4</sub> Sec. 20 and NW<sup>1</sup>/<sub>4</sub>NW<sup>1</sup>/<sub>4</sub> Sec. 21, T. 7 S., R. 12 W. would be identified and clearly marked.

**Cross #30033** (map #7)

*Grazing Management:*

Livestock Number & Kind	Begin Date	End Date	% Public Land	AUMs
375 C	05/16	08/25	100	419

The Cross allotment would continue to be used as an Resource Reserve Allotment where forage from it would allow another grazing allotment in the field office to be rested or have a reduction in grazing AUMs to allow for more rapid attainment of rangeland health. The allotment chosen annually to be used in conjunction with the Cross allotment would be the allotment in the field office with the highest priority for resource improvement.

Reservoir Creek AMP, due to its high resource values for wildlife, is a high priority allotment each year. In order to appropriately analyze grazing management on the Reservoir Creek AMP allotment, the IDT determined that it was, presently, the highest priority. Therefore, in 2013, the Cross allotment will be used in conjunction with the Reservoir Creek AMP's grazing management system and this system will be analyzed as Alternative B. If, in the future, it is determined that another allotment within the DFO has a higher resource need than the Reservoir Creek AMP allotment, the Cross allotment would be available for use under the same terms and conditions and grazing schedule as described in this alternative.

The 10-year grazing rotation would be as listed below:

Year	West Reservoir Herd #1 375 Cattle Maximum			
	Cross	R-4	W-1	W-2
2013	REST	Late	Mid	Early
2014	Early	REST	Late	Mid
2015	Mid	Early	REST	Late
2016	Late	Mid	Early	REST
2017	REST	Late	Mid	Early
2018	Early	REST	Late	Mid
2019	Mid	Early	REST	Late
2020	Late	Mid	Early	REST
2021	REST	Late	Mid	Early
2022	Early	REST	Late	Mid

Grazing Season: Early = 5/16 to 6/18; Mid = 6/19 to 7/22; Late = 7/23 to 8/25

The length of time in each pasture would be approximately as follows: Cross = 32 days; R-4 = 35 days; W-1 = 33 days; W-2 = 33 days. Average days in these pastures would be 33 days. Pasture moves would be based on utilization guidelines.

*Structural Projects:*

- Construct a pipeline from the Craigholm Well (SE<sup>1</sup>/<sub>4</sub>SW<sup>1</sup>/<sub>4</sub> Sec. 32, T. 9 S., R. 12 W.) about one mile south to a proposed 1,000-gallon trough located in the SW<sup>1</sup>/<sub>4</sub> Sec. 4, T. 9 S., R. 12 W.

**Ermont #10598** (map #8)

*Structural Projects:*

- Maintain the dam associated with the Ermont Pipeline on the tributary to Ermont Gulch #1556, and enlarge the existing exclosure (SW<sup>1</sup>/<sub>4</sub>NW<sup>1</sup>/<sub>4</sub>SW<sup>1</sup>/<sub>4</sub> Sec. 34, T. 6 S., R. 11 W.).

**Flying N #20724** (map #8)

*Structural Projects:*

- Coordinate with the USFS to maintain the snow-fence on the ridge in the E<sup>1</sup>/<sub>2</sub> NE<sup>1</sup>/<sub>4</sub> Section 29, T. 6 S., R 11 W.

**Frenchie #10121** (map #9)

*Structural Projects:*

- Abandon the following three dysfunctional spring developments and remove the infrastructure: Black Hill (SE<sup>1</sup>/<sub>4</sub>SE<sup>1</sup>/<sub>4</sub> Sec. 11, T. 8 S., R. 11 W.), East Frenchman (NE<sup>1</sup>/<sub>4</sub>NE<sup>1</sup>/<sub>4</sub> Sec. 18, T. 8 S., R. 10 W.) and Frenchman Springs (NW<sup>1</sup>/<sub>4</sub>NE<sup>1</sup>/<sub>4</sub> Sec. 18, T. 8 S., R. 10 W.).
- Construct an exclosure around the Frenchie Place Springs and spring brook (#1597) north of Frenchie Place, in the SW<sup>1</sup>/<sub>4</sub>NE<sup>1</sup>/<sub>4</sub>, Sec. 19, T. 8 S., R. 10 W. and install a 1000-gallon water trough in the SW<sup>1</sup>/<sub>4</sub>SW<sup>1</sup>/<sub>4</sub>NE<sup>1</sup>/<sub>4</sub> Sec. 19, T. 8 S., R. 10 W.
- Install an adequately sized culvert in the road along Cold Spring Creek, near reach #1551 (NW<sup>1</sup>/<sub>4</sub>SW<sup>1</sup>/<sub>4</sub>SW<sup>1</sup>/<sub>4</sub> Sec. 15, T. 8 S., R. 11 W.)

**Reservoir Creek AMP #30030** (map #7)

*Grazing Management:*

Livestock Number & Kind	Begin Date	End Date	% Public Land	AUMs
625 C	05/16	08/31	69	1531

Maintain the current grazing management system in use since 2005. The Cross allotment would continue to be used in conjunction with the Reservoir Creek AMP grazing management system to help improve habitat for sensitive wildlife species (sage grouse and pygmy rabbits).

The 10-year grazing rotation would be as listed below:

Year	West Reservoir Herd #1 375 Cattle Maximum			
	Cross	R-4	W-1	W-2
2013	REST	Late	Mid	Early
2014	Early	REST	Late	Mid
2015	Mid	Early	REST	Late
2016	Late	Mid	Early	REST
2017	REST	Late	Mid	Early
2018	Early	REST	Late	Mid
2019	Mid	Early	REST	Late
2020	Late	Mid	Early	REST
2021	REST	Late	Mid	Early
2022	Early	REST	Late	Mid

Grazing Season: Early = 5/16 to 6/18; Mid = 6/19 to 7/22; Late = 7/23 to 8/25

The length of time in each pasture would be approximately as follows: Cross = 32 days; R-4 = 35 days; W-1 = 33 days; W-2 = 33 days. Average days in these pastures would be 33 days. Pasture moves would be based on utilization guidelines.

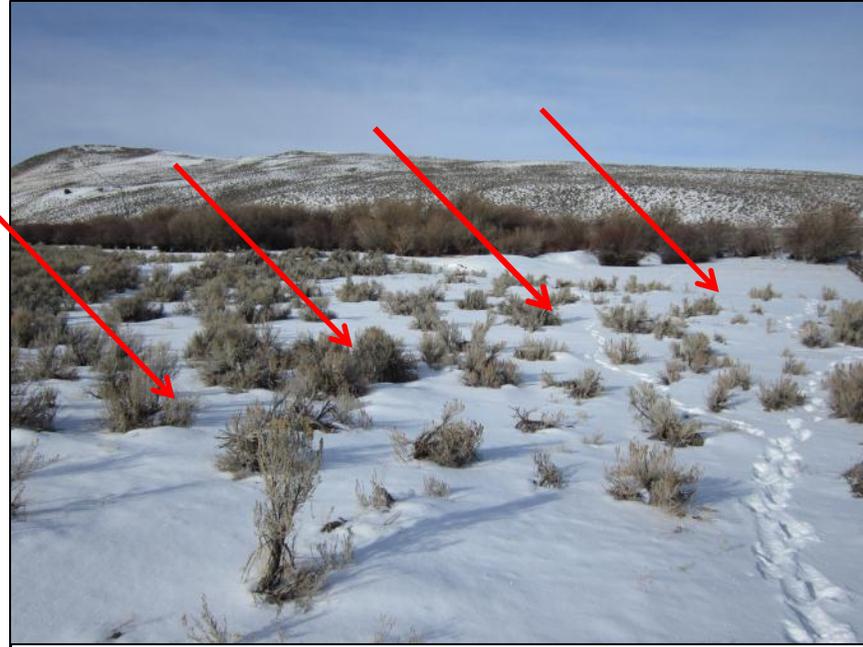
During the DFO’s annual review of allotments, if another allotment has a higher need than the Reservoir Creek AMP allotment, the Cross allotment would be reassigned to mitigate concerns on that allotment and the grazing rotation for Reservoir Creek AMP would defer to Alternative C, where Cross allotment is not included in the Reservoir Creek AMP grazing rotation.

Year	East Reservoir Herd #2 250 Cattle Maximum				
	R-1 (W)	R-1 (E)	R-2	R-3	Larkspur
2013	Late	Mid	Early	REST	Deferred
2014	REST	Late	Mid	Early	Deferred
2015	Early	REST	Late	Mid	Deferred
2016	Mid	Early	REST	Late	Deferred
2017	Late	Mid	Early	REST	Deferred
2018	REST	Late	Mid	Early	Deferred
2019	Early	REST	Late	Mid	Deferred
2020	Mid	Early	REST	Late	Deferred
2021	Late	Mid	Early	REST	Deferred
2022	REST	Late	Mid	Early	Deferred
Grazing Season: Early = 5/16 to 6/13; Mid = 6/14 to 7/12; Late = 7/13 to 8/10; Deferred = 8/11 to 8/31					

Length of time in each pasture would be approximate as follows: R-1 (E) 33 days; R-1 (W) 30 days; R-2 28 days; R-3 27 days. Average days in these pastures would be 29 days. Use in the Larkspur pasture would be approximately 21 days. Pasture moves would be based on utilization guidelines.

*Structural Projects:*

- Construct one mile of pipeline from the Taylor Ridge Pipeline, located in the NE¼ Sec. 26 T. 8 S., R. 13 W., to a 1,000-gallon trough in the SE¼ Sec. 26, T. 8 S., R. 12. W..
- Construct one mile of pipeline from the Bannack Pipeline, located in Sec. 36, T. 8 S., R. 12 W., to a 1,000-gallon trough in NW¼ Sec. 35, T. 8 S., R. 12 W.
- Clean up the materials at Duck Pond Spring (SW¼SW¼SE¼, Sec 23, T. 8 S., R. 12 W.).
- Rebuild two miles of dysfunctional fence to BLM specifications on the allotment’s southern boundary located in sections 33, 34, and 35, T. 8 S., R. 13 W.
- Build 350 feet of 4-strand barbed wire fence to create a 20 acre riparian enclosure to protect Reservoir Creek reach #1594 located on BLM administered land (Figure 2.2). Annual livestock grazing within the enclosure would not be authorized, but could be authorized for a maximum of seven days, once every three years, along with the adjacent pasture.



**Figure 2.2. Willow canopy along Reservoir Creek reach #1594. The proposed fence would follow arrows along the boundary of BLM-administered land.**

**Reservoir Creek Custodial #20723 (map #7)**

*Grazing Management:*

Livestock Number & Kind	Begin Date	End Date	% Public Land	AUMs
6 C	07/01	12/31	10	36

The authorized grazing period will be for no more than 30 days in the M1 and M2 pastures. At least one year in three the M1 and M2 pastures would receive full growing season rest (April 15 to July 31).

**Stonehouse #30005 (map #8 & 10)**

*Grazing Management:*

Pasture	Livestock Number & Kind	Begin Date	End Date	% Public Land	AUMs
Ermont & McDowell	600 C	05/17	06/25	81	639
				2	16
Spring Creek	600 C	11/10	12/31	81	831
				2	21
Argenta Flats, Argenta Springs, Frying Pan	200 C	05/10	06/25	71	219
	200 C	11/10	12/31	71	243

The grazing management would be the same as under Alternative A, except the grazing season would begin seven days later when the Ermont and McDowell pastures are grazed in alternate years. The remaining pastures would continue to be managed under a rest-rotation grazing system, in which one is used during the spring, one during the fall, and one rested.

*Structural Projects:*

- Expand the Enclosure at 278 Spring to include the wetland.
- Remove or modify the upper headbox at Dinosaur Spring, which is dry. Replace the existing troughs with a 1000-gallon trough in the same location.
- Remove infrastructure from the Grassy Draw and Stagecoach Springs.
- Redevelop the Montana 29 Spring, enlarge the enclosure, and remove any unnecessary infrastructure.
- Clean up materials and debris from the spring and spring brook (1559) located near the New Departure Mine.
- Replace the troughs in the NE<sup>1</sup>/<sub>4</sub>NW<sup>1</sup>/<sub>4</sub>SW<sup>1</sup>/<sub>4</sub> Sec. 34, T. 6 S., R. 11 W. with two 1000-gallon troughs on the Ermont Pipeline and relocate them away from the drainage.
- Construct a narrower, hardened water gap along Rattlesnake Creek (1566) to reduce accessibility by livestock.

*Conifer Treatments:*

Permits would be made available for commercial Christmas tree cutting within an 850 acre area to the east of the Badger Pass Road (#1848), of which 582 acres are in the Stonehouse allotment and 268 acres are in the adjacent unallotted area (see Map 10). A maximum of two commercial permits per year, for up to 200 trees each, would be issued over the next 10 years. Personal use Christmas tree cutting would still be allowed within this area, but may be excluded from specific areas where a commercial permit is active. Off-road travel would be allowed, but would be limited to pickups/ATVs with a trailer, and would only occur under dry, frozen, or snow covered ground conditions. Equipment use would be limited to chainsaws and other hand tools. Stumps must be less than 8” in height, and must be cut below the last live branch.

*Noxious and Invasive Species:*

Fence half of the Badger Pass gravel pit and close it for five years. Treat the spotted knapweed in the closed area more aggressively with herbicide to stop knapweed seed production in this section. After the five-year period, the closed area would be opened and the other half closed and treated for five years. During this time treatment on the half that is open for use would continue as in the past with three applications of 2,4-D being applied throughout the growing season.

**Taylor-Buffer #10122 (map #5)**

*Grazing Management:*

<b>Pasture</b>	<b>Livestock Number &amp; Kind</b>	<b>Begin Date</b>	<b>End Date</b>	<b>% Public Land</b>	<b>AUMs</b>
Buffalo Creek	200 C	06/10	06/25	100	105
Cottonwood, North Taylor, & South Taylor	200 C	06/07	06/24	99	117

Under this alternative, the Buffalo Creek pasture would be subdivided into three units, of which one would be rested each year. The two pastures that are used would be permitted for up to 8 days each.

For the Cottonwood, North Taylor, and South Taylor pastures, only two would be used each spring, while the third would be rested. The numbers of days permitted in each pasture would be: Cottonwood (10 days), North Taylor (6 days), and South Taylor (8days).

An adjustment would be made to the allotment boundary fence in the Cottonwood pasture that would remove about 50 acres from the pasture and add them to the Taylor-Buffalo allotment. No adjustment of AUMs would be made for the Cottonwood pasture.

*Structural Projects:*

- Construct about two miles of three-strand fence at two locations within the Buffalo Creek pasture.
- Install two new 1000-gallon troughs, one at each location, along the Buffalo Pipeline in the NW<sup>1</sup>/<sub>4</sub>NE<sup>1</sup>/<sub>4</sub> Sec. 7 and the S<sup>1</sup>/<sub>2</sub>NW<sup>1</sup>/<sub>4</sub> Sec. 4, T. 8 S., R. 12 W. These are both existing trough locations.
- Harden the water gap in the Buffalo Creek pasture, on Reservoir Creek, with rock and gravel.
- Construct about a 1/2-mile of four-strand fence on the west side of Taylor Creek in the S<sup>1</sup>/<sub>2</sub>SW<sup>1</sup>/<sub>4</sub> Sec. 18 and N<sup>1</sup>/<sub>2</sub>NW<sup>1</sup>/<sub>4</sub> Sec.19, T. 7 S., R. 11 W.

**Taylor Creek #10745** (map #5)

*Grazing Management:*

An adjustment would be made to the allotment boundary that would remove about 50 acres from the Cottonwood pasture, of the Taylor-Buffalo allotment, and add them to the Taylor Creek allotment. No adjustment of AUMs would be made.

*Structural Projects:*

- Remove about a 1/2 mile of four-strand fence from the east side of Taylor Creek in the S<sup>1</sup>/<sub>2</sub>SW<sup>1</sup>/<sub>4</sub> Sec. 18 and N<sup>1</sup>/<sub>2</sub>NW<sup>1</sup>/<sub>4</sub> Sec.19, T. 7 S., R. 11 W.

**2.3.5 Description of Alternative C**

**Livestock Management**

There are some proposed administrative, grazing management and project features listed under alternative C that are carried over from alternative B. Please refer to table 2.4, *Comparison of Proposed Livestock Grazing or Administrative Alternatives by Allotment*, to compare specific proposals under alternatives A, B and C.

**Baldy Mountain #30037** (map #2 & 4)

*Grazing Management:*

The grazing rotation would remain the same as under Alternative B, but the permitted grazing use would be changed as follows:

Livestock Number & Kind	Begin Date	End Date	% PL	AUMs
200 C	6/1	9/15	89	626

Grazing management under this alternative is the same as under Alternative B, except the grazing season would begin 17 days later.

Year	Pasture			
	Red Mine	Baldy Mountain (East Fork Dyce Creek)	Baldy Mountain (West Fork Dyce Creek)	Sheep Canyon
2013	06/01 – 07/25	08/21 – 09/15	07/26 – 08/20	SLACK
2014	06/01 – 07/30	REST	REST	SLACK
2015	REST	06/01 – 06/25	06/26 – 07/21	SLACK

Grazing use along the East and West Forks of Dyce Creek, in the Baldy Mountain pasture, would be limited to when greenline stubble height guidelines are met or 25 days, each.

As in Alternative B, the privately-owned Shearing Shed pasture would be removed from the allotment, but would still be used as part of a four-pasture rotation.

*Structural Projects:*

- Construct about 3 miles of three-strand fence along the ridge between the East and West Forks of Dyce Creek.

*Conifer Treatments:*

The Super Mahogany #1 and Dry Gulch treatment units, as identified and described in Alternative B, would be carried forward in Alternative C. Other conifer treatments would not be carried forward in Alternative C.

**Buffalo Creek #30617** (map #6)

*Grazing Management:*

Livestock Number & Kind	Begin Date	End Date	% PL	AUMs
3 C	4/1	2/28	100	33

Under this alternative, the BLM portion of the Hayes Creek pasture would be excluded from livestock grazing. The remaining parcels in this allotment would continue to be managed on a custodial basis.

*Structural Projects:*

- The projects would be the same as under Alternative B.

**Flying N #20724** (map #8)

*Projects:*

- Coordinate with the USFS to remove the snow-fence on the ridge in the E½ NE¼ Section 29, T. 6 S., R 11 W.

**Reservoir Creek AMP #30030 (map #7)**

*Grazing Management:*

The Cross allotment would not be included with the Reservoir Creek AMP grazing rotation under this alternative. The grazing period would be from May 16 to August 10<sup>th</sup> annually for both herds.

The 10-year grazing rotation would be as listed below:

Year	Herd #1- 250 Cattle			
	R-1 (W)	R-1 (E)	R-2	R-3
2013	Late	Mid	Early	REST
2014	REST	Late	Mid	Early
2015	Early	REST	Late	Mid
2016	Mid	Early	REST	Late
2017	Late	Mid	Early	REST
2018	REST	Late	Mid	Early
2019	Early	REST	Late	Mid
2020	Mid	Early	REST	Late
2021	Late	Mid	Early	REST
2022	REST	Late	Mid	Early

Grazing Season: Early = 05/16 to 06/13; Mid = 06/14 to 07/12; Late = 7/13 to 8/10

Year	Herd #2 - 375 Cattle			
	R-4	W-1	W-2	Larkspur
2013	7/14-8/10	6/15-7/14	5/16 -6/15	Rest
2014	REST	7/08-8/10	6/06-7/07	5/16-6/05
2015	5/16-6/18	REST	7/09-8/10	6/19-7/08
2016	6/19-7/20	5/16-6/18	REST	7/21-8/10
2017	7/14-8/10	6/15-7/14	5/16 -6/15	REST
2018	REST	7/08-8/10	6/06-7/07	5/16-6/05
2019	5/16-6/18	REST	7/09-8/10	6/19-7/08
2020	6/19-7/20	5/16-6/18	REST	7/21-8/10
2021	7/14-8/10	6/15-7/14	5/16 -6/15	REST
2022	REST	7/08-8/10	6/06-7/07	5/16-6/05

*Structural Projects:*

- Construct an extension of the Taylor Ridge Pipeline, located in the NE¼ Sec. 26 T. 8 S., R. 13 W., and install two 1,000-gallon troughs in the SE¼ Sec. 26 and NE¼ Sec. 34, T. 8 S., R. 12 W., one at each location.

**Reservoir Creek Custodial #20723 (map #7)**

*Grazing Management:*

Livestock Number & Kind	Begin Date	End Date	% PL	AUMs
6 C	07/01	12/31	10	36

The authorized grazing period would be for no more than 20 days on the M1 and M2 pastures. At least one year in three the M1 and M2 pastures would receive full year rest.

**Stonehouse #30005** (map #8 & 10)

*Grazing Management:*

Pasture	Livestock Number & Kind	Begin Date	End Date	% Public Land	AUMs
Ermont & McDowell	600 C	05/25	06/25	81	511
				2	13
Spring Creek	600 C	11/10	12/31	81	831
				2	21
Argenta Flats, Argenta Springs, Frying Pan	200 C	05/10	06/25	71	219
	200 C	11/10	12/31	71	243

The grazing management would be the same as under Alternative A, except the grazing season would begin 15 days later when the Ermont and McDowell pastures are grazed in alternate years. The remaining pastures would continue to be managed under a rest-rotation grazing system, in which one is used during the spring, one during the fall, and one rested.

*Structural Projects:*

- The projects for this allotment, under this alternative are the same as under Alternative B.

*Noxious and Invasive Species:*

Under Alternative C, the Badger Pass gravel pit would be closed to all uses for five years and aggressively treated with herbicides to suppress the spotted knapweed population. Areas that are not part of the active pit would be reseeded and reclaimed at this time.

**Taylor-Buffalo #10122** (map #5)

*Grazing Management:*

Pasture	Livestock Number & Kind	Begin Date	End Date	% Public Land	AUMs
Buffalo Creek	200 C	06/01	06/25	100	164
Cottonwood, North Taylor, & South Taylor	200 C	06/15	06/24	99	65

Under this alternative, the Buffalo Creek pasture would be used every other year. Between the Cottonwood, North Taylor, and South Taylor pastures, each pasture would be used only once in a three-year period and rested the following two years. The numbers of days permitted in each pasture would be: Cottonwood (10 days), North Taylor (6 days), and South Taylor (8 days).

*Structural Projects:*

- Harden the water gap in the Buffalo Creek pasture, on Reservoir Creek, with rock and gravel.

**2.4 Summary and Comparison of Proposed Alternative Actions**

Table 2.3 summarizes and compares the administrative actions, changes to livestock grazing management, structural projects, and vegetative projects described in the proposed alternatives.

**Table 2.3: Comparison of Proposed Alternatives by Allotment**

<b>Baldy Mountain #30033</b>	<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>
<b>Season of Use</b>	5/15 – 9/15	5/15 – 9/15	6/1 – 9/15
<b>Livestock Number &amp; Kind</b>	200 C	200 C	200 C
<b>Active BLM AUMs</b>	726	726	626
<b>Grazing System</b>	Rest-rotation	Rest-rotation	Rest-rotation
<b>Structural Projects</b>	None	<p>Construct three miles of fence, develop one new spring with a 1,000-gallon trough, and construct two miles of pipeline to pump water from the ponds to two 1,000-gallon troughs in the Baldy Mountain pasture.</p> <p>Begin stream channel restoration along 50 feet of East Fork Dyce Creek.</p> <p>Construct exclosures at spring and pond in the Red Mine pasture.</p> <p>Enlarge exclosures at Dyce Creek, El Ante, El Venado, and La Gallina Springs and install 1,000-gallon troughs at each.</p> <p>Reconstruct the Red Mine Pipeline.</p> <p>Construct an exclosure along ¾-mile East Fork Dyce Creek.</p>	Construct three miles of fence in the Baldy Mountain pasture.
		<p>If measurable progress isn't being made along specific riparian reaches in the Baldy Mountain pasture after one grazing cycle (3 years), construct three riparian exclosures along about ½ mile of East Fork Dyce Creek (1564), about ¾ mile of East Fork Dyce Creek (1571), and about ¾ mile of West Fork Dyce Creek (1591).</p>	
<b>Travel Management</b>	None	<p>Install water bars in road and harden stream crossing #3.</p> <p>Close about 0.4 miles of East Fork Dyce Creek Road.</p>	None
<b>Conifer Treatments</b>	None	<p>Up to 1,219 acres non-commercial mechanical/ prescribed fire in sagebrush/grasslands. Up to 1,815 acres non-commercial mechanical in mountain mahogany. Up to 312 acres commercial harvest of wood products.</p> <p>Up to 30 acres non-commercial mechanical in riparian and upland aspen.</p>	Up to 1,581 acres non-commercial mechanical in mountain mahogany. Up to 312 acres commercial harvest of wood products.
<b>Bannack #30015</b>	<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>
<b>Structural Projects</b>	None	Repair Hangman's Gulch Spring exclosure and reconstruct the spring if warranted. If not, remove infrastructure.	No Alternative C
<b>Buffalo Creek #30617</b>	<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>
<b>Season of Use</b>	4/1 – 1/31	4/1 – 1/31	4/1 – 2/28
<b>Livestock Number &amp; Kind</b>	11 C	11 C	3 C
<b>Active BLM AUMs</b>	111	111	33
<b>Grazing System</b>	None	Hayes Creek pasture grazed every third year.	Hayes Creek pasture excluded from grazing.

<b>Structural Projects</b>	None	Construct one mile of fence and remove a ½-mile fence in the Hayes Creek pasture. Clearly mark BLM ownership boundary of isolated parcel.	Same as Alternative B.
<b>Cross # 30033</b>	<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>
<b>Season of Use</b>	5/16 to 8/25 (32-Day Maximum Grazing Period)	5/16 to 8/25 (32 Day-Maximum Grazing Period)	No Alternative C
<b>Livestock Number &amp; Kind</b>	375	375	
<b>Active BLM AUMs</b>	419	419	
<b>Grazing System</b>	Rest-Rotation. Forage used in conjunction with the allotment in the DFO that has greatest resource need.	Rest-Rotation. Forage used in conjunction w/ Reservoir Creek allotment when it is determined to have the highest resource need in the office.	
<b>Structural Projects</b>	None	Pipe water from an existing well to a new 1,000-gallon trough.	
<b>Ermont #10598</b>	<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>
<b>Structural Projects</b>	None	Perform maintenance on the dam for the Ermont Pipeline and enlarge the enclosure.	No Alternative C
<b>Flying N #20724</b>	<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>
<b>Structural Projects</b>	None	Coordinate with USFS to repair snow-fence.	Coordinate with USFS to remove snow-fence.
<b>Frenchie #10121</b>	<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>
<b>Structural Projects</b>	None	Remove infrastructure from Black Hill, East Frenchman, and Frenchman Springs. Construct an enclosure around Frenchie Place Springs and install a 1,000-gallon water trough. Install a culvert along Cold Spring Creek (#1551).	No Alternative C
<b>Reservoir Creek AMP #30030</b>	<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>
<b>Season of Use</b>	5/15 to 9/30	5/16 to 8/31	5/16 to 8/10
<b>Livestock Number &amp; Kind</b>	533	625	625
<b>Active BLM AUMs</b>	1681	1531	1531
<b>Grazing System</b>	Rest-Rotation	Rest-Rotation. Incorporate forage from the Cross allotment into the Reservoir Creek AMP grazing rotation if it is determined that Reservoir Creek AMP has the highest resource need in the office.	Rest-Rotation.

<b>Structural Projects</b>	None	Construct 350 feet of fence to construct a riparian enclosure. Pipe water two miles from existing pipelines to two new 1,000-gallon troughs. Clean up the materials at Duck Pond Spring. Rebuild 2.5 miles of boundary fence.	Pipe water for two miles from an existing pipeline to two new 1,000-gallon troughs.
<b>Reservoir Creek Custodial #20723</b>	<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>
<b>Season of Use</b>	07/01 to 12/31	07/01 to 12/31 (60 day Maximum Grazing Period)	07/01 to 12/31 (40 day Maximum Grazing Period)
<b>Livestock Number &amp; Kind</b>	6 cattle	6 cattle	6 cattle
<b>Active BLM AUMs</b>	36	36	36
<b>Grazing System</b>	None	Pastures M1 and M2 must be grazed for < 30 days annually and rested once every third year during growing season (April 1 to July 31) period.	Pastures M1 and M2 must be grazed for < 20 days annually and rested once every third year during the entire calendar year.
<b>Stonehouse #30005</b>	<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>
<b>Season of Use</b>	5/10 – 6/25 11/10 – 12/31 5/10 – 11/10 11/10 – 12/31	5/17 – 6/25 11/10 – 12/31 5/10 – 6/25 11/10 – 12/31	5/25 – 6/25 11/10 – 12/31 5/10 – 6/25 11/10 – 12/31
<b>Livestock Number &amp; Kind</b>	600 C 600 C 200 C 200 C	600 C 600 C 200 C 200 C	600 C 600 C 200 C 200 C
<b>Active BLM AUMs</b>	2138	1969	1838
<b>Grazing System</b>	Alternating rest Rest-rotation	Alternating rest Rest-rotation	Alternating rest Rest-rotation
<b>Structural Projects</b>	None	Enlarge the enclosure at 278 Spring. Remove/modify the upper headbox at Dinosaur Spring and replace existing troughs with a 1,000-gallon trough. Remove infrastructure from Grassy Draw and Stagecoach Springs. Redevelop Montana 29 Spring and enlarge the enclosure. Replace troughs on the Ermont Pipeline with two 1,000-gallon troughs and relocate away from draw. Remove debris from reach 1559. Construct a hardened water gap along Rattlesnake Creek (1566).	Same as Alternative B.
<b>Conifer Treatments</b>	None	Up to 850 acres available for commercial Christmas tree permits	None
<b>Noxious &amp; Invasive Species</b>	None	Fence half of the Badger Pass gravel pit, close it for five years, and aggressively treat for spotted knapweed. The other half would be fenced, closed, and treated the subsequent five years.	Close the Badger Pass gravel pit for five years and aggressively treat for spotted knapweed. Reseed and reclaim inactive portions of the pit.

<b>Taylor-Buffalo #10122</b>	<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>
<b>Season of Use</b>	6/1 – 6/25 5/25 – 6/24	6/10 – 6/25 6/07 – 6/24	6/1– 6/25 6/15 – 6/24
<b>Livestock Number &amp; Kind</b>	200 C 200 C	200 C 200 C	200 C 200 C
<b>Active BLM AUMs</b>	164 202	105 117	164 65
<b>Grazing System</b>	Spring-use annually	Rest-rotation	Alternating rest Rest-rotation
<b>Structural Projects</b>	None	Construct two miles of fence within the Buffalo Creek pasture. Add two 1,000-gallon troughs to the Buffalo Pipeline. Harden the water gap on Reservoir Creek. Construct about ½-mile of fence on the West side of Taylor Creek and adjust the allotment boundary.	Harden the water gap on Reservoir Creek.
<b>Taylor Creek #10745</b>	<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>
<b>Structural Projects</b>	None	Remove about ½-mile of fence from the East side of Taylor Creek and adjust the allotment boundary.	No Alternative C

**Table 2.4: Comparison of Conifer Treatments by Alternative**

	<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>
Commercial Harvest	0	312	312
Permit Area for Commercial Christmas Tree Harvest	0	850	0
Non-commercial Mechanical/Prescribed Fire	0	1219	0
Riparian Juniper	0	30	0
Mountain Mahogany Restoration	0	1815	1581

**Table 2.5: Comparison of Travel Management Actions by Alternative**

<b>Travel Management (Designated Route changes, in miles)</b>			
	<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>
Change to Open	0		9.0
Change to Closed	0		8.5
Change to Seasonally Open (from open yearlong)	0		0.7

## Chapter 3: Affected Environment

This chapter describes the existing condition of specific environmental components that may be affected by the proposed action. The description of the affected environment is related to the specific issues and resource concerns identified in Chapter 1, but also encompasses the wider landscape of the EGW. This chapter is a summary of the baseline environment. A more detailed and comprehensive description of the current conditions in the watershed are provided in the EGW Assessment Report (December 2011) and is available for review at the Dillon Field Office or online at [http://www.blm.gov/mt/st/en/fo/dillon\\_field\\_office.html](http://www.blm.gov/mt/st/en/fo/dillon_field_office.html).

### 3.1 General Setting

The EGW is located in Beaverhead County, Montana and drains portions of the East Pioneer mountain range. The watershed lies within Townships 6-9 south and Ranges 10-13 West, Montana Principal Meridian (MPM.). The approximate boundary of the assessment area includes public lands administered by the BLM from the Big Hole Divide in the west to Frying Pan Basin in the east, and from the southern U.S. Forest Service (USFS) boundary of the East Pioneer Mountains south to about Highway 278. The assessment area boundary, shown on the East Grasshopper Assessment Area map (Map 1), follows grazing allotment boundaries and includes some allotments that are only partially within the watershed. Technically, the assessed area is not a distinct watershed. Watersheds are defined, and designated on maps, by natural topographical boundaries (i.e., ridgelines, drainages). Grazing allotment boundaries have been determined by previous BLM decisions based primarily on land ownership and these artificial boundaries may not follow topographical features. Therefore, some of the grazing allotments in the assessment area may fall within one or more watersheds or hydrologic units. Grazing allotments within the EGW may have been completed in other assessments (e.g., Beaverhead West, East Pioneers). (See Map 1 of the Assessment Report: East Grasshopper Vicinity Map and Allotments).

Within the EGW assessment area there are approximately 120,396 total acres of land, of which 80,237 are public lands administered by the BLM. Of the total BLM-administered lands within the EGW, 79,000 acres are allotted for livestock grazing and 1,237 acres are unleased. No acres are categorized as unallotted (unavailable for livestock grazing). This report addresses only land health conditions on public lands administered by the BLM.

The variety and distribution of plant communities and seral stages in the watershed area is a function of climate, geology, and soil combined with:

- historic uses (e.g., grazing, mining, etc.)
- short term weather patterns
- disturbance regimes (e.g., drought, fire, floods, and herbivory)

Current vegetative cover was calculated using satellite imagery (LANDFIRE 2011b). Table 1 summarizes the estimated cover types on all land ownerships within the EGW.

**Table 3.1: Summary of Acres by General Cover Type within the East Grasshopper Watershed.**

Cover Type	BLM Acreage	% of BLM Acreage	Total Watershed Acreage	% of Total Acreage
Forests	4,755	5.9%	6,688	5.6%
Grasslands	389	0.5%	528	0.4%
Sagebrush / Mountain Shrubs	74,192	92.4%	107,986	89.6%
Riparian / Mesic Shrubs	299	0.4%	1,525	1.3%
Mountain Mahogany	365	0.5%	469	0.4%
Aspen	70	0.1%	163	0.1%
Other (Rock /Water/Ag)	208	0.3%	3,138	2.6%
<b>Totals</b>	<b>80,278*</b>	<b>100.0%</b>	<b>120,497*</b>	<b>100.0%</b>

\*The slight difference between the acreages presented in Table 1, and the acreages previously presented, result from small variations between the two data sets.

## 3.2 Description of Affected Resources/Issues

### 3.2.1 Issue # 1: Riparian, Wetland, Aquatic Health and Associated Species Habitat

The assessment area is mainly within the Beaverhead Hydrologic Unit. A small portion drains to the Red Rock Hydrologic Unit. The Reservoir Creek AMP allotment drains to both the Red Rock River and the Beaverhead River, via Horse Prairie Creek and Grasshopper Creek, respectively. The Cross allotment flows to Red Rock River, by way of Horse Prairie Creek.

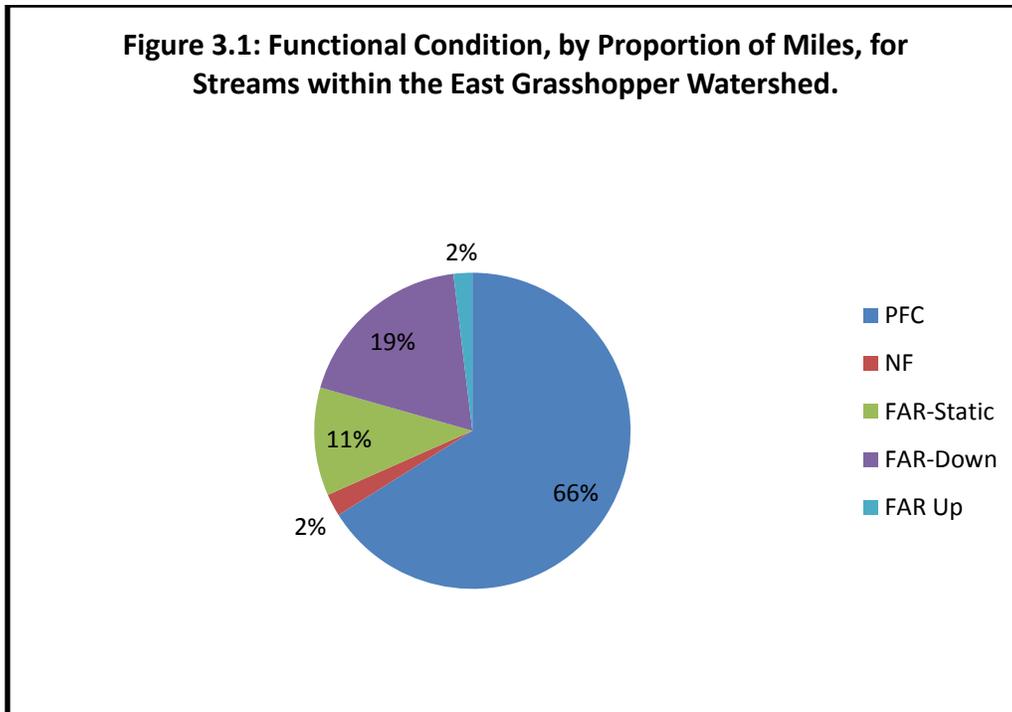
Isolated wetlands and springs exist throughout the assessment area. Hydric soils, which are associated with wetland and riparian areas, are a small component of the landscape, but play an important role in ecological processes. The National Wetland Inventory (NWI) was never completed for Montana, so no comprehensive database of springs and wetlands was available for this assessment. However, significant progress has been made in recent years and the NWI is nearing completion. Given these limitations, known wetland areas were assessed during the EGWA. Those wetlands which failed or had resource concerns are reported in this document.

### Streams and Wetlands

The streams in EGW assessment area drain 120,396 acres of BLM, Forest Service, State and private land. About 80,650 acres (67%) is public land administered by the BLM.

Twenty six stream reaches totaling roughly 15 linear miles were assessed in the EGW. Of the 26 stream reaches assessed, 15 reaches, about 8.6 miles, were rated PFC. One reach that was 0.25 miles rated FAR with an upward trend. Five reaches, totaling 1.4 miles, were rated FAR with a static or no apparent trend. One 0.3 mile reach was rated NF. The percentage of the total stream miles in each functional class is illustrated in Figure 2. The locations and functional class ratings for streams in the EGW are also illustrated on Maps 4 and 5 in the EG Assessment Report. The percentage of the total stream miles in each functional class is illustrated in the Figure 3.1.

**Figure 3.1: Functional Condition, by Proportion of Miles, for Streams within the East Grasshopper Watershed.**



The Riparian Standard was not being met in five allotments: Baldy Mountain, Buffalo Creek, Frenchie, Stonehouse and Taylor-Buffalo. With the exception of Frenchie allotment, the remaining four allotments failed the riparian standard due to livestock grazing. Although Reservoir Creek AMP allotment met the Riparian Health Standard, one site specific riparian concern was noted in this allotment. A brief description of impacts and concerns for the reaches within the five allotments that did not meet BLM’s Riparian Health Standard and the reach that had resource concerns are discussed below. Stream reaches assessed within the EGW which met BLM’s Riparian Health Standard and are not discussed here. For more information on specific stream reaches, please refer to the EGW Assessment Report.

Where streams were not PFC, concerns included: alteration of stream morphology, reduced access to floodplains, down cutting, reduction in species diversity and composition, reduced vegetative cover, limited species recruitment and regeneration, reduced structural diversity, and decreased vigor of streamside vegetation. Generally, livestock grazing and issues related to roads were the causal factors.

**Baldy Mountain** – The East and West forks of Dyce Creek flow through the Baldy Mountain allotment. The main stem of Dyce Creek (16) begins at the confluence of the East and West forks, flows for 0.3 miles, and then leaves public lands. The reach is impacted at the upper end by a culvert under the road which alters the channel morphology and by a fish barrier at the lower end which controls gradient. Livestock impacts were also contributing to the resource concerns. The reach was rated FAR with a static trend.

Habitat along the West Fork of Dyce Creek is managed by the BLM from the point where it leaves Forest Service land and enters public lands until it joins the main stem. The upper reaches

of the West Fork (18 and 1591) flow through two ponds and are influenced by sediment issues that originate from the road. Current and historic mining as well as livestock grazing influence this portion of the reach which the IDT rated FAR with a downward trend. About halfway between the FS boundary and the confluence with the East Fork, the influence of the road diminishes as it moves farther to the west. The IDT determined that remainder of the West Fork (1593 and 1564) was PFC. Juniper encroachment was noted in the lowermost part of this section.

The IDT evaluated the East Fork of Dyce Creek (15 and 1572) from the USFS Boundary to the patented parcels. Reach 15 was rated PFC, while the lower reach, 1572, was FAR with a static trend. The IDT noted that the road runs through the stream in two locations resulting in sediment issues. The fill covering the culvert in T.6S, R.12W, Sec. 23, is eroding and could lead to the culvert washing out. Livestock grazing impacts were also contributing to the FAR rating of reach 1572.

**Buffalo Creek** –The largest wetland assessed in the EGW watershed was reach 1570 in the Buffalo Creek Allotment. This allotment has been categorized as a custodial allotment and has been used along with the adjacent private land. It appears that this area was used for supplemental feeding during the fall and winter months and was rated as FAR with a static trend.

**Frenchie** – Cold Spring Creek (1551), a tributary to Grasshopper Creek, was rated as NF. The creek originates in a wet meadow split by the road. Water on the east side flows through a culvert and joins the tributary on the west side where it flows southwest in its channel until reaching a point where roadwork prohibits it from reaching the channel to the south. From this point the stream, it flows in a roadside ditch to a low spot where it floods a sagebrush community.

Three additional springs and a short spring brook (1597) located north of Frenchie Place, in T.8S, R.10W, Section 19 were visited by the IDT. The area has been disturbed in the past and likely associated with the adjacent homestead. All three springs were impacted by livestock and the surrounding area was infested by houndstongue, black henbane, spotted knapweed, and cheatgrass. The IDT rated this area as FAR Static.

**Reservoir Creek** – There are 1.8 miles of riparian habitat on public land within the Reservoir Creek allotment. Two perennial reaches (1590 and 41) and two intermittent reaches (63 and 64) of Watson Creek were rated PFC by the IDT. One reach of Watson Creek (1580) was rated as FAR with an upward trend. One reach of Reservoir Creek (1594) was rated as FAR with a static trend. The Reservoir Creek reach has some dysfunctional fencing and livestock are using the reach as a water gap causing bank shearing and a reduction in ground cover. A small water gap is located on the north side of this stream on the Taylor-Buffalo Allotment. This water gap has a steep grade and is not hardened (armored with rock). Therefore, it is contributing sediment to Reservoir Creek.

**Stonehouse** – Four reaches flow through Stonehouse Allotment: Cold Spring Creek (1550), a tributary to Grasshopper Creek, Rattlesnake Creek (1566 and 1567), and a tributary to Ermont Gulch (1559). Reach 1559 is a headwaters spring which flows only a few tenths of a mile. Cold

Spring Creek (1550) and Rattlesnake Creek (1567) were both rated PFC. Rattlesnake Creek (1566) was rated as FAR with a static trend. Resource concerns on reach 1566 are ungulate browsing of willows without adequate regeneration and stream bank shearing and compaction. The stream channel has also been over-widened making it less effective in accessing its floodplain to dissipate energy or transporting sediment.

**Taylor-Buffalo** – Taylor Creek (1553), and a tributary of Taylor Creek (1560), flow through the Taylor-Buffalo allotment. Taylor Creek (1553) is impacted by livestock and was rated as FAR. Resource concerns include channel over-widening and bank shearing. The tributary to Taylor Creek (1560) is located downstream of a water project, which is located in a draw and catches runoff. Reach 1560 was rated as PFC. The stream below the project does not receive upstream flows and relies on groundwater seepage.

**Fishery Habitat**

There are approximately 8.3 miles of fishery habitat located within the EGW. During the assessment, 4.6 miles were found to be PFC, while 3.6 miles were found to be FAR. In general, the quality of fishery habitat is directly linked to existing riparian conditions. Impacts that cause riparian habitat to not meet standards also, generally, result in low quality fish habitat. The main impacts to fishery habitat within the EGW were related to sediment and, to a lesser extent, bank alteration, which are related to current and past mining activities, roads, and livestock. Several streams were experiencing excessive use by livestock. Issues impacting fishery habitat along Taylor Creek (1553), Rattlesnake Creek (1566) and Reservoir Creek (1594) are discussed above. Dyce Creek is discussed above under Riparian and below under 3.2.5 Resource #3.

**Table 3.2: Fish Species Present In Streams on BLM-Administered Lands within the East Grasshopper Watershed.**

Stream	Reaches	Fish Species Present on BLM
Dyce Creek	15,16,18,1591,1593,1564,1572,1571	Westslope cutthroat trout
Rattlesnake Creek	1566,1567	Brook trout, rainbow trout, brown trout, mottled sculpin
Taylor Creek	1553,1552	Brook trout
Reservoir Creek	1594	Brook trout

**Developed Springs and Associated Wetlands**

The BLM’s Range Improvement Project (RIPS) database shows 18 spring developments in the EGW. BLM staff visited these developments to determine resource condition, condition of infrastructure, and water production (flow). The Bureau of Land Management has filed Water Rights Claims, both Statements of Claim and Reserved Claims, with the State of Montana for pre 1973 Water Rights. Similarly, the BLM holds Certificates for Water Rights for post 1973 Water Developments. The Jefferson and Madison Basins are closed to new appropriations and are subject to new administrative rules which require proof of no adverse impact and have public notice requirements for changes to existing water rights.

Maintenance of water developments was a noted concern in several allotments across the watershed. Maintenance problems frequently encountered with water developments were lines not being drained, sediment in troughs, plumbing not properly working, lack of float valves and or shutoff valves, and leaking troughs. These maintenance issues can negatively impact wetland hydrology and do not help attain the objective(s) that the development was originally intended to

achieve (i.e., livestock distribution or mitigation of impacts to perennial streams). Water Rights may also be impacted when developments are not properly maintained.

Properly maintained water developments function as Best Management Practices (BMP). The BLM must report on BMP effectiveness as part of our participation in Montana's Nonpoint Source Management Strategy. Permittee partnership and cooperation is critical to achieve these goals.

**Baldy Mountain** – In the Baldy Mountain allotment, the Dyce Creek, El Ante, El Venado, La Gallina, and Red Mine Springs were constructed between 1968 and 1982.

El Ante, El Venado and La Gallina were constructed at the same time. The enclosures are not protecting the resource and need to be reconstructed and expanded. The troughs at El Ante and La Gallina are located within the wetland and are being impacted by livestock. Red Mine Spring development is not currently functioning. Hydric soils in these localized areas are compacted. Similarly Dyce Creek Spring has a small enclosure and the adjacent wetland area is being impacted by livestock. All spring developments in the Baldy Mountain Allotment were FAR with a static trend.

**Bannock** – The Bannock allotment has one developed spring, Hangman's Gulch Spring. The enclosure is in need of repair, and the development is not currently producing water. Hydric soils, wetland vegetation and standing water are present. This spring source (wetland) is properly functioning.

**Ermont** – A water development located at the head of Ermont Gulch (1556) is the source for the Ermont Pipeline. The pipeline included the excavation of an existing spring development and the construction of a dam. Rodent activity and high spring run-off has caused the dam to leak. The wetland area associated with the pond and development is properly functioning.

**Frenchie** – Black Hill, East Frenchman, Frenchman and Horse Mountain springs are located in the Frenchie Allotment. Black Hill, East Frenchman and Frenchman springs are no longer producing water and appear to have been marginal at the time of development. There was no evidence of hydric soils or obligate hydric vegetation. There are no riparian resources at these developments.

**Reservoir Creek** – Duck Pond Spring was abandoned as it was not producing sufficient water. Some materials from the original development remain and need to be removed. The wetlands were properly functioning.

**Stonehouse** – Six springs were originally developed on the Stonehouse allotment. The 278 Spring is excluded from livestock; however the enclosure is smaller than the wetland. Hydric soils are present, but they are hummocked and compacted. The wetland (1576) associated with 278 Spring includes a relatively dense infestation of spotted knapweed and was found to be FAR with a downward trend. Dinosaur Spring has two head boxes created by welding a series of steel tanks. This development needs some maintenance. The resource conditions at this spring were FAR-Static.

Grassy Draw and Stagecoach Springs have dried out; only the troughs are left. These areas have no evidence of hydric soils or obligate hydric vegetation. The Montana 29 Spring is dysfunctional. Materials from the original spring development are still on site and there is no enclosure around the spring source. This spring is functioning at risk with a static trend.

The spring and spring brook (1559) located near New Departure Mine were FAR with static trends. The development does not appear to be used by the current permittee, is in disrepair and the area is littered with old mining equipment and debris. A spring enclosure consists of a small page wire fence. The spring and spring brook have been impacted by a road, historic mining activity and livestock.

Water Quality was not carried forward as an Issue to be analyzed; however the close relationship between Upland Health and Riparian Health to water quality was discussed in the EGW Assessment Report. The Beaverhead Watershed Sediment TMDL is nearing completion and at a Public Meeting Montana DEQ shared recommendations to address water quality issues associated with commonly encountered impacts. These recommendations are listed as follows:

- Improve ground protection in disturbed areas on small acreages, develop and implement grazing management plans, reduce the amount of erodible soil and runoff rate from agricultural lands
- Improve and restore streamside vegetation to provide shade, filter sediment, and stabilize eroding streambanks and floodplains
- Install all appropriate BMPs to road and road crossing networks and maintain & upgrade culverts to reduce the risk of failure in large events.

### **3.2.2 Issue #2: Upland Health, Sagebrush Steppe Habitat and Associated Species**

The Beaverhead County Soil Survey shows a variety of different soil complexes located in the EGW. They vary across the diverse topography from the nearly level to gently sloping flood plains adjacent the Grasshopper River to the steep rocky slopes of Black Mountain. In the uplands, the soils are well drained, vary from shallow to deep and range from silty and/or sandy to gravelly material.

Uplands are defined as land at a higher elevation than the alluvial plain or low stream terrace; all lands outside the riparian-wetland and aquatic zones (USDI 1996). Sagebrush and grassland habitat types are the dominant vegetation communities comprising 93% of public lands in the assessment area. Mountain big sagebrush is the dominant habitat type in the EGW. Intermingled occurrences of basin big sagebrush, tall three-tip sagebrush, and several low sage species add to the diversity of vegetation and habitat structure. Winterfat and Gardner's saltbush are found on many alkaline sites in the watershed. Some of the prominent herbaceous species included in the grasslands are bluebunch wheatgrass, western wheatgrass, Sandberg's bluegrass, needle and thread, prairie junegrass, and Idaho fescue. These same cool-season grasses are prominent understory vegetation in the sagebrush habitat types. Rubber rabbitbrush, green rabbitbrush, fringed sagewort, and broom snakeweed are common native shrubs found on numerous ecological sites throughout the watershed.



**Figure 3.2: Uplands in the Road Agent Rock, Bannack, and Frenchie BLM grazing allotments, July 2011.**

The uplands in 13 of the 16 grazing allotments in the EGW were rated as PFC or FAR with an upward trend as were the uplands in the un-leased tract. The total percent of BLM lands determined to be in PFC in the EGW was over 90%.

Uplands in three grazing allotments did not meet the minimum BLM, Upland Standard and were rated FAR with a static or downward trend. These allotments were Buffalo Creek, Reservoir Creek Custodial and Taylor-Buffero (See photo below). Primary issues on these allotments included impacts from abandoned mines, loss of dominant plant communities, noxious weeds and invasive species, reduced herbaceous vegetation production and vigor, localized areas of increased bare ground and consequently higher potential for wind and water erosion and decreased water infiltration efficiency. More allotment specific information is available in the EGW Assessment Report.



**Figure 3.3: Taylor-Buffalo Allotment showing 1984 and 2010 upland photo comparisons.**

Forest and woodland habitats comprise approximately 6% of all ownerships, and approximately 6% of BLM administered lands within the EGW. The close association of forests with adjoining sagebrush and riparian habitats supports a broad array of wildlife species. Forests in the EGW provide habitat for a large variety species such as black bear, bobcat, mountain lions, dusky grouse (formerly called blue grouse), northern goshawk and big game. This habitat provides year-round security cover for deer, elk, and moose and offers high protein browse species in the fall and winter. Forest-dwelling bird species require suitable nesting and foraging habitat. Several bird species help protect forests by eating millions of damaging insects, such as the western spruce budworm. It also provides nesting, roosting and foraging habitat for numerous bird species including great grey owls, cooper's hawks, and northern goshawks; all of which prey on small mammals and rodents that utilize forested habitats. The EGW lies within portions of Montana hunting districts (HD) 310 and 318 for antelope and 329 and 331 for deer and elk and lies within the Pioneer Elk Management Unit.

Limber pine, Rocky Mountain juniper, and curl-leaf mountain mahogany woodlands are present on drier, rocky slopes and lower elevations. Limber pine is found on some of the driest sites capable of supporting trees (Pfister et al, 1977), and is often found with Douglas-fir and juniper. Limber pine is an important source of food for several species, including red squirrels, Clark's nutcrackers and black bears. Squirrels, northern flickers, and mountain bluebirds often nest in the trees. Mountain pine beetle and white pine blister rust have resulted in varying levels of limber pine mortality throughout the watershed. In some places there is extensive mortality of limber pine, and a species conversion to Douglas-fir and/or juniper is likely. Loss of limber pine is a concern on the Baldy Mountain allotment. In other places, limber pine mortality is scattered and there are still many healthy-looking limber pine trees intermixed on the same site.

Mountain mahogany is mostly found on well drained slopes with shallow, coarse rocky soils, most often associated with limestone in southwest Montana. Sites can be pure stands or intermixed with conifers, where there is a potential for conifers to overtop and outcompete the shade intolerant mahogany. Loss of mountain mahogany is a concern in the Baldy Mountain allotment due to intensive browsing and increasing conifer competition and a species conversion to Douglas-fir, limber pine or juniper is likely. Mountain mahogany stands in the rest of the EGW are not showing this heavy browsing pressure and are in relatively good condition.

The majority of Baldy Mountain allotment provides summer habitat for mule deer. The mahogany on west side of Baldy Mountain allotment is crucial deer winter range. Mahogany also provides nesting habitat for a myriad of migratory birds and the seeds provide food for dusky grouse and a host of small mammals.

Douglas-fir is the dominant species of forests in the EGW, and depending on elevation and aspect, may be found intermixed with juniper, limber pine, lodgepole pine, and subalpine fir. Spruce is found in most forested areas, either scattered throughout, or concentrated in wetter areas. A hardwood component, including quaking aspen, willows, Rocky Mountain maple, red-osier dogwood, alder, and cottonwood may also be found in the wetter forested areas or around springs. Aspen stands are relatively minor in area, but are an important component on the landscape for wildlife values. In many areas, conifers have established in aspen stands and without disturbance may result in overtopping and shading out aspen trees.

The majority of Douglas-fir stands in the EGW are dense (300-600+ trees per acre), closed canopy stands ( $\geq 60\%$  canopy closure) consisting mainly of Douglas-fir trees 150 years or less in age. In comparison, 2011 inventory of harvested stands in the Dyce Creek area showed an average of 100-200 tree per acre, with open ( $< 40\%$  canopy closure) to moderately closed (40-59% canopy closure) canopy stands. Treatment in these areas also opened up around "relic" Douglas-fir trees (generally greater than 200 years old) to improve tree vigor and reduce ladder fuels, and create more of a Douglas-fir savannah structure.

Treatment has occurred on approximately 6% (~280 acres) of BLM forested habitats in the EGW. Overall throughout the watershed, the structure of Douglas-fir forests has been altered from the historic range of variation to become more homogenous with a higher dominance of mid-seral, closed canopy structure, and a loss of mountain meadows. The increased density within stands has resulted in trees competing for limited nutrients and moisture, leading to reduce vigor and growth of individual trees, and increased hazard ratings for spruce budworm and Douglas-fir beetle. The loss of variety of successional stages across the landscape increases the susceptibility to widespread insect and disease outbreaks.

Big game species are widespread throughout the EGW and use the forest and woodland habitat associated with adjoining sagebrush steppe habitat is yearlong. The increase in canopy cover in some of the Douglas-fir stands may have created a shift in species use, especially for migratory birds. Northern goshawks continue to use the Douglas-fir habitat in the Dyce Creek drainages.

Wildfire has played a large role in creating and maintaining forest vegetation communities prior to Euro-American settlement. The lower elevation limber pine and Douglas-fir communities were affected by the relatively frequent fire regimes of adjacent grasslands and sagebrush steppe. Fire scarred trees and charred wood are evident from this era, primarily in the mountainous terrain and foothills of the EGW. Frequent fires promoted more open-growing Douglas-fir forests, and also inhibited conifer expansion into the sagebrush steppe. Mountain mahogany is easily killed by fire, but due the rocky, often bare mineral soil in which the plant thrives, fires were likely a limited occurrence within mahogany stands. Higher elevation forests are affected by fire less frequently, but often more severely. The more contiguous forest habitat in the

adjacent Pioneer Mountains is dominated by a stand-replacing fire regime, most notably in the lodgepole pine forest.

Currently, the low elevation, dry forest types exhibit a moderate departure from reference conditions, primarily due to the altered structure of Douglas-fir forest and increased tree density. Much of the higher elevation forest types, primarily outside the EGW, are within their historic fire return interval. However, the increased fuel loading caused by the current epidemic insect activity will contribute to a natural stand replacing fire in the future.

Portions of the EGW were analyzed for vegetation treatments under the East Grasshopper Forest Vegetation Project Environmental Analysis (EA) #MT-076-98-12. The Decision for this project was signed in 2001, and prescribed vegetation treatments in the Dyce Creek and Badger Pass areas (see Map 6). The treatment units and status of their treatment are listed in Table 12.

**Table 3.3: East Grasshopper Vegetation Project EA Projects and Current Status.**

Unit	Treatment Type	Status
1	Douglas-fir savannah restoration	Completed, Dyce Creek Timber Sale.
1A	Douglas-fir savannah restoration	Completed, Dyce Creek Timber Sale.
2	Douglas-fir savannah restoration	Partially completed, Dyce Creek Timber Sale.
4	Douglas-fir savannah restoration	Dropped – sedimentation concerns on E. Fork Dyce Creek.
6	Douglas-fir savannah restoration	Dropped – sedimentation concerns on E. Fork Dyce Creek.
7	Douglas-fir savannah restoration	Not completed. Analyzed as part of Dyce Ck Spring Rx in this EA.
8	Douglas-fir savannah restoration	Not completed. Analyzed as part of Dyce Ck Spring Rx in this EA.
9	Douglas-fir savannah restoration	Dropped – sedimentation concerns on E. Fork Dyce Creek.
10	Douglas-fir savannah restoration	Dropped – sedimentation concerns on E. Fork Dyce Creek.
11	Aspen treatment	Not completed. Analyzed as part of Dyce Creek Riparian Conifer Removal in this EA.
12	Aspen treatment	Not completed. Analyzed as part of Dyce Creek Riparian Conifer Removal in this EA.
13	Douglas-fir savannah restoration	Completed, Badger Pass Timber Sale.
14A	Douglas-fir savannah restoration	Completed, Badger Pass Timber Sale.
14B	Douglas-fir savannah restoration	Completed, Badger Pass Timber Sale.
Encro –Badger Pass	Douglas-fir encroachment treatment	Completed on BLM administered land.
Encro – Dyce Ck.	Douglas-fir encroachment treatment	Partially completed. Analyzed as part of Dyce Ck Spring Rx in this EA.
MM	Mountain mahogany treatment	Not completed. Analyzed as part of Super Mahogany #1 in this EA.

### 3.2.5 Issue #3: Special Status Fish and Wildlife Species Habitat

“Special Status Species” refers to animals and includes proposed species, listed species, and candidate species under the Endangered Species Act; State-listed species; and BLM State Director-designated sensitive species (USDI 2001b). Providing habitat for special status animal

species is integral to meeting the biodiversity standard. Table 10 lists the special status species that occur within the EGW during all or part of the year.

No species listed as threatened or endangered under the Endangered Species Act (ESA) occur within the watershed. Sage grouse are currently listed as a candidate species under the ESA (Federal Register March 5, 2010), as the FWS determined that listing was warranted, but precluded by other priority listing actions. This emphasizes the importance of managing for, and maintaining the integrity of, all seral stages within sagebrush habitats on public lands, not only for sage grouse, but for all sagebrush-obligate species.

The EGW is in sage grouse Preliminary Priority Habitat (PPH, formerly Core habitat) and has the largest lek complex in the DFO. Sage grouse populations have remained stable in the EGW throughout the past ten years with seasonal fluctuations. There are currently 12 known active leks in the EGW, nine of which occur on BLM-administered lands, as well as several active leks within a mile of the EGW allotments. Sage grouse habitat monitoring data collected in the EGW allotments shows that requirements are being met for all seasons of use on most allotments. The exceptions to this are the Reservoir Creek Custodial, Taylor-Buffalo, and Buffalo Creek allotments. Radio telemetry data for sage grouse movements, collected by DFO personnel in 1999-2000 and 2010-2011, show that sage grouse are still using these allotments. The Reservoir Creek AMP allotment and the Ermont pasture of the Stonehouse allotment provide habitat for large concentrations of wintering sage grouse.

West Nile Virus (WNV) has been linked to sage grouse mortality in multiple areas in MT. BLM Information Bulletin (IB) No. MT-2011-033 provides guidance for West Nile Virus and Water Developments. Management to reduce impacts of WNV focuses on eliminating man-made water sources that support breeding mosquitoes known to vector the virus. The primary mosquito species associated with WNV is the Western Encephalitis mosquito (*Culex tarsalis*). *Culex tarsalis* likes river drainages, extensive wetlands and areas irrigated for agriculture. Whether the water development is for livestock water, wildlife habitat, fish, or storm water management, potential habitat for mosquitoes may be increased. Incorporating applicable design and mitigation measures, described in the IB, for water development projects can reduce mosquito production through modifying and eliminating mosquito breeding sites. WNV has been reported in a couple of horses in Beaverhead County (Veterinary Hospital of Dillon), however according to the Public Health Department, WNV has not been documented in humans or animals in Beaverhead County.

Pygmy rabbits are found throughout the EGW and habitat conditions appear to be suitable for existing populations to persist. Ongoing studies to determine implications of habitat quality and quantity and perceived risks of predation are currently being conducted by the University of Idaho through a cooperative project with the BLM. Recent genetics studies have shown genetic linkages between pygmy rabbits in Idaho and Montana.

Historically, WCT were found in most of the perennial streams within the EGW. Competition with non-native eastern brook trout, hybridization with non-native rainbow and Yellowstone cutthroat trout, as well as past habitat degradation have combined to extirpate pure populations of WCT from most of their historic habitat within the assessment area. Within the watershed,

genetically pure WCT have drastically declined from historic levels. As of 2011, Dyce Creek supports the only population of westslope cutthroat trout located on public land in the East Grasshopper assessment. Several streams within the greater area, but not within the assessment area, contain populations that are pure, or slightly hybridized (90% or greater). For example, sampling efforts on Reservoir Creek, by the USFS in 2004, documented WCT in the main channel several miles upstream of tributary (1594), on BLM. However, sampling of stream reach 1594, by the DFO fishery biologist in 2011, failed to locate any WCT. The headwaters of Taylor Creek support a population of genetically-pure WCT. However, brook trout are the only species present on the BLM-administered portions of Taylor Creek (1552 and 1553) in this assessment area.

WCT habitat issues are primarily related to sediment and historic mining. The Dyce Creek road traverses the drainage and in places the road is closely adjacent to both forks of Dyce Creek with several primitive stream crossings present. Runoff from the road and road crossings is contributing to sediment loads that in places, is causing the stream channel to braid and shift, as well as likely have some localized impacts to WCT spawning. Historical placer mining has substantially altered the stream potential in the drainage. Current livestock impacts in the form of bank trampling and heavy utilization of riparian forage is also a causal factor contributing to sediment and to a lesser extent bank alterations. However, as a result of historic mining, in most areas the banks are relatively well armored with larger substrate material that is more resistant to erosion. A small recreational mining area on the West fork has been a significant source of sediment that is causing the stream channel to fill with fine sediment as well as shift in course. As of 2011, this location has an active claim filed and sediment mitigation measures have been implemented that appear to be reducing the sediment input.

A habitat survey, conducted by MFWP in 2005, indicates that the Dyce Creek drainage is dominated by riffle habitat. Pools were found to be relatively small, but deep and in moderate proportion to other habitat types. Spawning habitat was found to be abundant in most sections of the East Fork, and not as common in the West Fork, which contains a much higher level of sands and silts. Woody debris was common throughout sample sections with larger material more common in the East Fork. Thermograph data from 2005 and 2010 indicates that the drainage maintained an average summer (June-Sept) temperature of around 50 and 48 degrees respectively. Temperatures in the West Fork were slightly warmer, with temperatures ranging from 58 degrees just downstream of the ponds to about 55 degrees lower in the drainage. These stream temperatures are within the optimal range for WCT spawning and fry fitness. Overall, WCT habitat condition was found to be in good condition in the East Fork and fair in the West Fork.

Over the last 8 years, the BLM, in cooperation with private landowners and state and federal agencies, has been actively conducting projects designed to secure the WCT population in Dyce Creek. In the fall of 2003, a riparian exclosure was constructed in the headwaters of the West Fork to protect the shoreline around two small ponds that provide important WCT habitat. In 2004, in conjunction with initiation of a non-native brook trout removal, a fish passage barrier was installed on private land. From 2004 through 2010, a non-native removal using electro fishing gear was conducted. The non-native removal resulted in WCT numbers going from a population of approximately 100-150 in 2004 to 450-500 in 2010. During the same period the

brook trout population showed a significant drop in both overall numbers and reproductive capability. Collections of brook trout went from more than 2050 in 2004 to 15 in 2010. Removal efforts in the West Fork were not as successful. In 2009, the results of the ongoing non-native removal were assessed.

From 2004 to 2010, 4,200 non-native brook trout were removed from the drainage above the fish barrier. Due to the difficulty in removing the non-natives from the West Fork drainage, it was decided to conduct a chemical fish removal. In August 2011, the fish toxicant CFT legumine was applied to 3.5 miles of the West Fork drainage and 1.5 miles of the East Fork drainage to remove non-native trout. Prior to the treatment, personnel from MFWP and the DFO collected over 480 WCT from the portion of the East Fork slated to receive chemical application. They were held upstream of the treatment area during toxicant application and released back into the stream after the treatment. Initial surveys post treatment by both BLM and MT FWP failed to turn up any fish in the West Fork, indicating that the treatment was effective.

The issue of WCT redd trampling was considered but eliminated as a significant factor affecting WCT recruitment in the Dyce Creek Drainage. While some impacts to WCT redds are likely occurring from wild and domestic ungulates within the drainage, current population trend data indicates that WCT recruitment is high and redd trampling is unlikely to be having a measurable effect on the WCT population. With the complete removal of non-natives within the drainage, the BLM expects to see additional increases in the Dyce Creek WCT population in the coming years.

#### **3.2.6: Issue #4: Noxious and Invasive Species**

Noxious weeds are defined in the Montana Weed Management Plan as “plants of foreign origin that can directly or indirectly injure agriculture, navigation, fish or wildlife, or public health.” Currently there are 35 weeds on the statewide noxious weed list that infest about 7.6 million acres in Montana. Of these 35, there are only two of major concerns in the EGW; they are spotted knapweed and houndstongue. Canada thistle, another state declared noxious weed also found in the EGW mostly in riparian areas, is widespread throughout the Dillon Field Office. Due to its location in riparian areas, it is difficult to treat effectively. Three other weeds that Beaverhead County has designated as noxious; black henbane, common mullein, and musk thistle, are found scattered throughout the watershed, mostly in disturbed areas.

Spotted knapweed, a biennial or short lived perennial, is found scattered throughout the EGW. Most infestations are found along roads and trails but the larger infestations are found around past disturbance sites and old mining claims. Of these infestation sites the one with the highest potential for seed spread is the gravel pit located on Badger Pass. With the widespread use of gravel from this pit, treatment methods are limited. Although it has been treated three times annually with 2,4-D, it has been observed that almost everywhere this gravel is used knapweed plants are found. Due to its location in the EGW, the potential is high for knapweed to be spread by vehicles, livestock, wildlife, recreation and other activities. Houndstongue is found scattered in trace amounts along roads and trails, with the larger infestations occurring along streams and in riparian areas. Because of its seeds ability to cling to hair and clothing, the potential is high for it to be spread rapidly within the watershed. Houndstongue, like Canada thistle, is generally found in areas that make treatment difficult

Another invasive weed that could present a threat to the EGW in the future is cheatgrass. Cheatgrass is found in small patches throughout the watershed primarily on south and west facing slopes naturally devoid of vegetation or where there has been some past disturbance.

A more detailed and comprehensive description of current weed infestations and treatments performed in the watershed are provided in the EGW Assessment Report (December 2011).

### **3.3 Resource Concerns**

#### **3.3.1 Resource Concern #1: Wilderness Characteristics**

There are no designated wilderness areas within the EGW. The northwest corner of the Henneberry Ridge Wilderness Study Area (WSA) extends into the EGW totaling approximately 750 acres within the watershed boundary. These lands are managed in accordance with the *Interim Management Policy (IMP) for Lands Under Wilderness Review* (BLM Handbook H-8550-1).

In accordance with Section 201 of FLPMA, BLM is required to maintain, an inventory of all public lands and their resources and other values, which includes wilderness characteristics. Lands within the EGW were evaluated for the presence of wilderness characteristics, and one area consisting of approximately 12,854 acres south and east of the Bon Accord Road, referred to as the Cold Springs Creek unit (#MT-050-031), was identified as having wilderness characteristics in accordance with the most recent policy guidance. Most of this area was identified in BLM's original wilderness inventory as having the requisite characteristics to carry it forward to the intensive inventory process, but was not recommended to be designated as a WSA. Current policy simply requires that the inventory be updated to assess whether or not wilderness characteristics ( $\geq 5,000$  roadless acres, natural conditions, and opportunities for solitude or primitive recreation) still exist, and evaluate the impacts of any proposed actions to those values. (Map 2)

#### **3.3.2 Resource Concern #2: Recreation and Travel Management**

Recreational use within the EGW occurs year round, including horseback riding, hiking, big game hunting, bird hunting, recreational driving, fishing, wildlife-viewing (especially sage grouse viewing near the Reservoir Creek lek), snowmobiling, cross-country skiing, etc. Two big game outfitters are permitted to guide commercial big game hunting in the area, and one outfitter provides commercial horseback rides within the EGW. All of these commercial outfitters use this area lightly, spending the bulk of their time outside the EGW boundary.

The EGW includes portions of the South Pioneers and the potential Rocky Hills Special Recreation Management Areas (SRMAs). These areas are identified in the RMP to provide direction for the types of recreation opportunities to be provided. South Pioneers SRMA is identified to provide opportunities for motorized recreation, mountain biking, and day use. The Rocky Hills SRMA would only be designated a SRMA if the Henneberry Ridge WSA were legislatively released from further consideration as wilderness. If the WSA is released as a WSA, the area would be managed primarily to provide mountain biking opportunities. Management would also emphasize opportunities for hiking and primitive camping.

BLM worked together with Bannack State Park in recent years to provide loop trail routes originating in the park and traversing portions of the BLM land north and east of the park boundaries. These trails accommodate mostly non-motorized recreational use, although portions of the trails also coincide with designated motorized routes.

### **3.3.3 Resource Concern #3: Socioeconomics**

#### ***Livestock and Agricultural Socioeconomics***

Although mining was an impetus in the region's development, cattle ranching was already established when the first miners found their way into Montana. The Grants and Orrs in the Beaverhead region and the Kohrs in Deer Lodge were grazing cattle and providing beef to local miners as well as to consumers in other parts of the west and east. These early ranchers faced difficult circumstances fighting with Blackfeet and other tribes over territory and initially competing with bison for range. Yet, through the 1870's the cattle and sheep business as well as farming continued to expand. By the end of the 1870's, bison were on the brink of extinction. Public lands became more accessible facilitated by an "open range" policy that made available public lands for grazing. Cattle ranching in Montana became another means to "strike it rich" and spurred another rush of settlers and speculators.

Before the boom of the 1880's, most Montana cattle operations were partnerships or family affairs, but many of the new outfits were full-fledged corporations with access to plenty of capital and plenty of livestock. Dozens of corporate ranches held Montana charters by 1886; and many others, such as the Texas-based XIT, and Continental Land and Cattle spreads, were incorporated in other states or territories. By 1886, at the peak of the open range boom, roughly 664,000 cattle and 986,000 sheep grazed Montana range lands. A large percentage of the animals belonged to the new corporate ranchers, whose managers packed them onto limited ranges with no provisions of winter hay, in hope of quick profits from minimal investments (Malone, Roeder, and Lang, 1991: 157).

A severe drought and hard winter in 1886-87 combined with overgrazing on public lands resulted in severe impacts to Montana's cattle business, with some estimates that half or more of the cattle died (Fletcher, 1960:89-94). Small operators who put up hay adapted better than the "get rich quick" operators did, and after 1887, the cattle industry settled into a period of recuperation and ultimately further expansion as the value of hay for winter feed became apparent (Harrison 1957; Fletcher 1960).

The agricultural boom began to go bust in the post-war depression of the 1920's, and large numbers of Montana farmers moved out of state, leaving a demographic profile that is similar to that of present day Montana: larger numbers of older persons and younger persons with the middle-age demographic group showing sharp declines. Prior to World War II, ranching and farming continued under pressure, but various New Deal programs supported these industries into World War II, when once again there was a small boom. A combination of weather, world economics, and cultural changes in the United States have continued to influence boom and bust cycles in ranching and farming in southwest Montana. Today these activities remain important to the overall economy and culture of the region, but the face of agriculture and ranching are changing.

Ranchers or their family members may also work as fishing guides or outfitters or in town to supplement their income. Fluctuations in cattle prices, other market forces, and increasing equipment and operating costs require some diversification in order to ensure the fiscal viability of present-day ranching operations. Some choose to lease their lands, or access through them for hunting or fishing and thereby supplement ranch income. It is common for wives and children to work for the cash needed to keep family and ranching life viable. Unfortunately, for many ranchers, children are not staying on to ranch, either because the isolation and lifestyle demands are not appealing or because financial realities do not allow it.

There are 9 different business entities or individuals currently authorized to graze livestock and harvest 79,000 public land AUMs on the 16 grazing allotments in the EGW. Qualified individuals and business enterprises are authorized to graze livestock through a ten-year term grazing lease (43 CFR 4110). Many use allotments that combine public and private land pastures in a comprehensive management plan. In most cases, private land owned by the lessees is adjacent to, or intermingled with, BLM administered land. All aspects of the ranching operation including calving, breeding, haying, feeding, shipping, summer pasturing, and marketing schedules are planned and implemented with reliance on annual use of public land allotments during a portion of the grazing season. Changes in numbers of livestock, seasons of use, and/or increased labor inputs may have a considerable economic impact on individual operators.

The EGW is sparsely populated with Dillon being the largest town near the watershed. Recreation and tourism is an important component of the economy of the EGW. Most of this recreation is use during the hunting season which provides substantial contributions to the local economy.

Of 56 Montana counties, Beaverhead County is the largest livestock producer. An inventory conducted the National Agricultural Statistical Service (NASS) (<http://www.nass.usda.gov/mt/>), in January 2002, indicated the eight-county area produced 472,740 head of cattle and 33,600 sheep and lambs. Very few grain-fed cattle were produced. The focus was on calves and feeder steers along with beef cows or breeding stock. This type of ranching requires large expanses of grazing land.

According to the NASS, overall cattle production in Montana has been relatively stable since 1986. The January inventories in 1986 and 2002 reported 2.45 million head with a peak of 2.75 million during 1996. Sheep production, on the other hand, showed a general decline across the state, reflecting a broader national pattern. The data from 2010 reports that, of Montana's 56 counties, Beaverhead county ranked 1<sup>st</sup> in total hay production. The data from 2011 reports that, Beaverhead county ranked 1<sup>st</sup> in total cattle numbers; and 3<sup>rd</sup> in sheep numbers.

Several economic factors have changed since the early 1980s, which might have affected ranching operations in southwest Montana, including rising real estate values, volatile commodity price fluctuations, and rising overhead costs for agriculture. These factors, along with state and national politics, and changing livestock market conditions, have affected the livestock industry over the last twenty years. Social factors include the rising popularity of southwest Montana as a place to live, work, and play accompanied by related population growth.

Grazing fees are calculated using the formula required by 43 CFR 4130.8 and are considerably less than those charged by private landowners. In 2011, the average fee in Montana for grazing on private land was \$19.40 per AUM, based on Montana Agricultural Statistics Service and NASS figures, and the average lease rate for Montana State Lands was \$6.50 per AUM. The BLM and Forest Service used the same formula to derive a \$1.35 fee in 2011, which makes federal land the least expensive grazing available to area ranchers.

Federal grazing permits are desirable for area cattle producers as a source of inexpensive forage, even though additional management costs are usually incurred. If a rancher agrees to run someone else's livestock on their term grazing permit under a Livestock Control Agreement, the BLM charges an additional surcharge. The surcharge rate fluctuates annually based on private land lease rates within the state. The surcharge fee in FY2012 is \$6.32 per AUM. Total grazing fee receipts for the BLM DFO amounted to \$123,589 in fiscal year 2010 and \$144,576 in fiscal year 2011.

On page 252 of the Proposed Dillon RMP/Final EIS, Table 48, Employment and Labor Earnings by Major Type and Sector in 2000, reports that private on-farm employment accounted for 17 % of total employment in Beaverhead County. (Please refer to Table 56 on page 286 of the Proposed Dillon RMP and Final EIS, which shows employment and labor income response coefficients related to livestock grazing, timber management and recreation use for the area influenced by the Dillon Field Office). In addition, page 251 of the EIS presents personal income statistics from 2000 that indicate that labor earnings are the largest source of income in Beaverhead County. The Proposed Dillon RMP/Final EIS is available at [http://www.blm.gov/mt/st/en/fo/dillon\\_field\\_office/rmp/Final.html](http://www.blm.gov/mt/st/en/fo/dillon_field_office/rmp/Final.html).

### ***Timber and Forest Products Socioeconomics***

Forest resources in the watershed have been utilized since the beginning of European settlement during the 1860's. Evidence in the form of old stumps can be found throughout forested habitats in the assessment area. Extensive timber harvest occurred on the slopes surrounding Bannack in association with settlement of the area and mining activities.

Recent forest management activities on BLM administered lands occurred in the early 2000s in the West Fork of Dyce Creek drainage and south of Badger Pass. The Dyce Creek timber sale completed timber harvest on approximately 230 acres, and the Badger Pass timber sale completed timber harvest on approximately 50 acres. Both of these sales implemented actions from the East Grasshopper Forest Vegetation Project (1998), and had the objectives of thinning overstocked Douglas-fir stands and restoring a Douglas-fir savannah structure. The Badger Pass Salvage Sale completed fire salvage harvest on approximately three acres. Approximately 500 thousand board feet (MBF) of predominantly Douglas-fir were removed in these sales combined. All three of these recent timber sales were sold to local purchasers from Beaverhead County, with wood products being supplied to local and regional lumber mills.

The opportunity for forest products related employment has declined substantially since the 1980's. The number of local and/or regional milling facilities that process more than one million board feet per year has declined from seven to two, neither of which are located in Beaverhead or Madison Counties. On a local basis, logging related job opportunities have declined due to the

uncertainty of employment. Milling facilities and other timber sale purchasers presently rely on subcontracting workers.

The Badger Pass area is popular for personal use Christmas tree cutting for Dillon and Argenta residents. There has been recent interest expressed in commercial Christmas tree cutting for this area. Additional public demand has been expressed for commercial and non-commercial firewood treatment areas.

#### **3.3.4 Resource Concern #4: Cultural Resources**

In conjunction with the Mountain Foothills Grazing EIS in the late 1970s, a Class II cultural resource inventory was completed for a 10% sample of lands within the Dillon Field Office. Results of the inventory located a mixture of prehistoric and historic sites throughout the watershed. Results of the sample inventory indicated that the cultural site densities in the EGW were considerably higher than that observed in other watersheds, with the average site density of 1 site per 348 acres (2.048 sites per square mile). Sites consist primarily of small prehistoric camp sites and historic mining (Earle 1980).

An examination of existing records on file with the BLM-Dillon Field Office, the Beaverhead National Forest, and the Montana State Historic Preservation Office, provides information on the number of known cultural resource properties and also the amount and level of previous cultural resource inventories that have been conducted. To date, there have been 90 Class III cultural resource inventories conducted within the EGW. Class III cultural resource inventories totaled 3,187 acres surveyed. Inventories are subject to specific project compliance in advance of all proposed federal undertakings including: small range improvements (fences, water developments), road rights-of-way, mining disturbances, timber sales, fuel reductions, and AML projects. The inventory projects vary from as little as 0.5 acres, to as much as 274 acres in extent, and public lands within at least ten grazing allotments have had no Class III cultural resources inventory at all.

As a result of past Class II and Class III cultural resource inventories, there are a total of 125 recorded cultural properties within the EGW study area. Of that number 33% are historic and 67% are of prehistoric origin. One paleontological site is located within the watershed. The majority of the sites associated with the study area are prehistoric in general; more specifically: stone circles; lithic scatters; rock alignments; and cairns. Recorded historic site types include: patented/unpatented mines; mine features and mining structures; isolated cabins; cairns; temporary settlement; and ditches. Of the 125 sites identified, 12 (10%) have been recommended eligible for the National Register of Historic Places. None of the sites have been formally evaluated for significance and eligibility to the National Register of Historic Places. Of the recorded sites three of them are considered contributing elements to the Bannack Mining District. All three sites associated with Bannack are recommended eligible to the National Register of Historic Places.

To date, traditional cultural properties or traditional life-way values of special concern to American Indian Groups have not been specifically identified within the EGW. However, certain site types such as food processing, rock art and habitation locations retain particular importance to most Native American Groups.

### **3.2.7 Resource Concern #5: Visual Resources**

Visual resources within this planning area are managed in three different visual resource management (VRM) classes for various levels of protection of existing visual resources. While the majority of the planning area is managed as VRM Class III, portions near mining activity around Argenta and Grasshopper Creek have been identified for VRM Class IV, and the Henneberry Ridge WSA is managed as VRM Class I.

According to BLM Handbook H-8431-1, (*Visual Resource Contrast Rating*) the visual resource management objective for the majority of the area (VRM Class III) 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." VRM Class IV allows for management activities which require major modifications to the existing landscape, and are typically reserved for areas with existing disturbances typical of those with substantial mining activity, like those areas surrounding Argenta and Bannack.

Henneberry Ridge WSA is managed according to VRM Class I objectives. "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."

### **3.2.8 Resource Concern #6: Special Status Plants**

Within the EGW, there are four sensitive plant species found, primarily, in sagebrush habitats. Bitterroot milkvetch, chicken sage, linearleaf fleabane, and railhead milkvetch are found in sagebrush steppe and grassland habitat. Bitterroot milkvetch and railhead milkvetch are palatable and are sensitive to intensive grazing, especially during spring and early summer. Repeated herbivory, particularly between mid-May and mid-July may lead to population declines. Rest-rotation grazing regimes may allow enough recruitment to maintain stable populations of these palatable sensitive plants. Chicken sage prefers sparsely vegetated habitats with low competition. It appears to tolerate and may benefit from disturbances that reduce competition such as livestock grazing. Observations suggest that linearleaf fleabane may respond positively to disturbance. Some populations might have been established through human activity, because the species is highly localized within what appears as extensive suitable habitat, in locations of historically intense mining activity. The low stature of this plant probably means that it responds positively to the disturbance of livestock grazing. Competition from introduced, invasive, and noxious weed species, especially spotted knapweed, leafy spurge, and cheatgrass, may pose the biggest threat to the sensitive plant species that are found in sagebrush habitats in the EGW.

Four sensitive plant species are found, primarily, in forest and woodland habitats within the EGW. Beautiful bladderpod, taper-tip desert-parsley, Lemhi beardtongue, and Railroad Canyon wild buckwheat prefer sparsely vegetated habitats with low competition. Many of the known populations of these plant species, in the EGW, face no anthropogenic threats. They appear to tolerate and may benefit from disturbances that reduce competition such as livestock grazing.

Lemhi beardtongue, however, is palatable and is sensitive to intensive grazing, especially during spring and early summer. Repeated herbivory, particularly between mid-May and mid-July may lead to population declines. Rest-rotation grazing regimes may allow enough recruitment to maintain stable populations of these palatable sensitive plants. Competition from introduced, invasive, and noxious weed species, especially spotted knapweed, may pose the biggest threat to the sensitive plant species that are found in forest and woodland habitats in the EGW.

Two sensitive plant species are found in riparian habitats within the EGW. Idaho sedge and slender thelypody are found in moist alkaline meadows, are palatable, and are sensitive to intensive grazing, especially during spring and early summer. Repeated herbivory, particularly between mid-May and mid-July may lead to population declines. Rest-rotation grazing regimes may allow enough recruitment to maintain stable populations of these palatable sensitive plants. Kentucky bluegrass and common dandelion are present in most wet meadow habitat and along many stream reaches. Kentucky bluegrass may compete with Idaho sedge. Canada thistle and houndstongue are scattered throughout the EGW and were observed in many riparian and wetland habitats, especially along intermittent stream reaches. These noxious weeds may also compete with Idaho sedge which prefers these streamside and meadow habitats.

During the summer of 2010, the U.S. Fish and Wildlife Service announced a 90-day finding on a petition to list whitebark pine (*Pinus albicaulis*) as endangered or threatened and to designate critical habitat. In July of 2011, the finding was released; whitebark was given a warranted but precluded listing with a priority of two and is currently on the candidate species list. There have been no whitebark pine trees identified in the EGW to date. However, there is similar habitat to other areas in the Dillon Field Office where whitebark is found, and scattered whitebark pine trees may occur in the EGW.

### **3.4 Description of Relevant Non-Affected Resources**

#### **3.4.1 Abandoned Mine Lands (AML)**

The AML program is an ongoing program which has been addressing legacy mining issues throughout southwest Montana. AML work will continue until all environmental and physical safety issues that can be resolved have been completed. Reclamation will be prioritized by the magnitude of the environmental problem, the severity of the safety risk, funding available, and/or the partnerships available to conduct the work. It will be conducted on a watershed or district scale when possible.

To determine the best reclamation method for each mine a detailed field evaluation must be conducted. Sites with potential water quality issues are reviewed under the CERCLA process, those with physical safety issues only are addressed under the NEPA process. Site assessment includes, but is not limited to, a review for a potentially responsible party (PRP), the geochemical character of the waste rock and tailings impoundments, delineation of the extent of contaminant transport, a cultural inventory and clearance through SHPO, evaluation of the sites for potential animal habitat, and a sensitive plant species review. The reclamation method chosen for each mine is based on the relative importance of the critical components of the site as well as the accessibility/workability of the area. As work progresses, mining areas which have not been sufficiently inventoried will be assessed.

The EGW has fewer AML sites than some of the other watersheds in the DFO. BLM will, however, continue to address AML features in the EGW on a priority basis.

### **3.4.2 Air Quality**

Air quality in the EGW is excellent. All of southwest Montana 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 in Butte. The BLM is a member of the Montana/Idaho Airshed Group and is in compliance with the Environmental Protection Agency's 1998 Interim Air Quality Policy for Wildland and Prescribed Fires.

### **3.4.3 Climate Change**

Climate change is defined by the Intergovernmental Panel on Climate Change (IPCC) as “a change in the state of the climate that can be identified (e.g., by using statistical tests) by changes in the mean and/or the variability of its properties, and persist for an extended period, typically decades or longer. It refers to any change in climate over time, whether due to natural variability or as a result of human activity.” (IPCC 2007a). Climate change and climate science are discussed in detail in the Climate Change Supplementary Information Report for Montana, North Dakota, and South Dakota, Bureau of Land Management (Climate Change SIR, 2010). This document is incorporated by reference into this EA.

The Intergovernmental Panel on Climate Change (Climate Change SIR, 2010) states, “Warming of the climate system is unequivocal, as is now evident from observations of increases in global average air and ocean temperatures, widespread melting of snow and ice, and rising global average sea level.” Global average temperature has increased approximately 1.4°F since the early 20<sup>th</sup> century (Climate Change SIR 2010). Warming has occurred on land surfaces, oceans and other water bodies, and in the troposphere (lowest layer of earth's atmosphere, up to 4-12 miles above the earth). Other indications of global climate change described by IPCC 2007b (Climate Change SIR 2010) include:

- Rates of surface warming increased in the mid-1970s and the global land surface has been warming at about double the rate of ocean surface warming since then;
- Eleven of the last 12 years rank among the 12 warmest years on record since 1850;
- Lower-tropospheric temperatures have slightly greater warming rates than the earth's surface from 1958-2005.

As discussed and summarized in the Climate Change SIR, earth has a natural greenhouse effect wherein naturally occurring gases such as water vapor, CO<sub>2</sub>, methane, and N<sub>2</sub>O absorb and retain heat. Without the natural greenhouse effect, earth would be approximately 60°F cooler (Climate Change SIR 2010). Current ongoing global climate change is believed by scientists to be linked to the atmospheric buildup of greenhouse gases (GHGs), which may persist for decades or even centuries. Each GHG has a global warming potential that accounts for the intensity of each GHG's heat trapping effect and its longevity in the atmosphere (Climate Change SIR 2010). The buildup of GHGs such as CO<sub>2</sub>, methane, N<sub>2</sub>O, and halocarbons since the start of the industrial revolution has substantially increased atmospheric concentrations of these compounds compared to background levels. At such elevated concentrations, these compounds absorb more energy from the earth's surface and reemit a larger portion of the earth's heat back to the earth rather

than allowing the heat to escape into space than would be the case under more natural conditions of background GHG concentrations.

A number of activities contribute to the phenomenon of climate change, including emissions of GHGs (especially carbon dioxide and methane) from fossil fuel development, large wildfires, activities using combustion engines, changes to the natural carbon cycle, and changes to radiative forces and reflectivity (albedo). It is important to note that GHGs will have a sustained climatic impact over different temporal scales due to their differences in global warming potential (described above) and lifespans in the atmosphere. For example, CO<sub>2</sub> proper may last 50 to 200 years in the atmosphere while methane has an average atmospheric life time of 12 years (Climate Change SIR, 2010). Land use and/or land management activities that increase the ability of vegetation and soil to sequester carbon can help mitigate the effects of climate change. Such activities include improving/restoring riparian and wetland areas, improving age class diversity, health and resiliency of forests, mitigating the size and intensity of wildfires and maintaining/improving livestock grazing management.

North Dakota, Montana, and South Dakota are all in the lower third of GHG-emitting states (by volume). North Dakota ranks 37, Montana ranks 42, and South Dakota ranks 43. Only Hawaii and Idaho have lower emissions than Montana and South Dakota among western states ([http://assets.opencrs.com/rpts/RL34272\\_20071205.pdf](http://assets.opencrs.com/rpts/RL34272_20071205.pdf), Ramseur 2007). Montana, North Dakota, and South Dakota combine for 1.8 percent of the U.S.'s GHG emissions.

Montana's GHG inventory (<http://www.eia.doe.gov/oiaf/1605/archive/gg04rpt/emission.html>, Center for Climate Strategies 2007) shows that activities within the state contribute 0.6 percent of U.S and 0.076 percent of global GHG emissions (based on 2004 global GHG emission data from the IPCC, summarized in the Climate Change SIR 2010). Based on 2005 data in the state-wide inventory, the most pronounced source of Montana's emissions is combustion of fossil fuels to generate electricity, which accounts for about 27 percent of Montana's emissions. The next largest contributors are the agriculture and transportation sectors (each at approximately 22 percent) and fossil fuel production (13.6 percent).

Greenhouse gas emissions from all major sectors in Montana in 2005 added up to a total of approximately 36.8 million metric tons of CO<sub>2</sub>e (Center for Climate Strategies (CCS) 2007). The EPA (USEPA 2010, as summarized by the Climate Change SIR 2010) published an inventory of U.S. GHG emissions, indicating gross U.S. emissions of 6,957 million metric tons, and net emissions of 6,016 million metric tons (when CO<sub>2</sub> sinks were considered) of CO<sub>2</sub>e in 2008. Global GHG emissions for 2004 (IPCC 2007, summarized by the Climate Change SIR 2010) indicated approximately 49 gigatonnes (10<sup>9</sup> metric tons) of CO<sub>2</sub>e emitted.

Information and projections of impacts beyond the project scale are becoming increasingly available. Chapter 3 of the Climate Change SIR describes impacts of climate change in detail at various scales, including the state scale when appropriate. The following bullet points summarize potential changes identified by the EPA (EPA, 2008) that are expected to occur at the regional scale, where the Alternatives in this EA are proposed to take place. The EPA identifies this area as part of the Mountain West and Great Plains region (<http://www.epa.gov/Region8/climatechange/pdf/ClimateChange101FINAL.pdf>):

- The region is expected to experience warmer temperatures with less snowfall.
- Temperatures are expected to increase more in winter than in summer, more at night than in the day, and more in the mountains than at lower elevations.
- Earlier snowmelt means that peak stream flow would be earlier, weeks before the peak needs of ranchers, farmers, recreationalist, and others. In late summer, rivers, lakes, and reservoirs would be drier.
- More frequent, more severe, and possibly longer-lasting droughts are expected to occur.
- Crop and livestock production patterns could shift northward; less soil moisture due to increased evaporation may increase irrigation needs.
- Drier conditions would reduce the range and health of ponderosa and lodgepole pine forests, and increase the susceptibility to fire. Grasslands and rangelands could expand into previously forested areas.
- Ecosystems would be stressed and wildlife such as the mountain lion, black bear, long-nose sucker, marten, and bald eagle could be further stressed.

Other impacts could include:

- Increased particulate matter in the air as drier, less vegetated soils experience wind erosion.
- Shifts in vegetative communities which could threaten plant and wildlife species.
- Changes in the timing and quantity of snowmelt which could affect both aquatic species and agricultural needs.

Projected and documented broad-scale changes within ecosystems of the U.S. are summarized in the Climate Change SIR. Some key aspects include:

- Large-scale shifts have already occurred in the ranges of species and the timing of the seasons and animal migrations. These shifts are likely to continue (USGCRP 2009, as cited by Climate Change SIR 2010). Climate changes include warming temperatures throughout the year and the arrival of spring an average of 10 days to two weeks earlier through much of the U.S. compared to 20 years ago. Multiple bird species now migrate north earlier in the year.
- Fires, insect epidemics, disease pathogens, and invasive weed species have increased and these trends are likely to continue. Changes in timing of precipitation and earlier runoff increase fire risks.
- Insect epidemics and the amount of damage that they may inflict have also been on the rise. The combination of higher temperatures and dry conditions have increases insect populations such as pine beetles, which have killed trees on millions of acres in western U.S. and Canada. Warmer winters allow beetles to survive the cold season, which would normally limit populations; while concurrently, drought weakens trees, making them more susceptible to mortality due to insect attack.

More specific to Montana, additional projected changes associated with climate change described in Section 3.0 of the Climate Change SIR (2010) include:

- Temperature increases in Montana are predicted to be between 3 to 5°F at mid-21<sup>st</sup> century and between 5 to 9°F at the end of the 21<sup>st</sup> century. As the mean temperature rises, more

heat waves are predicted to occur. In the late 21<sup>st</sup> century, the number of days per year with temperatures above 100°F is predicted to be between 10 and 45, depending on the level of GHG emissions, with the largest increase in the number days over 100°F occurring in the eastern portion of the state.

- Precipitation increases in winter and spring in Montana may be up to 25 percent in some areas. Precipitation decreases of up to 20 percent may occur during summer, with potential increases or decreases in the fall. In the fall western Montana may see little change in precipitation while the northwestern portion of the state may experience 5 to 10 percent increases.
- For most of Montana, annual median runoff is expected to decrease between 2 and 5 percent, but northwestern Montana may see little change in annual runoff. Mountain snowpack is expected to decline, reducing water availability in localities supplied by meltwater.
- Glaciers are already known to be melting, and all glaciers in Glacier National Park are expected to be completely melted by 2030 or sooner.
- Wind power production potential is predicted to decline in Montana based on modeling focused on the Great Falls area.
- Conditions in Montana wetlands across much of the northern part of the state are predicted to remain relatively stable, although some wetland habitat near Cut Bank is predicted to degrade to less favorable conditions.
- Water temperatures are expected to increase in lakes, reservoirs, rivers, and streams. Fish populations are expected to decline due to warmer temperatures, which could also lead to more fishing closures.
- Wildland fire risk is predicted to continue to increase due to climate change effects on temperature, precipitation, and wind. One study predicted an increase in median annual area burned by wildland fires in Montana based on a 1°C global average temperature increase to be 241 to 515 percent.

While long-range regional changes might occur within this analysis area, it is impossible to predict precisely when they could occur. The following example summarizing climate data for the West North Central Region (MT, ND, SD, WY) illustrates this point at the regional scale. A potential regional effect of climate change is earlier snowmelt and associated runoff. This is directly related to spring-time temperatures. Over a 112-year record, overall warming is clearly evident with temperatures increasing 0.21 degrees per decade (Figure 3.4). This would suggest that runoff may be occurring earlier than in the past. However, data from 1991-2005 indicates a 0.45 degree per decade cooling trend (Figure 3.5). This example is not an anomaly, as several other 15-year windows can be selected to show either warming or cooling trends. Some of these year-to-year fluctuations in temperature are due to natural processes, such as the effects of El Niños, La Niñas, and the eruption of large volcanoes (Climate Change SIR 2010). This information illustrates the difficulty of predicting actual regional or site-specific changes or conditions which may be due to climate change during any specific time frame.

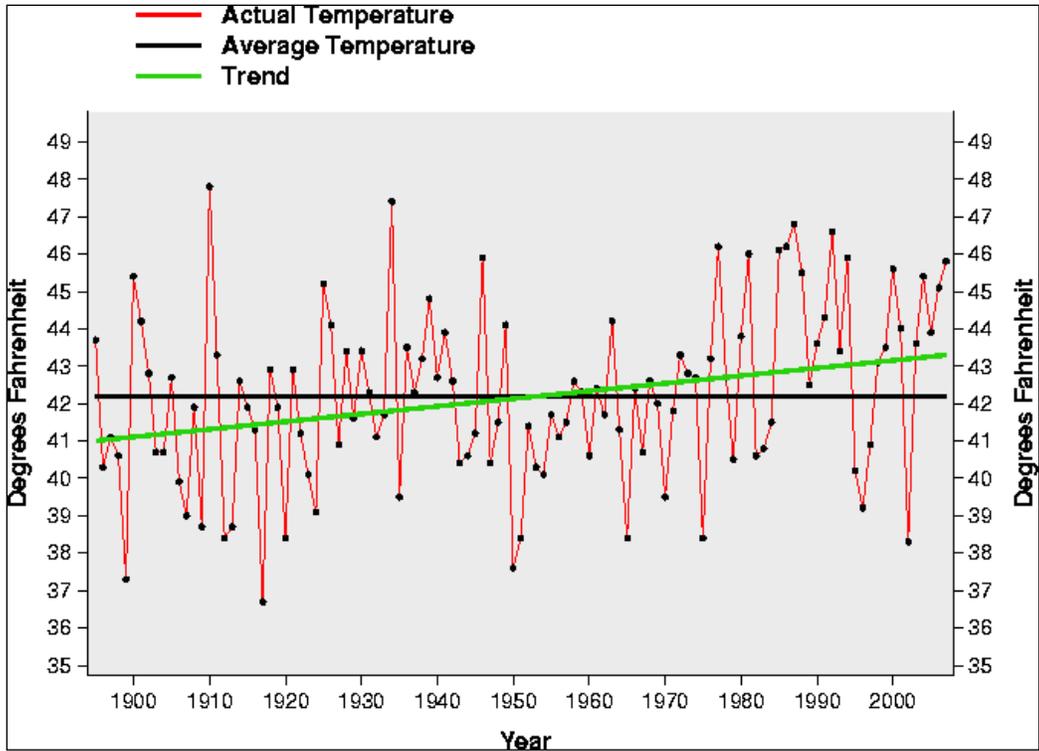


Figure 3.4: Regional climate summary of spring temperatures (March-May) for the West North Central Region (MT, ND, SD, WY), from 1895-2007. (Source: NOAA website – <http://www.ncdc.noaa.gov/oa/climate/research/cag3/wn.html>)

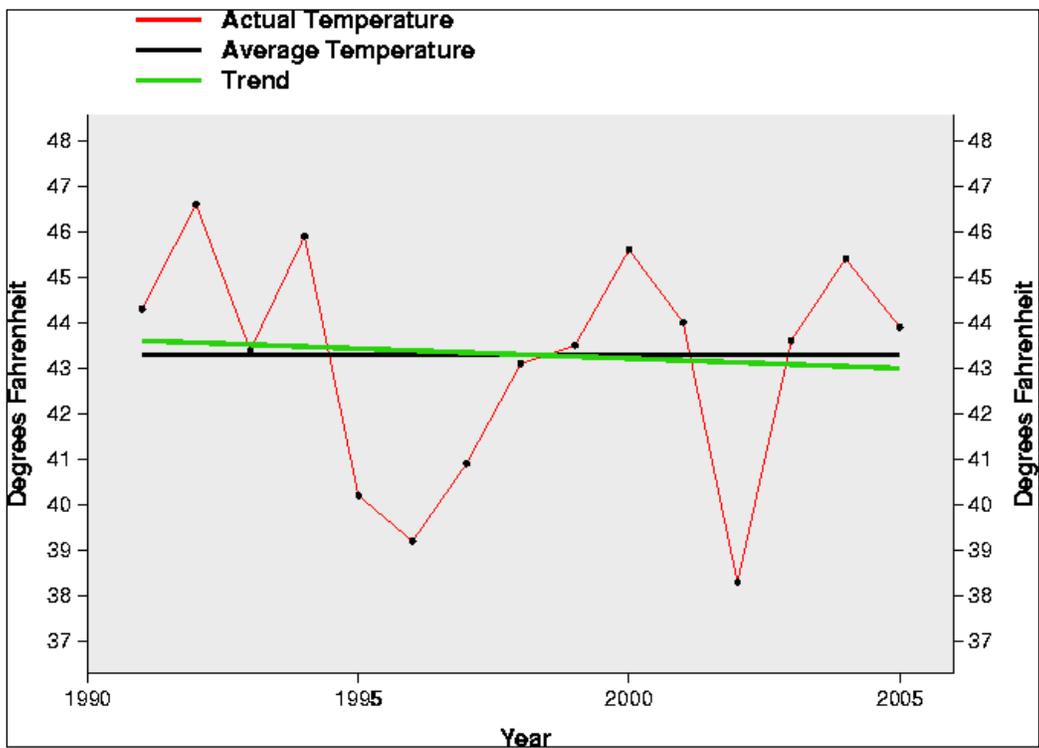


Figure 3.5: Regional climate summary of spring temperatures (March-May) for the West North Central Region (MT, ND, SD, WY), from 1991-2005. (Source: NOAA website – <http://www.ncdc.noaa.gov/oa/climate/research/cag3/wn.html>)

## **Chapter 4: Environmental Consequences**

### **4.1 Introduction**

This chapter discloses the scientific and analytic basis for comparison of the alternatives and describes the probable consequences (i.e., impacts, effects) of each alternative on the issues and resource concerns. The environmental consequences are disclosed and analyzed by alternative for each issue. This chapter also discloses the cumulative, or combined, impacts of alternative actions with past, present and reasonably foreseeable actions within the watershed.

Not every Key Issue and/or Resource Concern is relevant under each specific heading and therefore will not be discussed. Not every component within the Key Issues and/or Resource Concerns will be affected by the alternatives (i.e., not every species of wildlife in the watershed will be affected). If Key Issues, Resource Concerns and/or specific components within an issue are not discussed, they were either not present or present but minimally affected.

Carefully planned resource specific monitoring under all alternatives will provide data for adaptive management within the watershed. The monitoring plan for the EGW is attached as Appendix B.

### **4.2 Predicted Effects of Alternatives**

#### **4.2.1 Predicted Effects Common to All Alternatives, Including the No Action**

For each alternative where management changes or administrative actions are proposed, the predicted effects of each applicable action alternative(s) are presented for each identified issue or resource concern in the following order:

Issue #1: Riparian, Wetland, and Aquatic Health and Associated Species  
Issue #2: Upland Health, Sagebrush Steppe Habitat and Associated Species  
Issue #3: Special Status Fish and Wildlife Species Habitat  
Issue #4: Noxious and Invasive Species

Resource Concern #1: Wilderness Characteristics  
Resource Concern #2: Recreation and Travel Management  
Resource Concern #3: Socioeconomics  
Resource Concern #4: Cultural Resources  
Resource Concern #5: Visual Resources  
Resource Concern #6: Special Status Plant Species Habitat

Headings are omitted for those issues or resource concerns which are not present, or are present, but not affected.

#### **Issue #1: Riparian, Wetland and Aquatic Health and Associated Species**

There are 16 grazing allotments and one unleased parcel within the EGW. Of those, five allotments did not meet the riparian health standard. Clary and Leninger (2000), discuss livestock behavior and their tendency to congregate in riparian areas. They are drawn by forage

and water as well as relatively favorable topography, which they prefer over steeper terrain and drier forage. Their long-term presence can result in changes to stream channel profiles, channel bottom embeddedness, channel substrates, and streamside vegetation as well as lowering of water tables and replacement of plants with deep roots like sedges with shallow rooted species, like Kentucky bluegrass. In two separate studies in Oregon, cattle were found to use the riparian zone 12 to 20 times more than upland areas and 80% of the forage came from the riparian zone (Skovlin 1984). Depending on topography and timing of use, livestock are expected to utilize riparian areas more than upland areas.

When used, livestock supplement should be placed on ridges or terraces at least ¼ mile from the nearest livestock water source in areas naturally devoid of vegetation. Proper salting improves cattle distribution and forage utilization, but when done in conjunction with other management practices and/or projects animal behavior is most affected. The use of protein blocks will be encouraged away from riparian areas during fall grazing treatments to reduce herbivory on riparian woody species (e.g., willows, aspen).

Riding and herding will continue to be emphasized and utilized to improve livestock distribution, reduce the amount of time cattle spend in riparian areas, sustain resources and increase animal production. BLM technical reference # 1737-20, *Grazing Management Processes and Strategies for Riparian-Wetland Areas* (2006) states: “Successful application of low-stress stockmanship enables the rider or range manager to control the duration that plants and soils are exposed to grazing animals. This controls overgrazing and over resting, both of which lead to deterioration of range health. Proper handling can thus improve livestock distribution and rangeland condition and trend, and lead to improved riparian conditions that benefit fisheries and wildlife while improving water quality.”

Regulating livestock use around live water sources and wet meadows by fencing, grazing or herding management to restrict overuse protects vulnerable forbs and grasses for a variety of wildlife species. However, livestock grazing could periodically be used inside meadow enclosures to reduce old vegetation, thereby exposing and rejuvenating succulent forbs (Evans 1986).

## **Issue #2: Upland Health, Sagebrush Steppe Habitat and Associated Species**

The Upland Health Standard in 13 of the 16 grazing allotments in the EGW is not being adversely impacted by BLM authorized activities, including livestock grazing. Although noxious weeds may be present on some of these allotments, current grazing practices or noxious weeds were not contributing to Upland Health concerns. Therefore, no changes to the terms and conditions of these grazing permits/leases will be implemented based exclusively on the condition of the upland health. Sagebrush cover was not noted as a being limiting factor during the assessment and therefore none of the alternatives will impact sagebrush obligate species that rely on sagebrush canopy cover to fulfill all or part of their life cycle. The health of the uplands and associated upland species, including sagebrush obligate species, is expected to remain in PFC on 13 allotments, except in areas of conifer expansion as discussed below.

Temporary electric fence, livestock supplement placement (salt, protein block), riding and herding are encouraged, and may be required as a means of improving livestock distribution in

all alternatives. Although strategic salt placement is an inexpensive and effective distribution tool, research has shown that it is not as persuasive in modifying livestock distribution patterns as water developments (Ganskopp 2001), or the strategic placement of energy or protein supplements such as low-moisture blocks (Bailey and Welling 1999). The use of dehydrated molasses supplements is an effective way to lure cattle into underutilized rangeland. In a study conducted on two Montana ranches, cattle remained within 600 meters of supplements, even when located on steep rugged terrain and relatively far from water (Bailey, Welling and Miller 2001).

Removing, modifying, or rebuilding BLM fences and fences bordering BLM lands will enhance wildlife and bird movement through the area and reduce entanglement hazards. Modifications will be made to existing fences not meeting BLM specifications, which will reduce barriers to wildlife movement and mortality. Modification of wildlife barrier fences will improve seasonal movements by elk, mule deer, moose and antelope in specific areas within the watershed, particularly for young of all species. Adjusting wire spacing, removing wires or providing gaps will allow animals to pass over or under these fences with a reduced risk of entanglement. Installing wildlife escape ramps enhances the ability of birds, bats, and other small mammals to get out of water developments and avoid drowning.

Mountain pine beetle and white pine blister rust will continue to cause mortality of limber pine. In some areas, limber pine habitats may undergo a species conversion to Douglas-fir and/or juniper. Collecting cones from individual five needle pine trees (limber and/or whitebark pine) that are suspected of being blister rust resistant would contribute to the genetic breeding program, and could help the long-term sustenance of these species on the landscape. Applying pheromones to selected areas will deter bark beetles from attacking mature trees. This will protect special value individual trees, as well as their genetics, to persist on the landscape as an important feature of forest and woodland habitats.

### **Issue #3: Special Status Fish and Wildlife Species Habitat**

No Federally listed endangered or threatened wildlife species occur within the EGW. A short form Biological Evaluation (BE) for Special Status Fish and Wildlife Species (Appendix C) provides a summary of whether or not special status fish and wildlife species are affected by the proposed alternatives and potential impacts. Potential site-specific impacts to special status wildlife species are included in the allotment discussions below where appropriate. None of the alternatives would impact BLM sensitive wildlife species that would lead to a downward trend in populations and toward federal listing.

Continuing long-term monitoring of the Dyce Creek WCT population will allow BLM and MTFWP biologists to track changes in the population resulting from the non-native removal, as well as changes in land use practices. Sage grouse lek monitoring will continue within the EGW to collect trend data for male sage grouse lek attendance. Marking fences to make them more visible in areas where sage grouse use is concentrated has been proven effective to reduce collisions and mortalities (Christiansen, 2009 unpub.). Forage and cover will be reduced over winter and early spring on allotments or pastures that are grazed by cattle following the growing season of cool-season bunchgrasses, thereby reducing hiding cover for sage grouse and pygmy rabbits.

West Nile Virus (WNV) has not been detected in Beaverhead County, however, water developments for livestock, wildlife habitat, fish or storm water management create potential habitat for mosquitoes therefore increasing the risk of WNV. Incorporating applicable design and mitigation measures described in the BLM Information Bulletin (IB) No. MT-2011-033 guidance for West Nile Virus and Water Developments can reduce mosquito production by modifying and eliminating mosquito breeding sites.

Amending grazing leases to state that livestock losses may occur from wolves will create awareness, and minimize conflicts between lessees and agencies responsible for managing the wolf population. Range riders may also reduce conflicts between livestock and wolves (Smallidge et al., 2008).

#### **Issue #4: Noxious and Invasive Species**

Human activities, such as road maintenance activities, recreation, mining, and other disturbances, as well as livestock, wildlife, wind, water and fire will continue to spread weeds into and within the watershed. Noxious weeds will continue to be treated as resources allow through the existing cooperative effort between the BLM, Beaverhead County, private landowners and other partners. This will likely maintain noxious weed infestations at current levels or result in a slow decrease in plant densities.

#### **Resource Concern #1: Wilderness Characteristics**

No projects are proposed within the 750-acre portion of the Henneberry Ridge WSA that lies within the watershed boundary or within the 12,854 acre Cold Springs Creek unit identified as Lands with Wilderness Characteristics. Therefore, there would be no impacts to wilderness characteristics anticipated to occur within this planning area as a result of any proposed action or the No Action alternative.

#### **Resource Concern #2: Recreation and Travel Management**

Recreational uses would continue to occur as they have historically within this area under all alternatives. Although there would be some minor changes to certain designated motorized travel routes under the action alternatives, most of those proposed changes reflect corrections to mapping errors and/or designation of routes most commonly used by the public for recreation.

#### **Resource Concern #3: Socioeconomics**

The BLM does not have access to financial or business records for permittees that graze livestock on allotments included in this EA, therefore it is impossible to provide a detailed or quantifiable discussion of individual ranch operations or economic conditions. In 2012, the cost per AUM on BLM-administered lands is \$1.35, while private land lease rate in Montana for 2011 averaged \$19.40/AUM.

Economic impacts to area businesses and commercial operations associated with hunting opportunities in the area are not expected to be affected by any of the alternatives. Refer to Chapter 4, on page 302, and Table 56, on page 286, in the Dillon Proposed RMP and Final EIS for further information.

#### **Resource Concern #4: Cultural Resources**

The BLM will continue to focus on preservation and protection of cultural resources to ensure they are available for appropriate uses by present and future generations. The BLM will continue to reduce imminent threats from natural or human-caused deterioration, or potential conflict with other resource uses, by identifying areas for new field inventory. The BLM will continue to ensure that all authorizations for land and resource use avoid inadvertent damage to federal and nonfederal cultural resources in compliance with Section 106 of the National Historic Preservation Act.

#### **Resource Concern #5: Visual Resources**

Any changes to the visual characteristics of the landscape in the planning area would be consistent with the Visual Resource Management objectives. With or without the vegetation treatments proposed in the action alternatives, the characteristic viewshed would change over time as the timber is impacted by epidemic insect and disease. With no management actions, stands of timber would gradually change in color from dominantly green to reddish, brown, and gray. The Class III objective that applies to the majority of the watershed planning area allows for moderate changes to the characteristic landscape, and for management activities that "...may attract attention but should not dominate the view of the casual observer." The various vegetation management actions proposed within the action alternatives would attract attention to varying degrees according to the particular proposal, but none would be likely to "dominate the view of the casual observer" within the context of the overall landscape in this watershed.

No management actions are proposed to occur within the Henneberry Ridge WSA, which is managed according to VRM Class I objectives, to preserve the existing character of the landscape. This management class provides for "natural ecological changes" which would occur in the absence of any proposed management actions within this area.

#### **Resource Concern #6: Special Status Plant Species Habitat**

A summary table and a detailed discussion of predicted effects and potential impacts to special status plants and their habitat is provided in the Biological Evaluation (BE) for Special Status Plants on BLM Lands in the EGW (see Appendix C).

### **4.2.2 Predicted Effects of Alternative A - No Action (Continuation of Current Management)**

#### **Issue #1: Riparian, Wetland and Aquatic Health, and Associated Species**

The No Action Alternative would not meet riparian, wetland, or aquatic habitat objectives along stream reaches or at springs where resource concerns were identified. Alteration of stream morphology (i.e., channel shape and gradient), vegetative composition, vigor, structure and cover, conifer expansion, and/or excess sediment input would continue in areas where those impacts were identified by the IDT. Negative impacts from ungulate trampling to wet meadows, spring sources, and spring brooks would continue, and ecological functions would continue to be degraded in these areas.

Under this Alternative, none of the riparian issues or concerns identified by the IDT and documented in the EGW Assessment Report would be addressed. Site-specific objectives would

not be met and some allotments would continue being out of conformance with the Standards for Rangeland Health (43 CFR 4180). Under Alternative A, no new AMPs, stream crossings, road improvements or projects (fences, water developments) would be initiated to address concerns on 10 stream reaches (4.2 miles) that failed to meet the Riparian Health Standard. Some site specific riparian habitats would continue to be impacted by ungulate browsing on palatable woody species resulting in limited recruitment and regeneration.

Wildlife habitat in some riparian areas would continue to be affected by reduced vegetative and woody cover, vegetative species composition, and structural diversity. For example, decreased aspen, willow and sedge dominated communities limit biodiversity by reducing habitat available for amphibians, migratory birds, nesting waterfowl, and browse for wild ungulates.

Under this alternative, conifer expansion would continue to increase at the expense of other riparian woody and herbaceous species along Dyce Creek. Rocky mountain juniper has an extensive stoloniferous root system which is very efficient in competing for limited water and soil nutrients. Conifer expansion would eliminate understory vegetation, while increasing bare ground and sediment input to streams (Herman 1958). If conifer expansion continues in the riparian area, wildlife use of these areas would be impacted by loss of browse and forage.

#### **Issue #2: Upland Health, Sagebrush Steppe Habitat and Associated Species**

The existing mountain big sagebrush community in the EGW is slightly departed from reference conditions due to fire exclusion and the effects of conifer expansion. The proportions of mid- to late-development mountain big sagebrush are near reference conditions, however the early development sagebrush component is lacking throughout the watershed. Douglas-fir and juniper are establishing in areas historically occupied by sagebrush and are converting those areas into forested habitat.

In some allotments, particularly along the southern foothills of the Pioneer Mountains, conifers are expanding into sagebrush and grassland habitat and, under Alternative A, that trend is expected to continue. As stated by Hyerdahl and others (2006), “in the continued absence of fire, mountain big sagebrush and grasslands in southwest Montana are likely to become more homogenous as Douglas-fir trees continue to encroach.” Without any natural or human caused disturbances, some areas currently occupied by sagebrush and scattered conifer seedlings would be converted to a forest cover type within approximately 30 years. Conifer expansion into sagebrush communities would continue to affect the composition and structure of big sagebrush communities in portions of the EGW.

Continuation of current grazing practices on the Reservoir Creek Custodial, Buffalo Creek and Taylor Buffalo allotments would result in a continued suppression of forbs and cool-season bunchgrasses and may continue to limit cover and forage for ground nesting birds, wintering big game, and small mammals.

Suitable habitat conditions exist for sagebrush-obligate species within sagebrush habitat on those allotments that are meeting the upland and biodiversity standards. Under Alternative A, habitat conditions for sagebrush-obligate species are expected to continue being met on those allotments.

Implementation of the No Action Alternative would leave forest and woodland habitats undisturbed by the treatments proposed in the action alternatives. Current conditions and forest trends would continue until interrupted by natural events (e.g., wildfire, windthrow), insects and disease, and/or changes in weather or climate.

In areas where mountain mahogany is intermixed with conifers, increasing conifer competition may result in a species conversion to Douglas-fir, limber pine and/or juniper. The quality of mule deer winter range would decrease and mountain mahogany stands would continue to decline in size.

Under the No Action Alternative, mountain meadows would continue to be lost and aspen would continue to decline due to conifer expansion and competition for resources. Most forested stands in the EGW are high-density Douglas-fir and/or mixed conifer stands, and have high hazard ratings for western spruce budworm and Douglas-fir beetle. Continued spruce budworm activity would result in additional defoliation, reduced growth, and predisposition to attack by other insects and diseases. Repeated defoliation by spruce budworm may result in top-killing and tree mortality (Fellin and Dewey, 1992).

This activity in the EGW would allow for “natural” thinning of the Douglas-fir forest which would reduce densities towards more historic stocking levels. However, defoliation by spruce budworm would also weaken trees and make them more susceptible to bark beetles. This increased susceptibility, in combination with suitable stand conditions, may cause Douglas-fir beetle activity to increase. During Douglas-fir beetle outbreaks, large-scale tree mortality can cause significant economic losses, degradation of wildlife habitat, increased wildfire risk, and diminished aesthetic values associated with forests (Dodds et al., 2006). The previously harvested stands in the Dyce Creek and Badger Pass areas have reduced western spruce budworm and Douglas-fir beetle hazard ratings compared to untreated areas, and therefore have reduced potential for these types of insect activity.

Mature lodgepole pine trees would continue to be killed by mountain pine beetle. “Mountain pine beetle epidemics can substantially alter the ecosystem by reducing crown, thermal, and hiding cover, increasing forage production, releasing or converting to other tree species, creating large amounts of dead trees and logs, limiting access for large ungulates and recreationists, increasing fire danger, and providing a different mix of habitats for a variety of animal species” (Worrall, 2000). Where lodgepole pine trees have died in and around aspen stands, aspen are expected to benefit in vigor due to increased sunlight, water, and nutrients. Understory plants would also increase in vigor with increased light, moisture, and nutrients.

Generally, it takes five to 10 years for a beetle killed lodgepole pine to fall to the ground. While the trees are standing and have red needles on them, crown fire hazard is greatly increased. As the needles, and then the trees, fall to the ground, crown fire hazard is reduced and surface fire hazard is increased (Bentz et al., 2009). Mountain pine beetle population outbreaks in lodgepole pine are usually stand-replacing events, and are usually followed by fire within 15 years following the outbreak (Samman and Logan, 2000). If the outbreak is not followed by a fire, understory conifers that are generally less fire resistant (e.g., spruce, subalpine fir) would release and become dominant in the stand.

### **Issue #3: Special Status Fish and Wildlife Species Habitat**

Under current management and trends, sagebrush habitat would continue to meet sage grouse seasonal needs on all but three allotments (Taylor-Buffer, Buffalo Creek, and Reservoir Creek Custodial). These three allotments are not meeting the upland standards or the residual forage requirements for sage grouse (MTFWP 2005). Riparian areas not in PFC may have limited brood-rearing habitat, however, any impacts would be minor due to much of the brood-rearing habitat occurring on adjacent private lands. However, special status wildlife species are expected to persist under the no action alternative as current management is not having any measurable negative effects. For more information refer to the EGW Wildlife Biological Evaluation in Appendix C.

Although West Nile Virus (WNV) has not been documented on BLM lands within the DFO, or in Beaverhead County's sage grouse population, guidance for West Nile Virus and Water Developments will be implemented where applicable (BLM Information Bulletin (IB) No. MT-2011-033). Management to reduce impacts of WNV focuses on eliminating man-made water sources that support breeding mosquitoes known to vector the virus. Whether the water development is for livestock water, wildlife habitat, fish, or storm water management, potential habitat for mosquitoes may be increased. Incorporating applicable design and mitigation measures, described in the IB, for water development projects can reduce mosquito production through modifying and eliminating mosquito breeding sites.

Under current management, WCT habitat within the Dyce Creek drainage was found to be meeting the requirements of the WCT population. However, several locations within the drainage (roads, culverts, mining) were identified as being chronic sources of sediment. In addition to sediment issues, livestock use was identified as a contributing cause for resource impacts. Under alternative A, the sources of these impacts would not be addressed and would continue affecting WCT habitat.

### **Issue #4: Noxious and Invasive Species**

Spread of noxious and invasive species outside of known infestations would be prevented or mitigated to the degree that resources allow. If there are resource constraints, density and/or size of current infestations may not be reduced. Noxious and invasive species would continue to affect vegetative composition and cover, causing increased run-off and soil erosion, reducing forage and affecting upland and riparian health in localized areas within the watershed.

The Badger Pass gravel pit would continue to be a source of spotted knapweed seed spread.

### **Resource Concern #2: Recreation and Travel Management**

Under Alternative A, there would be no changes to travel management in the Dyce Creek area, and effects of this are discussed under Issue #1: Riparian, Wetland and Aquatic Health, and Associated Species. Motorized recreational travel has historically used several of the routes that are not currently designated open to wheeled motorized vehicles. This would likely continue unless BLM committed to constructing physical barriers on these well-traveled routes.

### **Resource Concern #3: Socioeconomics**

Under Alternative A, forage availability and number of authorized AUMs is expected to continue at current levels. Economic benefits attributed to livestock use of BLM lands would remain

unchanged. Livestock grazing on 79,000 acres of public lands would provide about 7,269 AUM's of forage on 16 grazing allotments in Beaverhead County. The dependency of livestock operators on BLM forage would remain unchanged. Because authorized grazing use on public land allotments would remain static, the real estate values of private base properties would not be influenced by BLM actions.

Without treatment, there would be no removal of forest products, and the economic value of the timber resource would not be recovered. Under the No Action Alternative, there would be no short-term job opportunities created to treat forests and woodlands on BLM-administered lands. Under the No Action Alternative there would also be no additional opportunities for public utilization of wood products.

Existing economic trends and BLM expenditures would continue under Alternative A. Economic and social conditions were analyzed in further detail for the Field Office under Alternative A in Chapter 4 (p 314) of the Proposed Dillon RMP and Final EIS.

#### **Resource Concern #5: Visual Resources**

Changes to the visual characteristics of the landscape would continue throughout the planning area that would be consistent with the Visual Resource Management objectives for the area. Without the vegetation treatments proposed in the action alternatives, the characteristic viewshed would change over time as the timber is impacted by epidemic insect and disease. With no management actions, stands of timber would gradually change in color from dominantly green to reddish, brown, and gray. The Class III objective that applies to the majority of the watershed planning area allows for moderate changes to the characteristic landscape, and for management activities that "...may attract attention but should not dominate the view of the casual observer."

#### **Resource Concern #6: Special Status Plant Species Habitat**

Bitterroot milkvetch, chicken sage, linearleaf fleabane, railhead milkvetch, beautiful bladderpod, taper-tip desert-parsley, Lemhi beardtongue, Railroad Canyon wild buckwheat, and Idaho sedge populations would be expected to persist under the no action alternative. Slender thelopody is palatable and is sensitive to intensive grazing, especially during spring and early summer. Under alternative A this species or its habitat may be impacted in the Taylor-Buffalo allotment due to continued spring use, which can lead to population declines. Populations of these species would be monitored as described in Appendix B.

##### **4.2.2.1 Climate Change**

Predicted effects would be the same as described in Section 3.3.3.

#### **4.2.3 Predicted Effects Common to All Action Alternatives**

##### **Issue #1: Riparian, Wetland, and Aquatic Health and Associated Species**

Overall effects of livestock grazing on composition of riparian vegetation due to dietary preference and selectivity of forage under action alternatives have been developed to make measurable progress towards site specific objectives and are expected to be positive in relation to the No Action Alternative.

Revised grazing systems included in the action alternatives were generally developed in cooperation with the grazing permittees in order to increase support in implementation and success in meeting resource objectives. Ehrhart and Hansen (1997) selected 71 reaches on private land which were either functioning properly or functioning with problems, but exhibited an upward trend. Some general conclusions associated with successful management of riparian areas suggest that what operators do to encourage livestock not to loiter in the riparian zone is more important than either season of use or length of time in the pasture. Ehrhart and Hansen (1998) acknowledge that there are “numerous techniques available for developing and implementing an appropriate prescription to address any given riparian ecosystem.” The only required ingredient which portends potential success was “serious commitment and personal involvement on the part of the operators and managers.” Alternatives developed in consultation with affected permittees have an improved chance for success.

Revised livestock management is predicted to improve riparian vegetation, stream channel morphology and sediment transport at varying degrees and timeframes in relation to the No Action alternative. Grazing treatments proposed for managing livestock across allotments and alternatives in the EGW include: late spring, summer, and fall treatments using deferred or rest-rotation systems. Each of these combinations of treatments and systems has positives and negatives (Elmore 1992).

Management revisions in the Baldy Mountain, Stonehouse, and Taylor-Buffalo allotments, which limit the amount of time that cattle have access to riparian areas, by shortening the season of use, providing additional rest or deferment, and/or constructing projects, would mitigate riparian concerns along stream reaches in these allotments. The length of time animals spend in a riparian area can be a significant factor in the condition of that area. According to Marlow and his colleagues (1991), “The most critical aspect in any grazing plan for the protection of riparian areas is the length of time cattle have access to a particular stream reach.” After reviewing 34 allotments in southwestern Montana, Myers (1989) concluded that, “duration in grazing treatments becomes a key factor in determining the severity of damage.”

Shortening the duration of treatments, providing or increasing rest or deferment, and/or constructing off-site water developments is expected to facilitate improvement of the vegetative component along the riparian areas. Stream channel morphology is expected to improve in most areas, albeit at a slower rate because physical recuperation requires more time than vegetative revitalization. Improved stream channel morphology would facilitate improved sediment transport. Where additional rest, deferment, and/or reduced duration of use is proposed, increased cover, structure, and vigor of riparian vegetation, as well as improved stream bank stability, is expected on streams that were FAR or NF.

Utilizing use guidelines as tools to indicate livestock movements would help improve overall watershed conditions along with the proposed management changes. This analysis is based on the assumption that these allowable use levels and associated livestock rotations are employed in a timely manner. A four inch sedge stubble height guideline would benefit stream channel morphology by reducing impacts to stream banks and bank-holding riparian vegetation in most areas, but is not expected to initiate significant progress toward meeting PFC on its own. Clary and Leininger (2000) recommend a four inch residual stubble height as a starting point for

improved riparian grazing management while acknowledging that six inches of stubble height may be required to reduce browsing of willows or limit trampling impacts to vulnerable stream banks. Annual use guidelines may reduce excessive wetland hummocking and drying. Improvements in stream channel morphology and reduced impacts to streamside wetlands would reduce sediment input associated with channel erosion.

Fencing spring sources and associated wet meadows would benefit the spring's ecological functions and hydrological processes, conserve habitat for rare plants, if they are present, and improve existing habitat for wildlife. Wetland exclosures would mitigate and prevent livestock induced hummocking, the compaction of moist wetland soil, and the subsequent raising of bumps or mounds.

A common effect within riparian or spring exclosures is an increase in Canada thistle if it is present at the site prior to fencing (pers. comm. Dewey, 2007). New exclosures would be monitored for noxious weeds and treated where necessary.

Water development in upland areas is often a key factor in reducing livestock watering in riparian areas. Fencing the source would protect the associated habitat in the immediate vicinity. Ehrhart and Hansen (1997) state, "The one quantifiable factor which was highlighted in successful riparian management was *the presence of off-stream water*. Case studies, controlled experiments, and common experience all confirm that, unless discouraged from doing so, cattle tend to spend a disproportionate amount of time in the riparian portion of any pasture. Alternate sources of water appear to be an important tool to encourage livestock to move away from the riparian area". Alternative water provides cleaner water for livestock. Where offsite water is located a sufficient distance from streams to draw livestock away from these areas and to spend less time loafing and grazing in riparian areas, there would be a reduction in waste inputs to streams, soil compaction, channel damage and grazing on riparian vegetation.

Augmenting the water development with shade, such as placing the watering trough near existing trees, would also help to reduce the time livestock spend in riparian areas (TR-1737-20, 2006). Design features for spring developments, listed in Section 2.3.3, would mitigate the potential of drying up or shrinking wetland areas associated with spring sources.

Restoring riparian health is expected to have a beneficial impact on wildlife and fisheries habitat by increasing forage and security cover as well as reducing sediment input into streams. Forbs are an important summer food source for sage grouse broods. Later in the summer, as palatability of forbs declines, sage grouse move to moist areas that still support succulent vegetation, including wetland and riparian areas. Altering livestock grazing to improve riparian conditions would benefit sage grouse, especially during brood-rearing when forbs and insects are essential to their diet.

For fisheries streams that were not in PFC, changes in management are expected to improve fishery habitat. Improvements would generally be seen as an overall improvement in riparian vegetative diversity and cover, reduced bare ground and stream bank condition and would decrease the level of localized sediment input. Instream sediment issues resulting from channel

formation may continue where conditions upstream continue to contribute sediment. As that sediment moves through the stream system, downstream conditions would be affected.

### **Issue #2: Upland Health, Sagebrush Steppe Habitat and Associated Species**

On the majority of BLM uplands, utilization of forage plants was found to be less than 50%. For those areas where site specific concerns were identified, limiting use of upland forage to 50% during spring and summer treatments would benefit water infiltration and plant vigor, reduce soil loss through overland erosion, leave adequate residual cover and forage for wildlife and enhance herbaceous plant community cover and composition. Increased cover would improve infiltration, which would reduce soil erosion, overland sediment transport, and sediment delivery to streams. Earlier grazing treatments allow sufficient time for plant regrowth while later deferred treatments enhance seedling establishment and species composition. Deferring livestock use until after the growing season mitigates grazing impacts to cool-season bunchgrasses and reduces trampling of forbs.

With the exception of the range improvement projects that would be removed, existing improvements would remain permanent features within the watershed. Construction of new fences may impede movement and be an entanglement hazard for wildlife, but following BLM Handbook H-1741-1 specifications for constructing wildlife friendly fences and livestock enclosures would reduce the risks to birds, elk, mule deer, antelope, and moose. Incorporating modifications and design features into fences around springs and tanks that prevent avian predators from using posts as hunting perches would provide safer sage grouse brood-rearing habitat when the birds are foraging in these areas.

Water troughs, mineral placement, and trailing along fences would cause some localized impacts to vegetation and soil compaction but would be considered incidental. The proposed water developments are designed to improve livestock distribution and are expected to change utilization patterns so that more use would occur on upland forage plants and less in riparian areas. New livestock water troughs may also provide increased water for wildlife if they are available when livestock are not present. Soil compaction and loss of vegetation is expected in the immediate vicinity of the new water trough and increased forage utilization can be expected within a ¼-mile of the troughs due to concentrated livestock use within close proximity to these watering locations. New two-track ways may be created along pipeline routes. Use may be authorized on these routes for administrative and maintenance purposes only by permit holders and BLM employees.

The grazing flexibility provision would provide the BLM and affected lessees' tools to more efficiently manage the herbaceous resources on public lands. Having the ability to respond to annual variations in precipitation and forage production would be practical and ecologically sensible. Flexibility is the hallmark of successful range management in arid regions. Strict adherence to animal numbers and livestock movement dates without regard to variations in precipitation and forage production can be counterproductive to both rangeland and livestock production. Adjust stocking rates and rotation dates so that livestock numbers are in balance with forage supply (Howery 1999). Riparian and upland health would benefit with more applicable timing of grazing use.

Suitable habitat conditions exist for sagebrush obligate species within sagebrush habitat on allotments meeting upland and biodiversity standards. BLM would maintain existing sagebrush habitat so that 70% or more of big sagebrush communities in the EGW provide adequate vegetative composition and structure for sagebrush obligate species. Residual grass cover following grazing is important for sage grouse nesting habitat. Light to moderate cattle grazing or managed grazing systems can improve quantity and quality of summer forage (e.g., forbs) for sage grouse (MFWP 2005). Implementing an annual utilization guideline of 50% on cool season bunchgrasses to maintain plant health and vigor would provide residual herbaceous nesting cover.

Reintroducing natural disturbance regimes (e.g., prescribed fire) would result in a mosaic of plant communities and diversity of successional stages in sagebrush habitats. This would result in a short term loss of habitat for sagebrush obligate species and benefit grassland species of migratory birds. Wildlife species that are more generalists will benefit from an increase in edge and the mosaic of plant communities therefore increasing biodiversity.

Herbaceous vegetation would increase within all conifer treatment areas. The BLM does not intend to increase authorized livestock use as a result of increased herbaceous vegetation. However, it is expected there would be increased ungulate use in the treated areas because of the improved accessibility and palatability of forage as well as production of herbaceous vegetation. This would change distribution and use patterns of herbivory (both wild and domestic) within the affected allotments for five or more years. There may be a short-term increase in soil erosion within treated areas, but the long term effect would be decreased soil erosion due to increased cover of herbaceous vegetation. Conditions in forest and woodland habitats not proposed for treatment under the action alternatives would undergo effects similar to those described under the No Action Alternative.

Changes to travel management under all action alternatives are not expected to have any effect on wildlife use. All of the changes are either mapping corrections or redesignating routes by closing routes that are not accessible or may be creating resource damage, and designating routes that would still provide access into the same areas.

### **Issue #3: Special Status Fish and Wildlife Species Habitat**

If the proposed livestock management changes in the Baldy Mountain allotment do not improve resource conditions on Dyce Creek, the construction of three riparian exclosures would increase herbaceous riparian vegetation and reduce sediment input into the stream. Travel management changes in the Baldy Mountain allotment are also expected to reduce the level of sediment entering the upper reaches of the East Fork of Dyce Creek by reducing runoff from the road.

Changes to travel management under all action alternatives are not expected to have any effect on special status wildlife species. All of the changes are either mapping corrections or redesignating routes by closing routes that are not accessible or may be creating resource damage, and designating routes that would still provide access into the same areas. The route designation to the Reservoir Creek sage grouse lek has been used for viewing by the public under a special designation since 2008. This route is closed 11 months out of the year, but will be designated to remain open in April to provide for public viewing of a sage grouse lek. It is

posted to educate viewers about parking far enough away to view sage grouse without disturbing them.

#### **Issue #4: Noxious and Invasive Species**

Targeting new noxious weed infestations would help stop the spread of existing populations within and out of the watershed as well as stop any new species from becoming established.

Biological control insects that feed exclusively on the target species are expected to reduce the seed production, vigor and competitiveness of existing population of these species. There would be fewer seeds to expand the infestation and reduced vigor would allow native vegetation to compete better with these aggressive invaders and mitigate further spread within and adjacent to existing infestations.

Timing restrictions for aerial application of herbicides is expected to mitigate impacts on migratory bird nesting and big game winter range.

Design features for conifer treatments and construction of structural projects is expected to mitigate cheatgrass and noxious weed spread resulting from soil disturbance during treatment/project implementation.

#### **Resource Concern #1: Wilderness Characteristics**

No projects are proposed under any of the action alternatives within the 750-acre portion of the Henneberry Ridge WSA that lies within the watershed boundary. Within the 12,854 acre Cold Springs Creek unit identified as being Lands with Wilderness Characteristics (LWC), four projects could potentially affect existing wilderness characteristics; the removal of three abandoned spring developments, and the construction of a spring enclosure and installation of a trough. Removal of the remnant spring development materials from the abandoned projects would enhance wilderness characteristics by eliminating these “permanent installations” or “man-made features” which are considered to negatively impact wilderness characteristics. Their removal will enhance the naturalness of the area. Constructing a spring enclosure and installing a trough in the southeastern-most portion of the unit would impact the naturalness of that area by introducing a man-made feature that did not exist at the time of the most recent inventory, but would better protect the spring source from trampling by livestock, which would benefit the natural processes that occur in the immediate vicinity of the spring. All things considered, proposed actions in all action alternatives would have an overall beneficial effect on the wilderness characteristics of the area.

#### **Resource Concern #2: Recreation and Travel Management**

Under all action alternatives, there would be a slight change in the number of miles of roads designated open to wheeled motorized vehicles. A total of 8.5 miles of road previously designated open to motorized vehicles would be closed, and approximately 9 miles of road previously closed would be designated open. Although there would be some minor changes to certain designated motorized travel routes under the action alternatives, most of those proposed changes reflect corrections to mapping errors and/or designation of routes most commonly used by the public for recreation. There would be very minor variations in the designated motorized routes within the East Fork of Dyce Creek between alternatives B & C.

### Resource Concern #3: Socioeconomics

Implementing commercial harvest treatments to remove wood products would recover the economic value of the timber resource before it is lost due to mortality and decay, create short term employment opportunities, and provide opportunities for public utilization of wood products.

To improve land health on BLM-administered lands, Alternative B proposes projects on 11 different grazing allotments, while Alternative C proposes projects on six allotments. Completion of these projects would affect socioeconomics in various ways including, but not limited to: changing use authorizations, purchasing supplies, providing materials and/or labor, and hiring employees or contractors to complete work. Table 4.1 summarizes the proposed projects on all BLM administered grazing allotments by alternative.

**Table 4.1: Summary of Proposed Projects on All Grazing Allotments by Alternative.**

Proposed Project	Alternative B	Alternative C
New fence construction (miles)	6.5	5
Fence removal (miles)*	1	0.5
Riparian exclosure fences (linear miles)	5	0.5
New or reconstructed spring developments (# of developments)	6	2
New 1,000g troughs (# of troughs)	15	6
New stockwater pipelines (miles)	6	1
Stream reaches improved through vegetation treatments (miles)	1.35	0
Redesignate roads (miles)	17.6	17.6
Non-commercial mechanical and/or Rx burns (acres)	1219	0
Treat riparian conifers (acres)	30	0
Mahogany restoration (acres)	1815	1581
Commercial timber harvest (acres)	312	312
Commercial Christmas tree permitting area (acres)	850	0

\* Additional miles of fence would be removed to reduce wildlife barriers and entanglement hazards, but the extent of these projects has not yet been determined.

Shortened or changed authorized use periods by pasture or within the allotment(s), incorporating additional rest or deferment, and/or reducing numbers of livestock would necessitate using private pastures or other areas for longer periods or at different times or reducing herd size. Additional range improvement projects would add increased construction and maintenance expenses for the permittees and the BLM. Authorized AUMs would change in some allotments as shown in Table 2.4, in Chapter 2. In addition, use guidelines in the uplands and riparian areas may necessitate increased labor inputs by the permittees in order to harvest authorized AUMs. During periods or years of drought, total authorized AUMs may not be available for harvest. Socioeconomics was fully analyzed under Alternative B in Chapter 4 (p 331) of the Final EIS for the Dillon RMP.

The economy in Beaverhead County is highly dependent on agriculture, primarily the livestock industry. The jobs and tax revenue generated by livestock associated activities play a major role in fueling the economy of southwest Montana. The inter-mixed private, BLM-administered, and State of Montana lands creates a woven ownership pattern on which many livestock producers have been dependent for decades to effectively run a livestock operation. Alternatives that the BLM Authorized Officer selects, including management changes, changes to grazing permit

authorizations and structural projects to improve a resource concern often have a financial impact on the BLM grazing permittee and cumulatively on Beaverhead County's economy. These impacts are considered and balanced with the alternative's ability to effectively mitigate resource concerns and make progress towards meeting resource objectives.

#### **Resource Concern #5: Visual Resources**

The various vegetation management actions proposed within the action alternatives would attract attention to varying degrees according to the particular proposal, but none would be likely to "dominate the view of the casual observer" within the context of the overall landscape in this watershed.

No management actions are proposed to occur within the Henneberry Ridge WSA, which is managed according to VRM Class I objectives, to preserve the existing character of the landscape. This management class provides for "natural ecological changes" which would occur in the absence of any proposed management actions within this area.

#### **4.2.3.1 Predicted Effects of Action Alternatives related to Climate Change**

The assessment of Green House Gas (GHG) emissions and climate change is in its formative phase. As summarized in the Climate Change Supplementary Information Report (SIR), climate change impacts can be predicted with much more certainty over global or continental scales. Existing models have difficulty predicting temperature changes at small scales. On smaller scales, natural climate variability is relatively larger, making it harder to distinguish changes expected due to external forcings (such as contributions from local activities to GHGs). Uncertainties in local forcings and feedbacks also make it difficult to estimate the contribution of GHG increases to observed small-scale temperature changes (Climate Change SIR 2010).

It is currently not possible to know with certainty the net changes to climate caused from activities related to improving land health in the EGW. The inconsistency in results from scientific models used to predict climate change at the global scale coupled with the lack of scientific models designed to predict climate change on regional or local scales, limits the ability to quantify potential future impacts of decisions made at the HUC 5 watershed level. It is therefore beyond the scope of existing science to relate a specific source of greenhouse gas emission or sequestration with the creation or mitigation of any specific climate-related environmental effects. Although the effects of greenhouse gas emissions in the global aggregate are well-documented, it is currently impossible to determine what specific effect GHG sequestration or emissions resulting from a particular activity might have on the environment.

Healthy forests with a diversity of age classes sequester more carbon than mature, even age, decadent and/or unhealthy stands (overstocked, insects, disease) (Millar et al. 2008). Salvaging forest products from dead/dying timber stands, also adds to our carbon storage capability. "Focusing solely on forest's sequestration benefits misses the important (and substantial) carbon storage and substitution GHG benefits of harvested forest products, as well as other benefits of active forest management" (Malmsheimer et al. 2011). "Unmanaged forests do not provide additional climate benefits indefinitely. The age when annual forest carbon storage increment begins to decline varies but generally occurs in the first 100 – 150 years as tree mortality losses increase.

In most of the American West, fire and insects pose a very immediate threat of catastrophic loss of live tree carbon, turning affected forests into carbon emitters” (Malmsheimer et al. 2011). “For more than 70 continuous years, US forest cover has increased and net growth has exceeded removals and mortality. Therefore, carbon storage is increasing in the United States. In some forests (e.g., old-growth), other considerations and other benefits will outweigh carbon benefits. However, forests will change with or without management, and choosing not to manage has its own carbon consequences. Young, healthy forests are carbon sinks. As forests mature, they generally become carbon-cycle neutral or even carbon emission sources because net primary productivity declines and the decay of trees killed by natural disturbances – windstorms, fire, ice storms, hurricanes and insect and disease infestations – emits carbon without providing the carbon benefits available through product and energy substitution” (Malmsheimer et al. 2011). “In the long-term, a sustainable forest management strategy aimed at maintaining or increasing forest carbon stock, while producing an annual sustained yield of timber, fiber or energy from the forest, will generate the largest sustained mitigation benefit” (IPCC 2007a p.543).

Overall, research studies agree that carbon storage is enhanced in wet systems. Also, evidence suggests more carbon is sequestered by a richer mix of native species. Species-rich ecosystems are more stable over time and may provide a faster, stronger response to future changes in atmospheric carbon dioxide concentration. (Lennon et al. 2006.) Improving and/or restoring riparian and wetland systems is predicted to increase their carbon storage capability.

Healthy native rangelands are also carbon sinks and properly managed livestock grazing at moderate levels can increase the soils capability to sequester carbon. (Liebig et al. 2010). Benefits of livestock grazing include increased litter incorporation into the soil and higher productivity of grazed vs. un-grazed grasses (varies with timing, intensity and frequency of grazing). Within allotments in the EGW where adding rest into the grazing systems is proposed, predicted effects are increased vigor, production and composition of cool season bunchgrasses.

In addition to maintaining/restoring sagebrush steppe habitat, the proposed prescribed burns under Alternative B would create landscape scale “fire breaks” that would reduce fuel continuity, thus allowing fire managers a greater range of opportunities for the management of wanted and unwanted wildfire. Because of the timing of the burns (e.g., spring) carbon release due to the burns would be decreased as compared to wildfires, which generally burn during the hottest part of the summer. More litter (duff) would remain on the top soil in a cooler spring burn.

The proposed action alternatives are expected to incrementally increase carbon sequestration in the soil and vegetation within the EGW. This would be accomplished by improving forest and woodland habitats, improving/restoring riparian/wetland areas, continuing and improving livestock grazing on rangelands, which is expected to maintain or improve upland conditions, and reducing the potential for damaging wildfires within treatment areas. In addition, salvaging wood products will prevent the carbon in these products from being lost to decay or wildfire. The amount of increased carbon sequestration across the watershed cannot be quantified with current technology and its effect on climate change would be undetectable.

#### **4.2.4 Predicted Effects of Action Alternatives B and C by Grazing Allotment**

For each grazing allotment where management changes or administrative actions are proposed, the predicted effects of each applicable action alternative(s) are presented for each identified issue or resource concern in the following order:

Issue #1: Riparian, Wetland, and Aquatic Health and Associated Species  
Issue #2: Upland Health, Sagebrush Steppe Habitat and Associated Species  
Issue #3: Special Status Fish and Wildlife Species Habitat  
Issue #4: Noxious and Invasive Species

Resource Concern #1: Wilderness Characteristics  
Resource Concern #2: Recreation and Travel Management  
Resource Concern #3: Socioeconomics  
Resource Concern #4: Cultural Resources  
Resource Concern #5: Visual Resources  
Resource Concern #6: Special Status Plant Species Habitat

Headings are omitted under those allotments within which certain issues are not present, are present, but not affected, or were previously addressed under section 4.2.3, Predicted Effects Common to All Action Alternatives.

#### **Baldy Mountain #30037**

##### Alternative B

##### *Issue #1: Riparian, Wetland, and Aquatic Health and Associated Species*

Expanding exclosures and assuring that flow is regulated at springs would benefit long-term ecological sustainability of these resources, including hydrology, hydric soils and hydric vegetation. There is an inverse relationship between the time livestock spend in riparian areas and riparian health, because “livestock tend to congregate in the riparian areas for extended periods, eat most of the vegetation, and trample the streambanks (GAO 1988).” Streambank trampling causes channels to widen and become shallow and reduces the streams ability to efficiently transport sediments. Micro-habitats, such as riffles and pools, can be impacted as channel bottom embeddedness increases and pools are lost (Clary and Leninger 2000). Therefore, reducing the amount of time that cattle spend in the riparian zone would reduce impacts to the stream channel and riparian vegetation. Obtaining surface water rights to take water from the West Fork Dyce Creek ponds may be difficult, but if water rights can be obtained, the off-stream water development is expected to reduce grazing pressure on the East and West Forks of Dyce Creek. Additionally, building a fence to separate the East and West Forks of Dyce Creek would reduce the time livestock have access to these resources by at least 50% (from 60 days to 30 days maximum). Road closures, the installation of water bars and a soil stabilization system, and channel restoration projects would benefit riparian resources by reducing sediment inputs to the stream.

##### *Issue #2: Upland Health, Sagebrush Steppe Habitat and Associated Species*

Grazing the Red Mine pasture for two consecutive growing seasons, followed by an entire year of rest, is not expected to negatively affect the canopy cover and composition of cool-season

bunchgrasses. Two successive years of late-spring defoliation, at light to moderate levels, has been shown to have relatively little effect on bluebunch wheatgrass (Brewer et al. 2007). Enlarging the spring exclosures and installing larger water troughs at Dyce Creek, El Ante, El Venado, and La Gallina Springs would improve water storage and dependability of those springs, which would result in better livestock distribution.

Within the Baldy Mountain pasture, developing a pipeline to pump water up to the ridge, between the East and West Forks of Dyce Creek, and developing the small spring west of the West Fork Dyce Creek Road would increase forage utilization on those upland sites. The grazing system for the Baldy Mountain pasture incorporates both deferred-use and rest into its three-year cycle, which would mitigate any effects of the additional grazing pressure.

Four non-commercial mechanical/prescribed fire treatments would be implemented within the Baldy Mountain allotment. Conifers that have recently expanded into sagebrush/grasslands within the treatment units would be reduced, and mountain big sagebrush, grasses and forbs would dominate the site for one to several decades.

Treatments to reduce conifer expansion into mountain big sagebrush would result in short-term change within sagebrush habitat, converting these sagebrush/forested areas to early seral stage sagebrush habitat with a grassland aspect and a minor forest canopy. Recovery of sagebrush habitat would facilitate the BLM's goals and objectives of maintaining and improving sagebrush/grassland habitat. Based on past prescribed fires in the watershed, it would take up to 30 years to move through early and mid seral stages to get back to current sagebrush cover. This creates seral and structural diversity within sagebrush habitats across the landscape. By creating a mosaic in the sagebrush canopy, more edge is created and removing the conifer expansion would maintain existing open sagebrush meadows. These burn units coupled with the mahogany restoration in deer winter range would benefit big game species.

Elk calving areas are dispersed across the allotment, but not all calving habitat will be treated and prescribed burning would not occur during the elk calving period. In areas where conifers are expanding into existing sagebrush habitat, elk calving areas will be maintained or restored, thus preventing these areas from transitioning into forested habitat. Because the identified units are in separate pastures and the pastures would need to be rested from livestock grazing following treatment, it is highly unlikely that all the burns will be completed in the same year. Big game hiding cover in sagebrush habitat would be reduced by these treatments until sagebrush reestablishes.

Mahogany restoration units were designed to benefit mule deer winter range. These units would not be burned and cut conifers would be left in place to create a browse barrier to promote establishment of new mahogany plants. Large Rocky Mountain junipers and clumps of Rocky Mountain juniper would be left to provide thermal and hiding cover for mule deer and support nesting migratory birds. Implementation of the mahogany units would be done between July and November to minimize disturbance during migratory bird nesting season and prior to winter use by mule deer to avoid/minimize disturbance.

Salvage harvest of lodgepole pine in the Dry Gulch treatment unit would remove mountain pine beetle infested dead and dying trees, allowing sunlight to reach the forest floor. When a new cohort of lodgepole pine trees becomes established, it would form a new age class that would not be susceptible to mountain pine beetle for the next 40 to 80 years. Thinning trees in mixed conifer and Douglas-fir stands would open up the stands and increase the vigor of leave trees. Douglas-fir beetle and spruce budworm hazard would be reduced. The residual stand would be more likely to survive attack by insects, and would exhibit less mortality than untreated areas during epidemic insect populations. These effects would occur only on the treated areas within the 312 acre unit.

Commercial timber harvest may cause some displacement by big game depending on the time of year it is implemented, however, this would be mitigated by reducing disturbances in the nearby burn units and mahogany units by not allowing the activities at the same time. This is a relatively small harvest unit (312 ac) therefore disturbance associated with the harvest would be minimal and short lived. Conifer removal in the mahogany units would also be restricted during hunting season between October 15 and December 1.

Allowing up to 1.0 mile of road construction, and allowing the use of mechanized equipment in the Dry Gulch treatment unit has the potential to cause soil disturbance, and introduce or spread noxious and invasive weeds. Design features which require power washing equipment before being used off-road, along with monitoring and treating weeds if found, would reduce the likelihood of noxious and invasive species becoming established or getting spread as a result of this activity. Roads constructed for this treatment unit would be minimally constructed, and would be physically closed to preclude vehicle use following harvest activity. Additionally, adherence to standard timber sale contract provisions, which provide protection from erosion, sedimentation, and soil compaction, would be required. These design features would reduce the potential for erosion, future spread of weeds by vehicles, and wildlife disturbance.

The Baldy Mountain allotment shares two level 6 hydrologic units, Dyce and Harrison, totaling 47,904 acres. The sagebrush/grassland treatments area is 1,219 acres; the Mountain Mahogany treatment area is 1815 acres. Salvage and sanitation acres and riparian/aspen acres total 342. The combined area of all treated polygons is 3,376 acres. Actual treatment acres would be less than the acres estimated for this analysis. Proposed treatments would be expected to alter hydrology to some degree. However, the total treatment area represents 7 % of the level six hydrologic units. Over 80 years of watershed research has shown that vegetation removal results in a reduction of evapotranspiration and an increase in stream flow (Troendle and Nankervis 2000). Because the scale of conifer treatments in relation to the size of the level six hydrologic units is relatively small the precipitation is less than 18 inches per year and grasses and shrubs will compete for the limited available moisture, changes to hydrology would not be measurable (Robichaud et al. 2010).

### *Issue #3: Special Status Fish and Wildlife Species Habitat*

Proposed changes in livestock management, including splitting the pasture to reduce the amount of time livestock spend on each Fork of Dyce Creek, changes in season of use, adding a 6-inch herbaceous stubble height guideline, and constructing an enclosure along portions of reach #15 and 1572, are expected to improve WCT habitat by reducing streambank impacts and sediment

input. This would be accomplished by reducing the amount of time livestock have access to riparian areas resulting in increased vegetative cover. Additionally, the proposed project to bring water to the top of the ridge dividing the East and West Fork pastures would be very beneficial to WCT habitat. Keeping livestock in the uplands and off riparian areas would reduce physical impacts to stream banks and result in more streambank herbaceous cover to filter sediment originating from roads and mining sources.

While not identified as an issue on Dyce Creek, redd trampling is a consideration on WCT streams. Changing the season of use on the East Fork of Dyce Creek to avoid WCT spawning and emergence periods, would reduce potential impacts to WCT recruitment from redd trampling. The spawning season in the East Fork of Dyce creek typically occurs in mid to late June. The proposed grazing periods of 5/15-6/14 and 8/16-9/15 would have the least impact on the WCT spawning and fry emergence period in the East Fork. Within the West Fork drainage, WCT spawning habitat is very limited and most spawning takes place in the headwaters, inside a livestock enclosure. For this reason, recruitment would not be measurably impacted by the proposed timing of use. The limited amount of spawning that occurs outside the enclosure would likely not be impacted to any appreciable extent due to the limited time livestock would be present, as well as the dispersed occurrence within the drainage.

Over the last 12 years, the occurrence of conifers in the stream corridor of Dyce Creek has noticeably increased. Removing conifers from riparian areas and within and around aspen stands would improve the vigor and regeneration potential of existing willows and aspen by reducing competition for sunlight, water, and nutrients.

The stream crossings and change in road use proposed under Alternative B would reduce sediment entering the East Fork of Dyce Creek and reduce impacts to WCT spawning habitat downstream. However, due to the close proximity of the unimproved road, sediment issues would continue, but at reduced levels from current conditions.

If the BLM can obtain a road easement, additional projects designed to reduce sediment could be accomplished. These include resetting a culvert in danger of washing out, installing an oversized culvert on stream crossing #2, and installing water bars prior to stream crossing #2. If these projects were implemented, WCT habitat would benefit from further reductions in sediment.

The timber harvest in Dry Gulch would require a survey for northern goshawk or great grey owls. If either species is found to be nesting in the unit or directly adjacent, timing restrictions would be imposed. The harvest lay out would be designed to maintain nest stands. Non-commercial mechanical/prescribed fire treatments would restore/maintain sagebrush communities in the long-term for sagebrush obligate species. These units are not occupied by pygmy rabbits. However these units provide some sage grouse summer use and the habitat is being converted to Douglas fir forest. These units are not winter sage grouse habitat, the nearest active lek is approximately three miles away, and nesting habitat for sage grouse is not a limiting factor in the EGW. Forage and cover for sagebrush obligate species would initially be reduced within the treatment units for the short-term. However, as sagebrush cover returns to the burned areas and the potential for forest habitat to expand has been reduced, habitat for sagebrush obligate species, including sage grouse, would be restored for the long-term. If burning is to be

implemented after May 15, nesting surveys will be conducted to determine if activities need to be postponed until after the nesting season (August 15) or the following spring.

*Resource Concern #3: Socioeconomics*

While the livestock numbers and season of use remain largely unchanged, the structural projects proposed would commit the BLM and the permittee to contributing money and/or labor toward their construction, which given the number of projects proposed under this alternative, may be significant. Implementing the Dry Gulch commercial harvest treatment would recover the economic value of the timber resource before it is lost due to mortality and decay, and create short term employment opportunities.

*Resource Concern #5: Visual Resources*

Prescribed fires to treat conifer expansion in the Dyce Creek area are proposed in this alternative, in addition to the mahogany restoration and commercial harvest. Visual impacts from all these activities within this area would certainly attract the attention of the casual observer, but would not dominate the view. Over the short term, these activities would attract attention more so than the No Action Alternative. However, as described above, taking no action would result in more gradual, but similar changes to the visual landscape. The proposed activities would be consistent with management of this area according the VRM Class III objectives.

**Baldy Mountain #30037**

Alternative C

*Issue #1: Riparian, Wetland, and Aquatic Health and Associated Species*

As in Alternative B, the Baldy Mountain pasture would be divided into two pastures to limit the time that livestock have access to either creek. Livestock grazing would be limited to 25 days or when greenline stubble height guidelines are met. Less time on the stream and riparian areas means fewer impacts to stream channels and riparian vegetation. Reducing authorized AUMs from 726 to 626 would reduce livestock impacts proportionately. Additionally, the use of road closures, water bars and a soil stabilization system, along with channel restoration projects, would benefit riparian resources by reducing sediment inputs.

Because spring developments would not be repaired and spring sources would not be protected under Alternative C, hydric soils and hydric vegetation would continue to be impacted and may be converted to upland conditions. Natural channel processes, such as annual flooding and deposition of sediments on streambanks, may continue to be hampered by livestock impacts if riparian exclosures are not built.

*Issue #2: Upland Health, Sagebrush Steppe Habitat and Associated Species*

While the proposed grazing rotation is the same as under Alternative B, the season of use is two weeks shorter and the new pipeline and spring developments would not be constructed. Additionally, the spring exclosures would not be enlarged and new troughs would not be installed, which would not improve the dependability of those springs or improve livestock distribution. As with Alternative B, grazing the Red Mine pasture for two consecutive growing seasons, followed by an entire year of rest, is not expected to negatively affect the canopy cover and composition of cool-season bunchgrasses. Two successive years of late-spring defoliation,

at light to moderate levels, has been shown to have relatively little effect on bluebunch wheatgrass (Brewer et al. 2007). Because this alternative would not include off-site water developments in the Baldy Mountain pasture; grazing use on upland sites is expected to be less than under Alternative B.

The effects of implementing the Dry Gulch treatment unit and any impacts or benefits to hydrology and wildlife from commercial harvest activities and mahogany treatments would be the same as described under Alternative B.

*Issue #3: Special Status Fish and Wildlife Species Habitat*

Under Alternative C, the proposed grazing season of use for the East Fork of Dyce Creek would provide adequate protection during WCT spawning/emergence periods. The proposed dates occur primarily outside WCT spawning and fry emergence dates. Grazing during the proposed dates would have little, if any, impact to WCT reproduction in the East Fork. For the same reasons as stated above under Alternative B, spawning in the West fork would not be impacted to any appreciable extent.

Although, the season of use proposed under Alternative C is of shorter duration, the proposed projects such as delivering water to the ridge top, which would reduce the time that livestock spend in riparian areas, would not be carried forward. Without these projects, impacts to WCT habitat under this alternative would be greater than under Alternative B.

Impacts or benefits to wildlife from commercial harvest activities and mahogany treatments would be the same as Alternative B.

*Resource Concern #3: Socioeconomics*

Shortening the season of use by two weeks would necessitate the permittee feeding harvested forage, leasing pasture elsewhere, or remaining on deeded pastures, which may reduce hay production. Any of these options may create a considerable business expense. Because this alternative proposes fewer projects than Alternative B, neither the BLM, nor the permittee would need to devote as much funding to project construction. The effects of implementing the Dry Gulch treatment unit would be the same as described under Alternative B.

**Bannack #30015**

Alternative B

*Issue #1: Riparian, Wetland, and Aquatic Health and Associated Species*

Repairing the Hangman's Gulch Spring Enclosure would continue to benefit the spring and associated wetland resource. While the enclosure is keeping livestock out of the spring area, repairing the enclosure would assure that livestock would continue to be excluded. It may be necessary to reconstruct or remove the development depending on whether it will produce an adequate water supply. If further examination of the spring shows it can continually produce greater than one gallon per minute, BLM will redevelop the spring. If the spring can't produce greater than one gallon per minute, the structural improvement would be removed and the spring would be abandoned, but the enclosure would remain.

## **Buffalo Creek #30617**

### Alternative B

#### *Issue #1: Riparian, Wetland, and Aquatic Health and Associated Species*

The largest wetland assessed in the EGW was reach 1570, which was the site of supplemental feeding during the fall and winter months. Eliminating supplemental feeding would greatly benefit this wetland by reducing the concentration of livestock, thereby reducing concentrated waste accumulations. Water quality, ecological conditions and biodiversity would be expected to improve over time.

#### *Issue #2: Upland Health, Sagebrush Steppe Habitat and Associated Species*

Limiting livestock grazing in the Hayes Creek pasture to every third year would provide two years of rest, which would provide an opportunity for the remaining native, cool-season bunchgrasses to reestablish naturally and, over time, increase their productivity, canopy cover, and reproductive capability. As canopy cover and productivity increase, active pedestalling and water flow patterns will decrease. Increasing productivity of herbaceous vegetation would increase forage for antelope. Cleaning up old fencing would eliminate a big game entanglement hazard, but constructing one mile of new fence would create a new collision hazard.

#### *Issue #3: Special Status Fish and Wildlife Species Habitat*

Cleaning up the dysfunctional fencing the Hayes creek pasture would benefit wildlife movements. Constructing a mile of new fencing along the BLM boundary would create a movement barrier, but is necessary to assist with improving conditions. The fence would be built to BLM specifications to facilitate antelope passage. Providing rest for two out of three years will allow grasses to reestablish and provide hiding cover for sage grouse broods.

#### *Resource Concern #3: Socioeconomics*

Limiting livestock grazing in the Hayes Creek pasture to every third year would necessitate the permittee feeding harvested forage, leasing pasture elsewhere, or remaining on deeded pastures, which may reduce hay production. Any of these options may create a considerable business expense.

## **Buffalo Creek #30617**

### Alternative C

#### *Issue #1: Riparian, Wetland, and Aquatic Health and Associated Species*

As with Alternative B, wetland 1570 was used for supplemental feeding during the fall and winter months. The elimination of supplemental feeding would benefit this wetland by reducing livestock concentrations, thereby reducing concentrated waste accumulations. Water quality, ecological conditions and biodiversity would be expected to improve over time.

#### *Issue #2: Upland Health, Sagebrush Steppe Habitat and Associated Species*

Removing livestock grazing from the Hayes creek pasture would provide the best opportunity for the remaining native, cool-season bunchgrasses to reestablish naturally. This alternative would increase the composition, vigor, production, canopy cover, and reproductive capability of those cool-season bunchgrasses, which would also reduce active pedestalling, water flow patterns, and

soil loss. Cleaning up the old fencing would reduce entanglement hazards of big game. Construction of a mile of new on the BLM boundary will create a new hazard, but would be necessary to keep livestock off. Constructing a three-wire fence to BLM specifications would help mitigate this hazard.

*Issue #3: Special Status Fish and Wildlife Species Habitat*

Removing grazing from the Hayes Creek pasture would provide the best opportunity for habitat conditions to improve and allow for sage grouse brood rearing.

*Resource Concern #3: Socioeconomics*

Removing livestock grazing from the Hayes Creek pasture would necessitate the permittee feeding harvested forage, leasing pasture elsewhere, or remaining on deeded pastures, which may reduce hay production. Any of these options may create a considerable business expense.

**Cross #30033**

Alternative B

*Issue #2: Upland Health, Sagebrush Steppe Habitat and Associated Species*

During the past five years, annual forage utilization data showed 30-50% utilization of current year's forage in the north half of the allotment and a 10-35% utilization of forage in the southern half of the allotment. Ideally, utilization would be similar in both the north and the south half of the allotment. The difference in forage utilization is mostly attributed to lack of water in the southern portion of the allotment. BLM has proposed piping water southeast one mile from an existing well to a new 1000 gallon trough in the southwest portion of the allotment (SW1/4 Sec. 32, T. 9 S., R. 12 W.). By providing water in the southern portion of the allotment, utilization on the north and south half of the allotment would be similar. The proposed pipeline would closely follow the path of the existing allotment boundary fence in an effort to minimize sagebrush disturbance. This area already has less sagebrush than surrounding areas due to years of travel by livestock, wildlife and vehicles.

*Issue #3: Special Status Fish and Wildlife Species Habitat*

Current management of the Cross allotment has shown improvements to sage grouse habitat. Therefore conditions are expected to be maintained or improved under this alternative. Developing water in the southern end of the allotment would redistribute livestock near sage grouse leks and would leave less residual cover. Keeping the pipeline and trough close to the existing boundary fence would also be the furthest possible distance away from active sage grouse leks which are found in the central portion of the allotment. This would also minimize any disturbance to pygmy rabbit burrows, by keeping the disturbance concentrated in one area. The pipeline would be constructed outside of sage grouse breeding and nesting seasons to minimize any disturbance.

## **Ermont #10598**

### Alternative B

#### *Issue #1: Riparian, Wetland, and Aquatic Health and Associated Species*

Maintaining the dam associated with the Ermont Pipeline and enlarging the livestock enclosure would assure that livestock continue to be excluded from the pond and associated riparian area and would increase the life of this project.

## **Frenchie #10121**

### Alternative B

#### *Issue #1: Riparian, Wetland, and Aquatic Health and Associated Species*

Constructing an enclosure around the Frenchie Place Springs and spring brook, installing a water trough, and regulating the flow at the spring, would benefit the hydrology, hydric soils, and hydric vegetation by reducing the impacts associated with livestock grazing. Installing an adequately sized culvert in the road along Cold Spring Creek, near reach #1551 would restore connectivity to the dewatered portion of the reach.

#### *Issue #4: Noxious and Invasive Species*

Construction of the enclosure around the Frenchie Place Springs and spring brook (#1597) would help to reduce the spread of houndstongue and spotted knapweed by livestock.

#### *Resource Concern #1: Wilderness Characteristics*

The Frenchie allotment includes the Cold Springs Creek LWC unit. Any impacts to wilderness characteristics by the proposed action are discussed in section 4.2.3 above.

## **Reservoir Creek AMP #30030**

### Alternative B

#### *Issue #1: Riparian, Wetland, and Aquatic Health and Associated Species*

Building 350 feet of four-strand barbed wire fence to create a 20-acre riparian enclosure to protect Reservoir Creek reach #1594 would reduce livestock impacts to Reservoir Creek and facilitate expansion of riparian vegetation along the Creek. Exposed banks along the Creek would quickly revegetate making them less susceptible to erosion. Sediments suspended in Reservoir Creek would be trapped and bank building would occur. Over time, Reservoir Creek's channel would narrow and the creek would deepen along this short section of stream. Grazing once every three years for seven days would be sustainable if the streambanks have dried sufficiently before cattle graze inside the enclosure.

Installing a 1000-gallon trough in the (SE¼ Sec. 26, T. 8 S., R. 12 W.) W2 pasture would provide a clean source of livestock water away from nearby Watson Creek. Although Watson Creek met the riparian health standard, cattle tend to gather at the creek to drink. Providing an alternative source of clean water, coupled with continued riding by the grazing permittee, would further improve riparian conditions on Watson Creek by reducing the livestock impacts along the stream. As riparian and channel conditions in Reservoir Creek progress to a more desirable condition, fisheries habitat would also improve.

*Issue #2: Upland Health, Sagebrush Steppe Habitat and Associated Species*

Installing a trough on the east side of the allotment (NW¼ Sec. 35, T. 8 S., R. 12 W.) in pasture R1 West would provide an additional source of clean livestock water. Due to the moderately rugged topography in the area and limited water sources, cattle underutilize certain portions of the R1 West pasture. Providing another 1000-gallon trough would improve livestock distribution over the entire pasture.

The southern boundary fence in the W2 pasture is old and the posts are decayed. The top wire, in places, exceeds BLM specifications for a wildlife friendly fence (40 inches). This fence would be reconstructed to meet BLM specifications mitigating big game entanglement hazards and facilitating better livestock control.

*Issue #3: Special Status Fish and Wildlife Species Habitat*

Current management with the seasonal rest rotation has improved habitat conditions for sage grouse and pygmy rabbits. Construction of new water developments would improve livestock distribution but leave less residual cover in those areas, however residual cover would increase in the remainder of the allotment with better distribution. Pipelines would be constructed outside of the breeding and nesting season for sage grouse, and placed to minimize the disturbance to sagebrush by keeping them along existing two track roads as much as possible. Many of the fences in close proximity to sage grouse leks or large winter concentrations of sage grouse have been marked to avoid collisions. The existing fences will be monitored to determine the need for further marking.

**Reservoir Creek AMP #30030**

Alternative C

*Issue #1: Riparian, Wetland, and Aquatic Health and Associated Species*

Installing two additional 1000-gallon troughs in the (SE¼ Sec. 26 and NE¼ Sec. 34, T8S, R12W) allotment would provide two clean sources of livestock water away from nearby Watson Creek. Although Watson Creek met the riparian health standard, cattle tend to gather at the creek to drink water. Providing two alternative sources of water, one on each side of Watson Creek, coupled with continued riding from the permittee, would further improve riparian conditions on Watson Creek by reducing streambank impacts.

*Issue #3: Special Status Fish and Wildlife Species Habitat*

Effects would be similar to Alternative B, The added trough in W2 pasture would increase disturbance in sagebrush during construction and reduce residual cover in the southwest end of the pasture. This would also improve livestock distribution and residual cover throughout the remainder of the pasture. Cross allotment would be grazed in conjunction with other allotments determined to be in greater need of resource improvement, thereby improving habitat conditions in other areas of the field office.

**Reservoir Creek Custodial #20723**  
Alternative B

*Issue #2: Upland Health, Sagebrush Steppe Habitat and Associated Species*

This allotment currently has no formal grazing rotation as it is a custodial (C category) allotment. This alternative would require M1 and M2 pastures to be grazed for less than 30 day annually with a full growing season rest once every third year in those pastures. Moderate early-spring use (<30 days) would provide key cool season bunchgrasses the opportunity to regrow basal leaves, vegetative stalks, seed heads and maintain healthy and vigorous root systems. Deferring grazing until outside the growing season or periodic full rest would allow all plants the opportunity to complete their entire growth cycle every third year. Deferred rotation pastures have higher forage production and condition than season long grazing (Owensby et al. 1973). Removing decadent stems and leaves late in the season would improve the nutritional value and forage quality of grasses for wildlife as well as livestock.

*Issue #3: Special Status Fish and Wildlife Species Habitat*

Grazing for 30 days on this allotment would be an improvement over the 60 days it had been grazed in the past. Reservoir Creek is on private land and the adjacent uplands on BLM provide brood rearing for sage grouse therefore deferring grazing until July is beneficial to avoid the nesting season. Adding rest one in three years during the growing season would increase plant vigor and allow for herbaceous grasses to go to seed.

*Resource Concern #3: Socioeconomics*

The permittee would be required to reduce the period of grazing in the mostly private M1 and M2 pastures by about 30 days a year during the growing season (April 15 to July 31) when additional forage is most difficult to locate. During years when M1 or M2 must be rested or grazed outside the growing season (April 15 to July 31), the permittee must alter his normal grazing rotation to accommodate this BLM requirement which would likely lead to extra time and/or funds to replace lost AUMs.

**Reservoir Creek Custodial #20723**  
Alternative C

*Issue #2: Upland Health, Sagebrush Steppe Habitat and Associated Species*

This alternative would require the M1 and M2 pastures to be grazed for less than 20 days annually, with a full growing season of rest every third year. Limiting grazing to a maximum of 20 days in July would facilitate the phenological development of key cool-season bunchgrasses during the spring (May and June). Hormay (1970) found defoliation is most harmful when food reserves are lowest in the spring when plants are rapidly growing. Bluebunch wheatgrass is susceptible to basal area loss and decreased vigor if grazing occurs during the inflorescence emergence stage of development (Clark et al. 1998). By the first of July, bluebunch and other cool season bunchgrasses in the allotment are flowering and would not be adversely affected if utilized by cattle for less than 20 days. Also, deferring grazing until outside the growing season or periodic full rest would allow all plants the opportunity to complete their entire growth cycle every third year. Deferred rotation pastures have higher forage production and condition than season long grazing (Owensby et al. 1973). Removing decadent stems and leaves late in the

season would improve the nutritional value and forage quality of subsequent growth of grasses for wildlife as well as livestock.

*Issue #3: Special Status Fish and Wildlife Species Habitat*

This alternative provides a full year of rest and allows each pasture to be grazed for no more than 20 days. Deferring grazing until July would be beneficial for nesting and early brood-rearing habitat for sage grouse. Providing a full year of rest every three years would increase hiding cover for nesting, wintering and early brood rearing of sage grouse.

*Resource Concern #3: Socioeconomics*

The permittee would be required to reduce the grazing period in the mostly private M1 and M2 pastures by about 50 days per year during the growing season (April 15 to July 31), when additional forage is most difficult to locate. During years when M1 or M2 must be rested or grazed outside the growing season (April 15 to July 31), the permittee must alter his normal grazing rotation to accommodate this BLM requirement, which would likely lead to extra time and/or funds to replace lost AUMs.

**Stonehouse #30005**

Alternative B

*Issue #1: Riparian, Wetland, and Aquatic Health and Associated Species*

Constructing a hardened water gap along Rattlesnake Creek (1566) would reduce livestock impacts to the creek by limiting access by livestock. This would reduce streambank trampling and allow riparian vegetation more opportunity to colonize the annual sediment deposits associated with annual flooding and build streambanks.

This alternative would expand the 278 Spring enclosure to include the wetland and redevelop Montana 29 Spring, including an adequately-sized enclosure. These projects, along with regulating the flow at the springs, would benefit long-term ecological sustainability of these resources, including hydrology, hydric soils and hydric vegetation.

Removing or modifying the upper headbox at Dinosaur Spring would provide the opportunity for natural vegetation to recolonize disturbed areas. Replacing the existing troughs with a 1000-gallon trough and assuring that flow is regulated would increase the project life and provide a more reliable water source.

Removing the infrastructure from Grassy Draw and Stagecoach Springs and cleaning up materials and debris from the spring and spring brook (1559) located near the New Departure Mine would improve ecological conditions by allowing for vegetative recolonization of these areas. Replacing the troughs on the Ermont Pipeline and relocating them away from the drainage would benefit the resource to the degree that livestock spend less time in the area.

*Issue #2: Upland Health, Sagebrush Steppe Habitat and Associated Species*

Under this alternative, livestock turnout would be delayed by seven days in the Ermont and McDowell pastures, which would reduce the season of use for each pasture to 39 days every other year. This shortened grazing season is expected to make gradual progress toward

improving vigor and reproductive capability of perennial grasses and increasing frequency and canopy cover of cool season bunchgrasses by reducing the opportunity for cattle to regraze plants during the growing season.

Allowing the permitted cutting of commercial Christmas trees would result in removal of small conifers on up to 850 acres. It is likely that the actual harvest and removal of trees would be incidental, and would only occur on a small percentage of this acreage. Where permits are issued, the removal of these smaller trees would make progress towards meeting management objectives to maintain existing openings by removing conifer expansion from sagebrush/grassland habitats. Allowing off-road travel has the potential to cause soil disturbance and introduce or spread noxious and invasive weeds. Design features including restricting operations to dry, frozen, or snow covered conditions, requiring power washing equipment before being used off-road, and monitoring and treating weeds if found, reduces the likelihood of noxious and invasive species becoming established or spreading, and reduces the potential for soil disturbance.

#### *Issue #3: Special Status Fish and Wildlife Species Habitat*

The Ermont and McDowell pastures have alternating rest and spring use, thereby eliminating any disturbance during breeding and nesting season for sage grouse every other year in one pasture or the other. Delaying turn out until May 17 would help minimize any disturbance to breeding sage grouse, but not eliminate it. Due to limited water distribution, use in and around the sage grouse leks in the spring is limited, but these lightly grazed areas provide hiding cover for nesting sage grouse. Improving riparian habitat associated with the springs would benefit sage grouse brood rearing.

The Spring Creek pasture would be grazed during the winter, while the remaining pastures would be grazed on a spring-fall-rest cycle. Historically, this system has provided for seasonal sage grouse needs. No leks occur in the Argenta Flats, Argenta Spring, or Frying Pan pastures, however they do provide for brood rearing and winter use. Alternating seasons of use and rest will continue to provide for sage grouse habitat needs.

The commercial Christmas tree harvest unit will not have any impacts to special status species. This area is already used by many locals to harvest Christmas trees and removal will be primarily Douglas fir that is colonizing into sagebrush habitat. Due to the nature of the cutting Christmas trees for commercial sale, any disturbance will be in winter and short lived. Allowing harvest of these trees will actually maintain the sagebrush steppe habitat, thereby benefitting sagebrush obligate species.

#### *Issue #4: Noxious and Invasive Species*

Closing half of the Badger Pass pit for several years and aggressively treating the closed portion would help to reduce the spread of spotted knapweed from the area. The portion that won't be closed would still be a source for seeds in the short term that may allow for new knapweed populations to develop wherever the gravel is used.

*Resource Concern #2: Recreation and Travel Management*

The commercial Christmas tree harvest proposed for the Badger Pass area could reduce the opportunities for local people from Dillon and surrounding communities to harvest their own Christmas trees in relatively near proximity to their residences. Badger Pass is a well-known and popular location for local residents to cut their own Christmas trees each year. A commercial harvest operation could reduce the number of quality Christmas trees in close proximity to nearby communities.

*Resource Concern #3: Socioeconomics*

Delaying turnout of livestock by seven days would necessitate the permittee feeding harvested forage, leasing pasture elsewhere, or remaining on deeded pastures, which may reduce hay production. Any of these options may create a considerable business expense. Allowing permits to be issued for commercial Christmas tree cutting would provide opportunities for a product that has some demand, and is currently unavailable on BLM lands in the Dillon Field Office. Revenue to the BLM from this activity would likely be minimal.

**Stonehouse #30005**

Alternative C

*Issue #1: Riparian, Wetland, and Aquatic Health and Associated Species*

The impacts under Alternative C would generally be the same as under Alternative B. The two pastures that would benefit by delaying turnout for 15 days include limited riparian/wetland resources. That said, those resources may benefit slightly from the shortened grazing period, because livestock would have less time to impact those resources and there would be a longer interval for them to recover.

*Issue #2: Upland Health, Sagebrush Steppe Habitat and Associated Species*

Under this alternative, turnout of livestock would be delayed by 15 days in the Ermont and McDowell pastures, which would reduce the season of use for each pasture to 31 days every other year. This shortened grazing season would reduce the opportunity for cattle to regrow plants during the growing season, which, along with alternating years of non-use, would improve vigor and reproductive capability of perennial grasses and increase frequency and canopy cover of cool-season bunchgrasses.

*Issue #3: Special Status Fish and Wildlife Species Habitat*

Ermont and McDowell pastures have alternating rest and spring use, thereby eliminating any disturbance during breeding and nesting season for sage grouse every other year in one pasture or the other. Delaying turn out until May 25 for would help to reduce any disturbance to breeding sage grouse and in some, allow for some green up before livestock grazing occurs in spring. Due to limited water distribution, there is not a lot of use in and around the sage grouse leks in the spring. Reducing the grazing season by 15 days this would basically improve the overall vigor of the bunch grasses and provide improved hiding cover for sage grouse during the breeding season. By having rest every other year, residual cover for nesting would be available on alternating years. Improved riparian habitat associated with the springs would benefit sage grouse brood rearing. Effects to sage grouse in the remaining pastures would be the same as under alternative B.

*Issue #4: Noxious and Invasive Species*

Closing the Badger Pass gravel pit would stop the spread of spotted knapweed seeds from the area. The aggressive treatment with herbicides would reduce and eventually eliminate knapweed from the pit area. Reseeding of the unused area around the pit would help to stop the establishment of new noxious weed infestations.

*Resource Concern #3: Socioeconomics*

Delaying turnout of livestock by two weeks would necessitate the permittee feeding harvested forage, leasing pasture elsewhere, or remaining on deeded pastures, which may reduce hay production. Any of these options may create a considerable business expense. Completely closing the Badger Pass gravel pit for five years would impact the public by eliminating the only source of gravel available from BLM-administered lands in Beaverhead County. This gravel pit is used by Beaverhead County under a free-use permit to maintain nearby roads. Additionally, over the past five years, the DFO has sold 29 permits for a total of 3222 cubic yards of gravel from the Badger Pass gravel pit and collected \$1774.45 in fees for the U.S. Government. Instead, this demand would need to be met from privately-owned sources.

**Taylor-Buffalo #10122**

Alternative B

*Issue #1: Riparian, Wetland, and Aquatic Health and Associated Species*

Realigning the fence to move the majority of Taylor Creek (reach 1553) into the Taylor Creek allotment, which is winter use, would increase riparian vegetation and result in improvements to stream bank and channel conditions. As riparian conditions improve, habitat for cold-water fish species would follow closely.

Hardening the water gap in the Buffalo Creek pasture, along Reservoir Creek, with rock and gravel would reduce sedimentation associated with livestock watering.

*Issue #2: Upland Health, Sagebrush Steppe Habitat and Associated Species*

Subdividing the Buffalo Creek pasture would allow one-third of the pasture to be rested each year. Additionally, the two remaining thirds would only be used for eight days each, limiting the opportunity for livestock to regrow plants during the active growing season. Resting one of the three remaining pastures (i.e., Cottonwood, North Taylor, and South Taylor) each year would provide an opportunity for the herbaceous vegetation in that pasture to grow unhampered. These shortened grazing periods and periodic rest are expected to increase the frequency, canopy cover, production, and reproductive capability of cool-season bunchgrasses. Increasing the herbaceous canopy cover will reduce runoff that has caused pedestalling and water flow patterns in the past. Constructing fences to improve livestock distribution will increase the risk of collisions and entanglement of antelope. Marking the fences to improve visibility and adhering to BLM's specifications for wildlife passage will reduce the probability of entanglement. Adding rest will improve forage conditions for winter antelope use as well as nesting habitat for migratory birds.

*Issue #3: Special Status Fish and Wildlife Species Habitat*

Reducing the authorized AUM's and cross fencing the Buffalo Creek pasture to add rest would benefit sage grouse by increasing the herbaceous cover on about one third of the allotment each

year. The new fence construction would be a three-wire fence built to BLM specifications and would be marked to reduce collisions by sage grouse and antelope. This area receives a disproportionate amount of winter use by both species as compared to the rest of the watershed.

*Resource Concern #3: Socioeconomics*

Delaying turnout of livestock by 10 days in the Buffalo Creek pasture, and up to 10 days when the Cottonwood pasture is rested, would necessitate the permittee feeding harvested forage, leasing pasture elsewhere, or remaining on deeded pastures, which may reduce hay production. Any of these options may create a considerable business expense.

**Taylor-Buffalo #10122**

Alternative C

*Issue #1: Riparian, Wetland, and Aquatic Health and Associated Species*

As with Alternative B, hardening the water gap, located in the Buffalo Creek pasture, with rock and gravel would reduce sedimentation associated with livestock watering in Reservoir Creek. Changing use in the Cottonwood pasture to one year in three would provide sufficient rest to allow for improvement to riparian/fishery habitat in Taylor Creek. Over time, vegetation will increase and the stream channel will begin to narrow resulting in better sediment transport through the stream reach.

*Issue #2: Upland Health, Sagebrush Steppe Habitat and Associated Species*

Resting the Buffalo Creek pasture every other year is expected to increase the frequency, canopy cover, production, and reproductive capability of cool-season bunchgrasses. However, cattle would have access to the entire pasture for 25 days, so progress may be more gradual. Resting two of the three remaining pastures (i.e., Cottonwood, North Taylor, and South Taylor) each year would provide two years of non-use and is expected to increase the frequency, canopy cover, production, and reproductive capability of cool-season bunchgrasses more quickly in those pastures. Adding rest to the Buffalo Creek pasture without the construction of new fences would increase residual forage for wintering antelope every other year and eliminate the risk of new entanglement hazards or the need to mark new fences.

*Issue #3: Special Status Fish and Wildlife Species Habitat*

Alternating rest every other year in the Buffalo creek pasture would benefit sage grouse and pygmy rabbits by increasing the herbaceous cover every other year. This area receives a disproportionate amount of winter use by sage grouse as compared to the rest of the watershed and improving hiding cover would benefit both species.

*Resource Concern #3: Socioeconomics*

Completely resting the Buffalo Creek pasture every other year and resting two of the remaining three pastures each year would necessitate the permittee feeding harvested forage, leasing pasture elsewhere, or remaining on deeded pastures, which may reduce hay production. Any of these options may create a considerable business expense.

**Taylor Creek #10745**  
Alternative B

Any impacts from adjusting the Taylor-Buffalo/Taylor Creek allotment boundary are discussed under Alternative B for the Taylor-Buffalo allotment.

**4.2.5 Comparative Effects of All Alternatives by Issue or Resource Concern**

**Table 4.2: Comparative Effects of All Alternatives on Issue #1: Riparian, Wetland, and Aquatic Health and Associated Species**

<b>Allotment</b>	<b>Alternative A (No Action)</b>	<b>Alternative B</b>	<b>Alternative C</b>
<b>Baldy Mountain</b>	No Change	Improvement to ecologic conditions at developed springs; reduced impacts to riparian areas; reduction of conifer expansion into riparian areas. Sediment from roads would be reduced.	Conditions would not improve at developed springs under this alternative. Reducing the time livestock spend along the East and West Forks of Dyce Creek would improve riparian areas. Sediment from roads would be reduced.
<b>Bannack</b>	No Change	Maintain ecologic conditions at Hangman’s Gulch Spring	No Alternative C
<b>Buffalo Creek</b>	No Change	Improve water quality, ecological conditions and biodiversity in the wetland by reducing livestock concentration and waste inputs.	Improve water quality, ecological conditions and biodiversity in the wetland by reducing livestock concentration and waste inputs.
<b>Ermont</b>	No Change	Assure the exclusion of livestock from the pond and associated wetlands and maintain long-term sustainability of project.	No Alternative C
<b>Flying N</b>	No Change	When snow accumulates, provide groundwater recharge to Taylor Spring	Same as Alternative B.
<b>Frenchie</b>	No Change	Exclusion of livestock from spring complex at Frenchie Place would facilitate maintenance of hydrology, hydric soils, and associated ecological conditions.	No Alternative C
<b>Reservoir Creek</b>	No Change	Building 350 feet of four-strand barbed wire fence to create a 20-acre riparian enclosure would reduce livestock impacts to Reservoir Creek and facilitate expansion of riparian vegetation.  Installing a 1000-gallon trough in W2 pasture would provide a clean source of livestock water away from nearby Watson Creek and improve riparian conditions by reducing bare ground along banks, building banks and narrowing and deepening the stream channel.	Installing two additional 1000-gallon troughs would provide two clean sources of livestock water away from nearby Watson Creek and would reduce livestock impacts along the creek and facilitate bank building and deepening the stream channel.

<b>Allotment</b>	<b>Alternative A (No Action)</b>	<b>Alternative B</b>	<b>Alternative C</b>
<b>Stonehouse</b>	No Change	Constructing a water gap would limit livestock access to the area within the water gap and reduce livestock impacts to the rest of the reach. This would allow natural channel processes to occur. Riparian vegetation would colonize annual sediment deposits and build banks.  Ecologic conditions at developed springs would improve and impacts to riparian areas would be reduced.	Shortening the season of use in the Ermont and McDowell pastures by two weeks would likely provide some benefit to springs and wetlands that do not have livestock exclosures. Other impacts would be the same as in Alternative B.
<b>Taylor- Buffalo</b>	No Change	Constructing a ½ mile of fence west of Taylor Creek and adjusting the allotment boundary, would shift grazing from spring to winter along Taylor Creek, leading to improved riparian conditions. Hardening the water gap on Reservoir Creek in addition to shifting the season of use would reduce livestock impacts.	Spring grazing would be limited to one year in three for 10 days, which is expected to improved riparian conditions along Taylor Creek in the Cottonwood pasture. The effects of the hardened water gap would be the same as Alternative B.
<b>Taylor Creek</b>	No Change	The effects of adjusting the allotment boundary and removing ½ mile of fence would be similar to the effects described for Taylor- Buffalo.	No Alternative C

**Table 4.3: Comparative Effects of All Alternatives on Issue #2: Upland Health, Sagebrush Steppe Habitat and Associated Species**

<b>Allotment</b>	<b>Alternative A (No Action)</b>	<b>Alternative B</b>	<b>Alternative C</b>
<b>Baldy Mountain</b>	No Change	Grazing management would maintain conditions in the Red Mine pasture and increase grazing pressure in the uplands of the Baldy Mountain pasture, which are mitigated by the rest-rotation grazing system.  Reduced conifer expansion on up to 1219 acres of sagebrush steppe habitat with prescribed fire treatments would maintain sagebrush steppe habitat.  Enhanced mule deer winter range in mahogany habitat.  Nesting habitat for forested migratory bird species would decrease and increase for sagebrush steppe/grassland species.	Grazing management would maintain conditions in the Red Mine pasture, but the grazing use in the uplands of the Baldy Mountain pasture would be 15 days shorter and more similar to Alternative A  No conifer encroachment removal, sagebrush habitat would be converted to Douglass fir forest habitat.  Enhanced mule deer winter range in mahogany habitat.  Nesting habitat for forested migratory bird species would increase, and decrease for sagebrush steppe/grassland species.

<b>Allotment</b>	<b>Alternative A (No Action)</b>	<b>Alternative B</b>	<b>Alternative C</b>
<b>Buffalo Creek</b>	Habitat conditions would not improve.	Two years of rest in the Hayes Creek pasture would gradually increase the productivity, canopy cover, species composition and reproductive capability of cool-season bunchgrasses.  Increased forage for antelope. Cleaning up old fencing would remove entanglement hazard, 1 mile of new fencing would create a new collision hazard.	Exclusion of livestock would improve forage condition more quickly than Alternative B, but fencing impacts would be the same.
<b>Cross</b>	Sagebrush obligate species' habitat requirements are likely being met.	Same As Alternative A.	No Alternative C
<b>Flying N</b>	No concerns	No change	No change
<b>Frenchie</b>	No concerns	No change	No change
<b>Reservoir Creek</b>	Habitat requirements for sagebrush-obligate species are likely being met.	Water developments would improve distribution across the allotment.	Same as Alternative B.
<b>Reservoir Creek Custodial</b>	Habitat requirements for sagebrush-obligate species are likely being met.	Improved habitat conditions with deferred turn out and adding rest.	Improved habitat conditions with deferred turn out and adding rest. Reducing grazing to 20 days would see quicker recovery than alternative B.
<b>Stonehouse</b>	Habitat requirements for sagebrush-obligate species are likely being met.	Delaying turnout by seven days would gradually increase frequency, canopy cover, vigor, and reproductive capability of cool-season bunchgrasses. Habitat conditions would likely be similar to Alternative A.	Delaying turnout by 15 days would increase frequency, canopy cover, vigor, and reproductive capability of cool-season bunchgrasses more quickly and improve habitat conditions throughout the allotment.
<b>Taylor- Buffalo</b>	Habitat conditions for wildlife would not improve.	Incorporating rest every third year would gradually increase frequency and canopy cover of cool-season bunchgrasses. Adding rest into the rotation by creating three pastures out of the Buffalo Creek pasture would improve habitat, but two miles of new fence construction would create a collision hazard for big game.	Alternating rest for Buffalo Creek and providing two years of rest in the other pastures would increase frequency and canopy cover of cool-season bunchgrasses more quickly. Alternating rest every other year in the Buffalo creek pasture would improve habitat conditions without the need for two miles of new fencing.
<b>Taylor Creek</b>	No Change	Adjusting the Taylor- Buffalo/Taylor Creek allotment boundary would result in no net increase of fencing and not increase entanglement hazards for wildlife.	No Alternative C

**Table 4.4: Comparative Effects of All Alternatives on Issue #3: Special Status Fish and Wildlife Species Habitat**

<b>Allotment</b>	<b>Alternative A (No Action)</b>	<b>Alternative B</b>	<b>Alternative C</b>
<b>Baldy Mountain</b>	No change	Reduced levels of sediment into Dyce Creek. Increased level of protection to WCT during spawning/ emergence periods over either Alternative A or C. Conifer removal would result in improvements to riparian vegetation through increased sunlight, nutrients and water.  Timber harvest would enhance foraging for great grey owls and northern goshawks.	Slightly increased levels of sediment reduction over Alt B Increased level of protection to WCT during spawning/ emergence periods over Alternative A.  Effects from timber harvest would be the same as Alternative B.
<b>Buffalo Creek</b>	Would not meet sage grouse habitat needs.	Improved brood-rearing habitat for sage grouse, new fencing would create potential for sage grouse collisions.	Improved forage condition with a faster response than Alternative B. Removing livestock grazing in the Hayes pasture would improve residual cover and provide habitat for sage grouse brood rearing fencing impacts would be the same as Alternative B
<b>Cross</b>		Changes in distribution of livestock from water development would likely change residual cover throughout the allotment and would likely impact sage grouse nesting cover.	Would depend on how allotment is managed in conjunction with other allotments.
<b>Flying N</b>	No concerns	No concerns	No concerns
<b>Frenchie</b>	No concerns	No concerns	No concerns
<b>Reservoir Creek</b>	Sage grouse habitat would be maintained or steadily improved under current management.	Sage grouse habitat would be maintained or steadily improved similar to current management. Improved water distribution will change use patterns and residual cover.	Same as Alternative B.
<b>Reservoir Creek Custodial</b>	No improvement of sage grouse nesting and brood-rearing habitat.	Improved brood-rearing habitat for sage grouse with deferred turn out and adding rest.	Improved brood-rearing habitat for sage grouse with deferred turn out and adding rest. Reducing grazing to 20 days would improve habitat conditions more quickly than Alternative B.
<b>Stonehouse</b>	Sage grouse and pygmy rabbit habitat requirements are being met.	Improved habitat conditions for sage grouse brood rearing around springs.	Improved habitat conditions for sage grouse brood rearing around springs. Reduced grazing by 15 days in Ermont and McDowell pastures would provide greater residual nesting cover for sage grouse.
<b>Taylor-Buffalo</b>	Marginal habitat for sage grouse nesting and brood rearing due to lack of residual cover.	Two miles of new fence construction in Buffalo creek pasture would be a collision hazard for sage grouse, resting pastures would improve residual cover.	Resting the Buffalo creek pasture every other year would improve habitat without the need for new fencing.

<b>Allotment</b>	<b>Alternative A (No Action)</b>	<b>Alternative B</b>	<b>Alternative C</b>
<b>Taylor Creek</b>	No Change	Adjusting the Taylor-Buffalo/Taylor Creek allotment boundary would result in no net increase of fencing and not increase collision hazards for sage grouse. Improved habitat conditions for sage grouse brood rearing along Taylor Creek.	

**Table 4.5: Comparative Effects of All Alternatives on Resource Concern #1: Wilderness Characteristics**

<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>
No change	Wilderness characteristics would be enhanced.	

**Table 4.6: Comparative Effects of All Alternatives on Resource Concern #2: Recreation and Travel Management**

<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>
No change	A net increase of 0.5 miles of designated open roads.	

**Table 4.7: Comparative Effects of All Alternatives on Resource Concern #3: Socioeconomics**

<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>
No change	Constructing the structural projects in this alternative would require a substantial investment from the BLM and the permittees/lessees. These projects will also likely create job opportunities for local individuals. The commercial timber and Christmas tree harvest units would provide jobs and merchantable product to the local economy.	The shortened seasons of use and increased rest proposed in this alternative would have a higher cost to livestock producers with grazing permit/leases, but there are fewer structural projects proposed. Closing the Badger Pass gravel pit would increase the cost of acquiring gravel for the public and Beaverhead County.

**Table 4.8: Comparative Effects of All Alternatives on Resource Concern #4: Cultural Resources**

<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>
No Change	No predicted impacts to cultural resources. Conducting cultural resource clearances prior to project construction and vegetation treatments would avoid or mitigate any potential impacts.	

**Table 4.9: Comparative Effects of All Alternatives on Resource Concern #6: Special Status Plant Species Habitat**

<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>
No change	Proposed changes would maintain or improve habitat for special status plants. Special plant clearances would mitigate impacts during project implementation.	

### **4.3 Cumulative Effects for All Alternatives**

Cumulative effects are those that result from adding the anticipated direct and indirect effects of the proposed action, to impacts from other past, present and reasonably foreseeable future actions. These additional impacts are considered regardless of what agency or person undertakes such actions. The cumulative impacts area for this EA is defined as all land, regardless of ownership, in the EGW assessment area (map 1) for all issues and resource concerns except Socioeconomics, for which the cumulative impacts area is Beaverhead County. Climate change is analyzed at the regional level. The temporal boundary when analyzing cumulative impacts is 10 years. Some past, present and reasonably foreseeable actions are discussed in Chapter 3 (Affected Environment) and/or Chapter 2 (Features Common to all Alternatives).

#### **4.3.1 Past and Present Actions**

Past or ongoing actions that are common to all alternatives and affect the same components of the environment as the proposed actions are:

Severe over-trapping of beavers and unregulated livestock use during the late 1800s and early 1900s changed the character (hydrologically and vegetatively) of most mountain streams in the Intermountain West (Elmore and Beschta, 1987; Elmore and Kaufman, 1994; Naiman, 1988). Although there are still active beaver colonies in the EGW, activity is substantially reduced from historical levels.

In the late 1890's and early 1900s, wolves and other large predators in the western United States were hunted, trapped and poisoned nearly to extinction. Ripple and Beschta (2005) indicate that the presence of top trophic level predators significantly affects herbivores and that this interaction alters or influences vegetation (aspen, willow, cottonwood). Over the past decade, wolves have moved back into the EGW.

Watershed-wide under all management schemes on all land ownerships, there has been and continues to be a decline in aspen. This is a west wide phenomenon that can be attributed primarily to a combination of successional processes including reduction (or elimination) of fire, loss of predator influence on herbivores, and long-term overuse by ungulates (Bartos and Campbell, 1998; Beschta, 2003; Ripple and Beschta, 2004).

There has been timber harvest, Christmas tree cutting, and firewood collecting in the past throughout the watershed. The total estimated forested area treated on BLM-administered lands in the past 30 years is about 380 acres across the watershed. The majority of this was thinning in Douglas-fir stands in the Dyce Creek and Badger Pass areas.

There has been little-to-no timber harvest on State of Montana and USFS-administered lands in the EGW. An unknown acreage of forested land has been harvested on private lands.

Excluding fire from the landscape, by removing fine fuels via livestock grazing and suppressing fire over the past century, has increased the accumulation of fuel loads and altered forest conditions.

Impacts on lands upstream from BLM administered land may contribute sediment to streams and subsequently may adversely affect downstream water quality on public land.

The number of water developments, including pipelines, located on other ownerships is unknown as is their condition and functionality. Historically, water developments were designed with one objective, to provide water for livestock. Where sources were unprotected, designs were poor, or where the developments were not maintained, hydrology, hydric soils, and hydrophytic vegetation were often impacted. Impacts frequently observed under such conditions include lowered water tables, conversion of hydric soils to upland soils and reduction in hydrophytic vegetation. Some of these historic developments and designs along with the described impacts may still exist in the EGW.

Road use and maintenance adjacent to or crossing streams have impacted some streams in the watershed by adding sediments and/or removing vegetation at the crossing or adjacent to the stream.

Roads in the uplands allow opportunities for noxious and invasive weeds to become established and in isolated areas (steep slopes) contribute to soil erosion.

Increased recreation has adversely impacted isolated areas within the watershed (e.g., camp sites, new trails and roads, spreading of weed seeds).

Historic mining in the EGW has resulted in visual, water quality, and habitat changes. Riparian and upland habitats have been impacted directly and indirectly across all ownerships.

Introduction of non- native sport fish in the early-mid 1900's has resulted in the loss of most populations of native WCT within the watershed. A nonnative trout removal project, conducted in 2011, has restored 7½ miles of native WCT habitat in Dyce Creek.

#### **4.3.2 Reasonably Foreseeable Future Actions**

Reasonably foreseeable future actions that would cumulatively affect the same resources in the cumulative impact area as the proposed actions and alternatives are:

The risk of wildfire on all ownerships will continue. Fire management actions will continue on federally-administered lands in the watershed.

Livestock production and sustainability will continue to be important in Beaverhead County and the State of Montana. According to the United Nations, the world's population increased from 2.6 to 7 billion between 1950 and 2012 (UN 2012). The world's population is predicted to reach 8.92 billion by 2030 (UN 2004). Given this projection, food security is and will continue to be an important issue and livestock are integral to addressing food security. The United Nations Food and Agriculture Organization (UNFAO), using the year 2000 as a baseline, estimates that global meat production will double between 2000 and 2050 (UNFAO 2006). In 2000, the UNFAO launched the Livestock Environment and Development (LEAD) Initiative to devise and promote ecologically sustainable livestock production strategies and practices with a concern

towards reducing world poverty (UNFAO 2009). Livestock production and sustainability, as well as food security, will continue to be important issues locally and globally.

Impacts resulting from grazing, vegetative projects and/or recreation on private and State lands are expected to continue. This could impact wildlife migration and dispersal depending on timber harvests planned on State and private lands in the future. Any reductions in AUMs on BLM lands would increase grazing use on private or state land within the watershed if herd numbers remain consistent.

Fencing on other land ownerships and on BLM boundaries may lessen the benefit of fence modification efforts on public lands to improve wildlife movements.

Recreation, especially hunting and fishing, is expected to increase in the EGW in the future. Impacts expected from this increased use are new camp sites, spreading of weed seed, more use of roads and increased wildlife disturbance.

Increasing loss of basin and mountain big sagebrush habitat through Douglas-fir or juniper expansion can be anticipated. In areas that are treated to remove competing conifers, the seral stage of sagebrush would be set back to early seral and would take up to 30 years to progress back to late seral. This creates seral and structural diversity within sagebrush habitats across the landscape.

The economic situation of the permittees/lessees is affected by changes in cattle prices, hay prices, fuel prices, interest rates, land prices, labor costs, labor inputs, equipment costs, equipment maintenance costs, facilities maintenance costs, costs of feed supplements, irrigation costs and availability of irrigation water, livestock loss, private land lease rates, veterinary costs, local weather and other miscellaneous factors. Cumulative economic impacts could influence grazing lessees to subdivide private land to maintain economic viability.

The BLM plans to implement timber harvest immediately east of the Dry Gulch treatment unit as part of the Black Mountain Salvage Timber Sale, as analyzed in the Beaverhead West Watershed EA and subsequent Black Mountain Salvage Determination of NEPA Adequacy (DNA). Treatment on 180 acres is anticipated to take place in 2012-2013. An estimated area of up to 300 acres is also anticipated have timber harvest completed on private lands to the south of this area.

Within the Reservoir Creek AMP Allotment, two projects are planned on lands administered by the Montana Department of Natural Resources and Conservation (MTDNRC). One project will pipe water from an existing pipeline, in the NE<sup>1</sup>/<sub>4</sub> Sec. 22, T. 8 S., R. 13 W., to supplement water in an existing trough in the SW<sup>1</sup>/<sub>4</sub> Sec. 22, T. 8 S., R. 13 W. The other project will pipe water from an existing pipeline, in the NW<sup>1</sup>/<sub>4</sub> Sec. 23, T. 8 S., R. 13 W., to a proposed trough in the NW<sup>1</sup>/<sub>4</sub> Sec. 24, T. 8 S., R. 13 W. Both projects are located entirely on MTDNRC-administered lands. (Map #5)

The BLM has recently received notice, under 43 CFR §3809, for exploratory drilling in sections 26, 27, 34 and 35, T. 6 S., R. 11 W., near Ermont. Initially, ten holes will be drilled with an

additional 11 holes drilled if the first phase proves promising. If drilling and other exploration indicates a minable deposit, a Plan of Operation will be submitted for production mining.

The AML program will continue to inventory and assess the impacts of abandoned mines on BLM lands. Once the mines have been evaluated the appropriate closures, reclamation, or mitigation will be conducted as funding and staffing allow. Closure methods, determined through evaluating the mine safety, accessibility, animal and or plant species present, and cultural significance, will be permitted on an individual basis through separate EAs as work progresses.

#### **4.3.3 Cumulative Effects of All Alternatives, Including the No Action**

The removal of large predators in the western United States in the late 1890s/early 1900s increased the level of impact that elk and moose had on riparian areas and aspen. The reintroduction of wolves into Yellowstone National Park in 1995 and subsequent increase in wolf numbers in southwest Montana may have an effect on reversing these impacts.

The intermingling of private and state lands with public lands throughout the watershed ensures that activities outside the control of BLM will continue. Grazing on these lands at various times throughout the year will influence forage and cover availability, and distribution of seasonal wildlife uses.

High probability habitats will be surveyed for sensitive plants prior to any ground disturbing activities on federal land but botanical surveys aren't required on private and state lands even on cooperative projects (e.g., a pipeline that crosses multiple-ownerships).

The loss of forest canopy and cover, due to insect and disease mortality, is likely to continue across all ownerships in untreated forested habitat resulting in the accompanying loss of wildlife habitat. Large-scale mortality of trees across forested portions of all ownerships within the EGW may increase annual stream flows and change the timing of water delivery, due to decreased water uptake by trees and reduced interception of precipitation resulting from the loss of canopy (Colorado State Forest Service, 2009).

Without proactive cooperative projects between private, state and federal agencies, it is likely that WCT will be extirpated in the next 20-50 years from the assessment area. Projects like the nonnative removal on Dyce Creek will help, but should only be considered as a stop gap measure. Additional projects designed to increase the distribution of this native species within the watershed are required to prevent extirpation.

West Nile Virus (WNV) has been linked to sage grouse mortality in multiple areas, however not in the Dillon Field Office. BLM Information Bulletin (IB) No. MT-2011-033 provides guidance for West Nile Virus and Water Developments. Management to reduce impacts of WNV focuses on eliminating man-made water sources that support breeding mosquitoes known to vector the virus. Whether the water development is for livestock water, wildlife habitat, fish, or storm water management, potential habitat for mosquitoes may be increased. Incorporating applicable design and mitigation measures, described in the IB, in water development projects can reduce mosquito production through modifying and eliminating mosquito breeding sites. While these

mitigation measures will be applied on BLM lands where applicable, the potential for WNV may still exist, including on lands not managed by the BLM where mitigation measures may not be applied.

#### **4.3.4 Cumulative Effects of Alternative A – No Action (Continuation of Current Management)**

Without grazing management changes and new range improvement projects cattle-induced riparian health concerns identified in the EGW Assessment Report would not be addressed and objectives for improving riparian health would not be accomplished. Downward trends would continue on stream reaches in seven grazing allotments which could affect riparian health, fisheries habitat and/or water quality downstream from BLM administered lands. Conversely, on those allotments that were meeting rangeland health standards, resource conditions are expected to continue meeting or making progress toward management objectives. The predicted effects of climate change would be the same as described in section 3.3.3.

#### **4.3.5 Cumulative Effects of All Action Alternatives**

The proposed changes in livestock management would generally improve riparian function on BLM-administered land and other lands (private, state) within BLM allotments at varying degrees and timeframes. The expected effect to downstream riparian habitats and water quality would be improved sediment transport, better access to floodplains, dissipation of energy and, over time, improvements in channel morphology. The effects of implementation of the selected alternative would be quantitatively determined by monitoring physical and vegetative indicators of riparian and upland function, and monitoring vegetative components of habitat.

Forest health would be improved within the units as a result of treatments proposed under the action alternatives and treated stands would be more resilient to insects and disease in the future. Insect and disease mortality would continue unmitigated in untreated stands within the watershed. Wildfires would continue to occur, but in treated areas the intensity would be reduced due to the lesser amount of fuel that would be available.

The implementation of the land health standards, site specific rangeland improvements, and site-specific mitigation would maintain or improve vegetative composition, diversity, vigor and cover, maintain or restore soil function and limit stream bank disturbance and associated soil loss where these concerns were noted. As areas not meeting the land health standards move towards proper functioning condition, the BLM anticipates an increase in vegetative cover, a reduction in bare ground, soil compaction, and soil erosion and an increase in stream bank stability. All lands included within allotment and pastures boundaries are expected to improve as described under the action alternatives, not just BLM administered lands.

If fewer AUMs were authorized on BLM-administered lands, livestock would have to be pastured elsewhere for part of the grazing season or the herd size may have to be reduced. Reducing authorized AUMs may increase livestock use on private property adjacent to or near public lands. When viewing the watershed as a whole, this may directly affect similar resources on private property and offset the benefits to public land. If private livestock numbers were permanently reduced, a decrease in Beaverhead County's tax revenues may result.

It's possible that sensitive plant species could be accidentally or inadvertently impacted by construction or placement of range improvement projects on non-federal lands. Indiscriminate or random placement of livestock supplements could also cause impacts to individual plants or populations across all ownerships.

Slightly increased labor costs are assumed under Alternatives B and C to implement and check the allowable use grazing guidelines. During drought periods, total authorized AUMs may not be available. All reduced AUMs would be held in suspended non-use on the term grazing permits/leases.

As proposed projects and changes management take place in the Dyce Creek drainage, decreased sediment loads would allow for improvements to WCT habitat through improved spawning habitat conditions, increased riparian vegetation and increased streambank cover.

#### **4.3.5.1 Cumulative Impacts of Climate Change for Action Alternatives**

As previously discussed above in Section 4.2.3.1, it is difficult, if not impossible to identify specific impacts of climate change on specific resources within the analysis area. As summarized in the Climate Change SIR (2010), climate change impacts can be predicted with much more certainty over global or continental scales. Existing models have difficulty predicting temperature changes at small scales. On smaller scales, natural climate variability is relatively larger, making it harder to distinguish changes expected due to external forces (such as changes from local activities to GHGs). Uncertainties in local forces and feedbacks also make it difficult to estimate the contribution of GHG changes to observed small-scale temperature changes (IPCC 2007b, as cited by the Climate Change SIR 2010). Effects of climate change on resources are described in Chapter 3 of this EA (section 3.3.3) and in the Climate Change SIR (2010).

The BLM expects only minor changes in the form of increased carbon sequestration capability of vegetation and soil with regard to climate change from actions implemented by the BLM within the East Grasshopper Watershed. In fact, given current technology, any change would likely be undetectable. Regarding impacts from climate change, there is a great deal of uncertainty over what to expect during the life of the Watershed Plan (10 years). While the long-term (100 year) trend clearly shows warming, local climatic records show great variability for any particular 15 year period. This would make any analysis of short-term impacts from climate change purely hypothetical.

The implementation of the selected alternative would improve the ability of affected public land within the EGW to perform their physical and biological functions including carbon sequestration. As discussed above under 4.2.3.1, healthy forests, riparian/wetland areas, and rangelands mitigate GHGs in the atmosphere by storing carbon in the soil and vegetation. Proper livestock management on rangelands increases carbon sequestration in these areas and decreases the number of livestock produced in feedlots that contribute to GHGs (at least for a portion of their life cycle).

On several allotments within the EGW, where resource issues were identified, the alternatives in this EA shorten the season of use and/or reduce the number of livestock. These actions, along

with others, are expected to improve riparian/wetland, upland and forest health conditions. The alternatives in this EA do not propose to increase livestock numbers on BLM administered lands with the watershed. Therefore, the limited emissions associated with livestock digestion and excretion would not increase from current levels and carbon sequestration in the soil and vegetation would increase as land health conditions improve. The proposed alternatives and projects are not expected to cause negative impacts to climate change. Conversely, a reduction in net GHGs in the atmosphere is projected as land health conditions improve.

The application of the land health standards requires that they are met regardless of climatic conditions. While it would be nearly impossible to accurately predict short-term climatic conditions, the land health standards remain relevant during warm/dry or cool/wet periods. Progress towards meeting Land Health Standards is expected regardless of fluctuations in climate over the life of this plan. The Dillon Field Office's Watershed Assessment and planning process facilitates adaptive management over ten year increments. By reviewing land health across the watershed(s) and adjusting management to account for documented land health issues, impacts or effects from climate change (as well as other causes/uses) will be accounted for and alternatives developed to mitigate impacts and continue to maintain, or progress towards, site specific objectives and Land Health Standards.

#### **4.3.6 Cumulative Effects of Alternative B**

The snow-fence, located in the Flying N allotment (E½ NE¼ Section 29, T. 6 S., R. 11 W.), was constructed in an effort to catch snow and provide water to Taylor Spring, located on adjacent USFS lands. Maintaining the snow fence would benefit the spring to the degree that it does catch snow and to the degree that snowmelt provides groundwater recharge.

Implementing the conifer treatments proposed in Alternative B, in conjunction with past and reasonably foreseeable future actions, would increase the structural heterogeneity across the foothills on the south end of the West Pioneer Mountains. As future disturbances (e.g., wildfire, bark beetles, windthrow) occur, the effects would be more varied across the landscape.

Generally, additional impacts or predicted effects other than those described in section 4.2.4 and 4.2.5 are not expected on a landscape level. Because many allotments within the EGW are intermingled with state and private lands, improvements to resource conditions resulting from management changes and projects would produce benefit across all ownerships. Impacts resulting from grazing, vegetative projects and/or recreation on private and State lands would continue. This could impact wildlife migration and dispersal depending on timber harvests planned on State and private lands in the future. Any reductions in AUMs on BLM lands would increase grazing use on private or state land within the watershed if herd numbers stay the same.

Managing for more vigorous and productive cool season grasses by changing the frequency, timing, duration and/or intensity of livestock grazing on specific allotments would leave more cover and forage for wildlife species and may slightly change patterns of use in specific areas within the watershed. Additional off-site watering locations would better disperse ungulate use in specific areas within the watershed.

No additive or cumulative effects are expected for special status plants under this alternative.

Socioeconomic impacts to livestock operators other than those discussed above are not expected.

The cumulative effects for recreation, wilderness, and visual resources of future actions on private or state lands would be similar to the effects discussed in Section 4.2.4. The nature and scale of these activities would vary according to the objectives of the landowners or administrators.

#### **4.3.7 Cumulative Effects of Alternative C**

The snow-fence, located in the Flying N allotment (E½ NE¼ Section 29, T. 6 S., R. 11 W.), was constructed in an effort to catch snow and provide water to Taylor Spring, located on adjacent USFS lands. Removing the snow-fence would reduce the additional groundwater recharge that was provided to Taylor Spring by snowmelt.

Implementing one proposed conifer treatment, in conjunction with past and reasonably foreseeable future actions, would increase structural heterogeneity within the immediate area of Black Mountain and Dry Gulch only. This is on a much smaller scale than Alternative B, and would have localized effects only to future disturbance patterns.

Impacts in addition to those described under section 4.2.4 and 4.2.5 are not expected. The investment in projects is similar to that in Alternative B. Alternative C, generally, contains more intensive management practices and/or more structural projects to help mitigate resource concerns.

Effects to resources resulting from grazing, timber harvest and/or recreation on private and State lands would continue. This could impact wildlife migration and dispersal depending on timber harvests planned on State and private lands in the future. Any reductions in authorized AUMs on BLM lands would increase grazing pressure on private and state lands within the watershed if herd numbers stay the same.

## **Chapter 5: List of Preparers - Consultation/Coordination**

### **5.1 List of Preparers**

#### **5.1.1 Core IDT members:**

Brian Thrift	Rangeland Management Specialist – IDT Leader
Ryan Martin	Rangeland Management Specialist
Aly Piwowar	Forester
Kipper Blotkamp	Fire Ecologist
Kelly Bockting	Wildlife Biologist
Paul Hutchinson	Fisheries Biologist
Stephen Armiger	Hydrologist – Riparian Coordinator
Pat Fosse	Supervisory Natural Resource Specialist

### **5.1.2 Support IDT members include:**

Michael Mooney	Weeds Specialist
Katie Benzel	Wildlife Biologist
Jason Strahl	Archaeologist
George Johnson	Fuels Specialist
Laurie Blinn	GIS Specialist
Rick Waldrup	Outdoor Recreation Planner
Kelly Urresti	Rangeland Management Specialist – Special Status Plants
Bob Gunderson	Geologist

### **5.1.3 Other Support Personnel**

Corey Meier	Soil Scientist – Abandoned Mine Lands
Mike Philbin	Supervisory Physical Scientist, MT/DAK BLM State Office
Susan Bassett	Air Quality Specialist, MT/DAK BLM State Office
Steve Lubinski	Range Technician
Lindsay Wilsey	Range Technician
Brett Christian	Range Technician
Alison Makoutz	Range Technician
Desire'e Seal	Range Technician
Cole Dallaserra	Range Technician
Bryce Nelson	Range Technician
Shelby Barnes	Range Technician
Kate Alder	Administrative Assistant
Ellen Daugherty	Administrative Assistant
Jed Berry	Fisheries Technician
Brian Krott	Forestry Technician
Drew Paganucci	Forestry Technician
Aaron Rutledge	Wildlife Technician
Nick Calvert	Wildlife Technician

## **5.2 Consultation/Coordination**

### **5.2.1 Persons and Agencies Consulted**

Chuck Barrone	Forester, MT DNRC Dillon
Craig Fager	Wildlife Biologist, MT FWP Dillon
Ted & John Harrison	J. Dwight Harrison Ranch
Todd Holland	Holland Ranch Co.
Art Robinson	Livestock Producer

### **5.2.2 Notifications**

Media Release in Southwest Montana – May 2011  
Internet NEPA Log – Dillon Field Office – May 2011  
Mailing List for EGW Assessment – December 2011  
Media Release in Southwest Montana – December 2011  
Watershed Assessment Report and Authorized Officer's Determination – December 2012  
Media Release in Southwest Montana – December 2012

### 5.2.3 Statement of Public Interest

Several individuals and groups have expressed interest in this proposed action. The mailing list of individuals and groups who have expressed interest to date is available at the Dillon Field Office.

## Glossary of Terms

**Adaptive Management:** a decision process that promotes flexible decision making that can be adjusted in the face of uncertainties as outcomes from management actions and other events become better understood. Careful monitoring of the outcomes both advances scientific understanding and helps adjust policies or operations as part of an iterative learning process. Adaptive management also recognizes the importance of natural variability in contributing to ecological resilience and productivity. . . (Williams et al. 2007)

**Allotment:** an area of land designated and managed for livestock grazing.

**Allotment Management Plan (AMP):** a documented program developed as an activity plan that focuses on, and contains the necessary instructions for, the management of livestock grazing on specified public lands to meet resource conditions, sustained yield, multiple use, economic and other objectives.

**Alluvium:** clay, silt, sand, gravel or similar detrital material deposited by running water.

**Animal unit month (AUM):** amount of forage necessary for the sustenance of one cow or its equivalent for a one-month period.

**Anthropogenic:** caused or influenced by humans.

**Area of Critical Environmental Concern (ACEC):** areas within the BLM administered lands where special management attention is required to: (1) protect and prevent irreparable damage to important historic, cultural or scenic values, fish and wildlife resources, or other natural systems or processes, or (2) protect life and safety from natural hazards.

**Aridic Soil Moisture Regime:** dryer than Ustic soil moisture regime, and moisture is considered “limiting” to plant growth. Areas that are considered arid have little to no chemical leaching so areas where salts are present usually have serious salinity issues because there is not enough “water” to leach them through the profile.

**Census County Division:** Census county divisions (CCDs) are geographic statistical subdivisions of counties established cooperatively by the Census Bureau and officials of state and local governments in states where minor civil divisions (MCDs) either do not exist or are unsatisfactory for census purposes.

**Climax plant community:** the final or stable biotic community in a successional series; it is self-perpetuating and in equilibrium with the physical habitat.

**Closed Basin:** For the purposes of this document, the term Closed Basin, refers to State of Montana water rights law. Montana Water Use Act defines a basin closure area as a hydrologic drainage basin area within which applications for certain water use permits cannot be accepted.

**Colluvium:** is the name for loose bodies of sediment that have been deposited or built up at the bottom of a low-grade slope or against a barrier on that slope, transported by gravity.

**Cryic Soil Temperature Regime:** soils in this temperature regime have a mean annual temperature higher than 0 degrees but lower than 8 degrees Celcius, with a difference between mean summer and mean winter soil temperatures greater than 5 degrees C at 50 cm, and COLD summer temperatures.

**Daylighting:** The removal of all competing trees around a target tree in a circular area of a predetermined size.

**Depredation:** An act of consuming agricultural resources (crops, livestock), especially as plunder.

**DEQ:** Department of Environmental Quality

**Drip Line:** The line extending vertically from the exterior edge of a tree's live crown to the ground.

**Ecological site:** a kind of land with specific physical characteristics which differs from other kinds of land in its ability to produce distinctive kinds and amounts of vegetation and in its response to management.

**Endemic:** a population of potentially injurious plants, animals, or viruses that are at low levels.

**Epidemic:** pertaining to populations of plants, animals, and viruses that build up, often rapidly, to unusually and generally injurious high levels – *synonym* outbreak – *note* many insect and other animal populations cycle (periodically or irregularly) between endemic and epidemic levels.

**Fellfield:** a community of dwarfed, scattered plants or grasses above the timberline where the dynamics of frost (freeze and thaw cycles) and of wind give rise to characteristic plant forms.

**Fen:** a type of wetland fed by surface and/or groundwater. Fens are characterized by their water chemistry, which is neutral or alkaline.

**Forest land:** land that is now, or has the potential of being, at least 10 percent stocked by forest trees (based on crown closures) or 16.7 percent stocked (based on tree stocking).

**Frigid Soil Temperature Regime:** soils in this temperature regime have a mean annual temperature higher than 0 degrees but lower than 8 degrees, with a difference between mean summer and mean winter soil temperatures greater than 5 degrees C at 50 cm, and WARM summer temperatures.

**Functional at risk (FAR):** riparian wetland areas that are functional, but an existing soil, water, or vegetation attribute makes them susceptible to degradation.

**Geomorphology:** is the scientific study of landforms and the processes that shape them.

**Glacial Till:** is unsorted glacial sediment. It is that part of glacial drift which was deposited directly by the glacier.

**Graminoid:** grass or grass-like plant, including grasses (Poaceae), sedges (Cyperaceae), rushes (Juncaceae), arrow-grasses (Juncaginaceae), and quillworts (*Isoetes*).

**Greenline:** that specific area where a more or less continuous cover of vegetation is encountered when moving away from the center of an observable channel. The greenline is often, but not necessarily, located at the water's edge.

**Historical range of variation (HRV):** The "HRV" concept refers to the expected variation in physical and biological conditions caused by natural climatic fluctuations and disturbance regimes (i.e., flooding, fire and windthrow). HRV is derived from an ecological history of the landscape and is estimated from the rate and extent of change in selected physical and biological variables. For example, in the Douglas-fir forest, HRV was determined by looking at existing fire scar evidence which indicated one to several fire events during the life of the older to oldest trees. The relatively uniform age groups of younger trees found in the direct vicinity of older fire scarred trees that have seeded in and grown since the last major historical fire disturbance event(s) also indicate a lack of fire in recent history.

**Hummocking:** a form of micro-topographic relief characterized by raised pedicels of vegetated soil as much as 0.6 m (2ft) higher than the surrounding ground which results from long term large animal trampling and tracking in soft soil. Vegetation on the pedicels usually differs from that on the surrounding lower area due to moisture difference between the two levels. Hummocking is also caused by abnormal hydrologic heaving.

**Hydric soil:** soil that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part.

**Hydrophyte:** plants growing in water or on a substrate that is at least periodically deficient in oxygen due to excessive wetness.

**Hydrologic Unit:** the USGS has developed a system of geographic units based upon watersheds. These units were originally subdivided to four levels. Subsequently two additional subdivisions have been developed. Currently there are six levels, with the sixth being the smallest unit.

**Hydrologically Connected:** Hydrologically connected is used in this document in the same sense as in Rapanos vs. United States in the question of isolated wetlands. That is there is continuous surface connection. It is acknowledged that there are other definitions.

**Interrupted Stream:** a stream with discontinuities in space. A stream which surfaces and subs at various locations along a length of channel.

**Lands with Wilderness Characteristics:** those lands that have been inventoried and determined by the BLM to contain wilderness characteristics as defined in Section 2 (c) of the Wilderness Act. These are separate from lands already designated as Wilderness or wilderness study areas.

**Lentic:** standing or still water such as lakes and ponds.

**Lotic:** flowing or actively moving water such as rivers and streams.

**Moraine:** accumulated glacial debris - a mass of earth and rock debris carried by an advancing glacier and left at its front and side edges as it retreats.

**Neotenic:** retention of juvenile characteristics in adults of a species, as among certain amphibians.

**Nonpoint source pollution (NPS):** pollution originating from diffuse sources (land surface or atmosphere) having no well-defined source.

**Obligate wetland species:** plant species that occur almost always under natural conditions in wetlands.

**Palustrine:** from the Latin "palus" or marsh. non-tidal wetlands dominated by trees, shrubs, persistent emergent plants, emergent mosses or lichens.

**Parent Material:** the underlying geological material (generally bedrock or a superficial or drift deposit) in which soil horizons form.

**Pedestal:** plants or rocks that appear to be elevated as a result of soil loss by wind or water erosion.

**Proper functioning condition (PFC):** lotic riparian-wetland areas are considered to be in proper functioning condition when adequate vegetation, landform, or large woody debris is present to: Dissipate stream energy associated with high waterflows, reducing erosion and improving water quality; Filter sediment, capture bedload, and aid floodplain development; Improve flood-water retention and ground-water recharge; Develop diverse ponding and channel characteristics to provide the habitat and the water depth, duration, and temperature necessary for fish production, waterfowl breeding, and other uses; Support greater biodiversity

**Pugging:** is tracking depressions left by large animals (typically hooved animals, but occasionally humans) left in fine textured soil. Moist clay or silt usually has a consistency to hold tracks. Upon drying, pugged areas will have a hard, irregular surface, difficult to walk across.

**Resource Reserve Allotment:** A unit of public land that will provide temporary grazing to rest other BLM allotments following wildfire, habitat treatments, or to allow for more rapid attainment of rangeland health.

**Riparian zone:** the banks and adjacent areas of water bodies, water coursed, seeps, and springs whose waters provide soil moisture sufficiently in excess of that otherwise available locally so as to provide a moister habitat than that of contiguous flood plains and uplands.

**Rosgen Classification System:** A classification system for natural rivers in which a morphological arrangement of stream characteristics is organized into relatively homogeneous stream types. Morphologically similar stream reaches are divided into 7 major stream type categories that differ in entrenchment, gradient, width/depth ratio, and sinuosity in various landforms. Within each major category are six additional types delineated by dominant channel materials from bedrock to silt/clay along a continuum of gradient ranges.

**Seral:** of, relating to, or constituting an ecological sere.

**Sere:** a series of ecological communities that succeed one another in the biotic development of an area or formation.

**Spring brook:** a channel that carries water from a spring. Where there is sufficient flow, the channel forms a perennial stream. Frequently in arid environments, the flow is insufficient to create a perennial stream. Groundwater emerges at the springhead, flows a short distance within the spring brook, and then submerges.

**Topography:** the study of Earth's surface shape and features. It is also the description of such surface shapes and features (especially their depiction in maps). The topography of an area can also mean the surface shape and features themselves.

**Total Maximum Daily Load (TMDL):** the goal of the Clean Water Act (CWA) is "to restore and maintain the chemical, physical, and biological integrity of the Nation's waters." Under section 303(d) of the CWA, states are required to develop lists of impaired waters. The law requires that states establish priority rankings for waters on the lists and develop TMDLs for these waters. A TMDL is a calculation of the maximum amount of a pollutant that a water body can receive and still safely meet water quality standards.

**TMDL Planning Areas:** Montana DEQ is using a watershed approach to address TMDLs based on the premise that water quality restoration and protection are best addressed through integrated efforts within a defined geographic area. DEQ has divided the state into 91 watershed planning areas to facilitate development of TMDL/water quality restoration plans.

**Ustic Soil Moisture Regime:** it is wetter than aridic soil moisture regime and moisture is present during the time of year that is suitable for plant growth.

**Wilderness Characteristics:** these attributes include the area's size, its apparent naturalness, and outstanding opportunities for solitude or a primitive and unconfined type of recreation. They may also include supplemental values.

**Woodland:** forest communities occupied primarily by noncommercial species such as juniper, mountain mahogany, or quaking aspen groves. All western juniper forest lands are classified as woodlands, since juniper is classified as a noncommercial species. Woodland tree and shrub canopy cover varies, but generally individual plant crowns do not overlap.

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