East Bench Watershed Environmental Assessment

DOI-BLM-MT-B050-2009-0002-EA

Dillon Field Office

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Table of Contents

List of Tables ii

1.0 Purpose of and Need for the Proposed Action 1
- 1.1 Introduction and Background 1
- 1.2 Proposed Action 2
- 1.3 Purpose and Need for the Action 2
- 1.4 Issues 4
- 1.5 Scope of this Environmental Analysis – Scope, Plan Conformance, Critical Elements, and Issues 8
- 1.6 Decisions to be Made 10
- 1.7 Applicable Legal and Regulatory Requirements 10
- 1.8 Coordination Requirements 11

2.0 Description of Alternatives 12
- 2.1 Process Used to Formulate Alternatives 12
- 2.2 Alternatives Considered but Eliminated from Further Analysis 12
- 2.3 Description of Alternatives 14
- 2.4 Summary Comparison of Alternative Actions 32

3.0 Affected Environment 35
- 3.1 General Setting 35
- 3.2 Description of Affected Issues, Resource Concerns and Critical Elements 35

4.0 Environmental Consequences 46
- 4.1 Introduction 46
- 4.2 Predicted Effects of Alternatives 46
- 4.3 Cumulative Effects for All Alternatives 70

5.0 List of Preparers - Consultation/Coordination 76
- 5.1 List of Preparers 76
- 5.2 Consultation/Coordination 76

Glossary of Terms 78
References 83
Appendices
- Appendix A – Maps
- Appendix B – East Bench Watershed Monitoring Plan
- Appendix C - Sensitive Plant Species and Wildlife Species Biological Evaluations

List of Tables

Table Page

1.1 Determination of Standards by Allotment 3

1.2 Critical Elements of the Human Environment 9

2.1 Current EBW Grazing Allotments Summary 16

2.2 Current Authorized Use for Garden Creek Isolated 21

2.3 Current Authorized Use for McHessor Creek and McHessor Creek Isolated 22

2.4 Current Authorized Use for Middle Fork 22

2.5 Proposed Authorized Use for Middle Fork – Alternative B 23

2.6 Proposed Pasture Rotation for Middle Fork – Alternative B 23

2.7 Current Authorized Use for Stone Creek 24

2.8 Proposed Authorized Use for Stone Creek – Alternative B 24

2.9 Proposed Pasture Rotation for Stone Creek – Alternative B 24

2.10 Forest and Woodland Treatments - Alternative B 25

2.11 Proposed Authorized Use for Middle Fork-Alternative C 28

2.12 Middle Fork Allotment Proposed Pasture Rotation - Alternative C 28

2.13 Proposed Authorized use foe Stone Creek - Alternative C 29

2.14 Stone Creek Allotment Proposed Pasture Rotation 29

2.15 Proposed Forest and Woodland Treatments – Alternative C 30

2.16 Comparison of Proposed Alterntives by Allotment 32

2.17 Comparison of Proposed Alternatives for Conifer Treatments 34

2.18 Comparison of Proposed Alternatives for Travel Management Actions 34

4.1 Summary of Proposed Projects on All Grazing Allotments by Alternative 56

1.0 Purpose of and Need for the Proposed Action

1.1 Introduction and Background

The East Bench Watershed (EBW) is located in Madison and Beaverhead Counties, Montana. The EBW drains portions of the Ruby Mountains range and lies within Townships South 5-8 and Ranges 5-7 West, Montana Principal Meridian (Map 1, Appendix A).

The EBW covers public lands administered by the Bureau of Land Management (BLM) in 14 grazing allotments. The EBW includes un-allotted public land within the watershed and the northwestern portion of the Ruby Mountains Wilderness Study Area (RMWSA).

The EBW follows grazing allotment boundaries and includes some allotments that are only partially within the watershed. Watersheds are defined by natural topographical boundaries (ridgelines/drainages). Grazing allotment boundaries are determined by previous BLM decisions based primarily on land ownership and may not follow topographical features. Therefore, some of the grazing allotments fall within one or more watersheds or hydrologic units.

For various reasons, the public land in the North Fork AMP and Belmont South Isolated grazing allotments had not been assessed prior to 2008. Although they are part of the Ruby River Watershed, they were included in the EBW assessment to ensure compliance with the Congressional mandate that all grazing permits and leases are fully processed, which includes assessing all grazing allotments for the five Standards of Rangeland Health (Standards), by fall 2009 (43CFR 4180).

There are approximately 211,000 total acres of land in the EBW, 23,000 of which are public land administered by the BLM. Grazing allotments in the EBW contain 17,479 acres of BLM administered land, including about 6,000 acres within the RMWSA. An additional 5,374 acres of public land administered by the BLM are either un-allotted or un-leased. This environmental assessment (EA) addresses only BLM-administered public land within the watershed.

In 2008, an interdisciplinary team (IDT) assessed BLM land in the EBW for the five Standards of Rangeland Health. The Standards are: Upland Health, Riparian Health, Water Quality, Air Quality, and providing for Biodiversity. The EBW Assessment Report described the condition/function of resources within the assessment area to the Authorized Officer. The EBW Assessment Report and the Authorized Officer's Summary and Determination have been released to the public and are available for review at the Dillon Field Office, or on the internet at http://www.blm.gov/mt/st/en/fo/dillon_field_office.html.

The condition/function and recommendations in the EBW 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 EA was completed in accordance with established procedures to analyze and implement area, allotment 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 Proposed Action

The BLM Dillon Field Office proposes to renew term grazing permits on 14 grazing allotments within the watershed. BLM also proposes to improve land health and enhance biodiversity on BLM administered public lands within the EBW by:

- Restoring and/or maintaining riparian, wetland and aquatic habitats through revised livestock grazing management, construction of rangeland projects, and/or implementing vegetative treatments.
- Restoring and/or maintaining historic density, structure, and species composition of forest, woodland and aspen habitats through mechanical treatments, commercial timber harvest and prescribed fire.
- Maintaining and/or enhancing sagebrush steppe habitat (species composition and structure).
- Eradicating new and containing existing noxious weed and invasive species infestations.
- Reducing soil erosion and providing access to public lands through modifications to motorized travel route designations.

1.3 Purpose and Need for the Action

This EA is in direct response to land health condition/function and recommendations identified in the EBW Assessment Report. In the Assessment Report, the IDT described several causal factors, which, when combined, negatively impact the biological, physical, and ecological processes in the EBW. As a result, the Authorized Officer determined that one or more of the Standards are **not met** in five of the 14 grazing allotments, the Stone Creek un-allotted parcel, and the RMWSA.

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…" (43 CFR 4180.1 (a)), if an assessment determines one or more of the Land Health Standards are not being met.

Table 1.1 lists the Authorized Officer's determination of each standard in 14 grazing allotments, the portion of the RMWSA within the watershed, and the Stone Creek un-allotted parcel.

Table 1.1: Determination of Standards by Allotment

Allotment, Number, Category* & Acreage	Are Land Health Standards Met?				
	Uplands	**Riparian**	**Water Quality**	**Air Quality**	**Biodiversity**
Belmont South #20320 (C) Acres: 255	Yes	Yes	NA	Yes	Yes
Big Sheep #10513 (C) Acres: 499	Yes	Yes	#	Yes	Yes
Carter Creek #10534 (C) Acres: 282	Yes	Yes	#	Yes	Yes
Garden Cr. Iso. #30601 (C) Acres: 1176	Yes	**NO**	#	Yes	Yes
Hoffman Cr. Iso. #10511 (C) Acres: 285	No	NA	NA	Yes	Yes
Lark Isolated #30678 (C) Acres: 1025	Yes	NA	NA	Yes	Yes
McHessor Cr. #10530 (I) Acres: 4364	Yes	**NO**	**NO[1]**	Yes	Yes
McHessor Cr. Iso. #10680 (C) Acres: 967	Yes	NA	NA	Yes	Yes
Middle Fork #20525 (I) Acres: 1818	Yes	**NO**	**NO[1]**	Yes	**NO**
North Fork AMP #10482 (M) Acres: 1736	Yes	Yes	NA	Yes	Yes
Nyhart #20470 (C) Acres: 782	Yes	Yes	#	Yes	Yes
Spring Canyon #10527 (C) Acres: 515	Yes	NA	NA	Yes	Yes
Stone Creek #10498 (I) Acres: 3699	Yes	**NO**	**NO[1]**	Yes	Yes
Stone Cr. Isolated #10674 (C) Acres: 39	Yes	NA	NA	Yes	**NO**
Stone Creek Un-allotted Reach # 421 Acres: 39	Yes	**NO[1]**	**NO[1]**	Yes	**NO**
Ruby Mountain RMWSA; Stream reaches #881 & 880 (1 mile)	Yes	**NO[**]**	#	Yes	Yes

* Categories are assigned to allotments based on resource management goals: I=improve, M=maintain, C=custodial ** Reach 881 in RMWSA above Garden Cr. Iso., and reach 421 on un-allotted parcel did not meet standard. [1] McHessor Creek and Stone Creek are on the Montana Department of Environmental Quality (DEQ) 303(d) list of impaired streams. [#]The Montana Department of Environmental Quality (DEQ) has been given the responsibility for making water quality determinations and has completed its evaluation of 303(d)-listed streams. Tributary streams in the EBW are not on the 303(d) list, are not priority streams, and are not scheduled to be evaluated by the DEQ.

The Authorized Officer determined that livestock grazing impacts are contributing to one or more of the Standards not being met in four grazing allotments, along one mile of Big Dry Creek in the RMWSA, and on ¼ mile of Stone Creek flowing through an un-allotted parcel of BLM land. 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: Garden Creek Isolated, McHessor Creek, Stone Creek and Middle Fork.

1.4 Issues

1.4.1 Description of Issues, Resource Concerns and Objectives

Primary resource issues and related resource concerns were identified during the EBW Assessment and the public scoping process. A range of management alternatives to address these resource issues and concerns are described in Chapter 2. The predicted effects of each alternative to these issues and resource concerns have been analyzed in Chapter 4.

For purposes of this document, issues will have a direct bearing upon the proposed action and the process of how the purpose and need will be achieved, and are used to drive the development of alternatives. Resource concerns do not necessarily drive the development of alternatives, but are used to analyze and disclose the effects of actions proposed in the alternatives.

Two primary land health issues and five additional resource concerns are listed below. A brief description or explanation and management objectives for each issue and resource concern are included. Progress toward meeting some objectives can be quantifiably measured, e.g. acres of prescribed burns completed. Others, like reducing stream bank impacts and sediment input into streams, are evaluated over time by long term trend indicators such as relative changes in riparian vegetation composition and abundance and/or channel width/depth ratio.

Additional information about methodologies and documented resource concerns can be found in the EBW Assessment Report which is available at the Dillon Field Office.

Issue # 1: Riparian, Wetland, Aquatic Habitat 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 riparian health standard was not met in four grazing allotments and on three stream reaches in an un-allotted parcel and the RMWSA. The EBW Assessment Report documents several resource concerns including alteration of stream morphology (channel shape and gradient) with resultant over-widening, reduced access to floodplains, and channel entrenchment. Impacts to vegetation included some loss of species diversity and composition, reduced vegetative cover, limited species recruitment and regeneration, reduced structural diversity and decreased vigor of streamside vegetation. Increasing juniper cover is adversely affecting deciduous riparian habitat on some stream reaches in the EBW.

These conditions were attributable to several factors including livestock grazing, conifer expansion, mining (current and historic), wildlife browsing, sedimentation from roads, and off-road vehicle use in localized areas.

Objectives

- Restore stream dimension, pattern and profile to the natural range of variation where concerns were documented.
- Restore deciduous woody and herbaceous riparian habitat types, with emphasis on reducing juniper and disturbance induced species composition.
- Increase deep-rooted riparian vegetation (sedges, willows) where decreased composition was documented.
- Reduce sediment loads into streams where uses on public lands are causing increased sediment.
- Maintain/enhance westslope cutthroat trout (WCT) habitat in Trout Creek, Stone Creek, and the Middle Fork.
- Maintain/enhance habitat for cold water fisheries in occupied streams within the watershed.
- Restore, maintain and/or enhance native vegetation and hydrology of springs, seeps and wet meadows with emphasis on ecological function and biodiversity.
- Protect developed springs (spring sources) from impacts by ungulates.
- Prevent spread of noxious and invasive species into and within the watershed, and reduce or eradicate existing infestations.

Issue # 2: Forest and Woodland Health and Fuels Management

Evidence of historically recurring fire is found in forests and woodlands throughout the EBW. Fire exclusion, caused primarily by fire suppression and livestock management on rangelands over the last century, has changed the structure, density, and species composition within forest and grassland communities (fire dependent ecosystems). Conifer densities have increased within forested stands, particularly within Douglas-fir forest types. Forested stands have more continuous cover than occurred historically, and there has been a loss of mountain mahogany, aspen, and mountain meadows due to conifer expansion. The recent drought and increased densities has resulted in forest susceptibility to insect and/or disease infestations and subsequent

mortality. The increase in conifer density and mortality from insects and disease has led to a decrease in forest health and an increase in fuel loading throughout forested areas in the EBW.

Objectives

- Restore/maintain historic range of variation in forest and woodland habitats (density, structure, and species composition).
- Improve forest health and increase resiliency to insects, disease, drought and wildland fire.
- Where possible, salvage dead or dying forested habitats from epidemic insect activity and treat remaining healthy stands to increase their resistance to insect activity. Utilize forest products where economically feasible.
- Maintain/enhance existing aspen and mountain mahogany stands by promoting successful regeneration.

Resource Concern # 1: Sagebrush Steppe Habitat and Associated Species

Important sage grouse habitat within the EBW is located south of Spring Creek in the Stone Creek, Middle Fork, Nyhart, Lark Isolated, Hoffman Isolated, Carter Creek and Big Sheep allotments. Sagebrush habitat in this area is meeting sage grouse requirements as outlined in two publications: *BLM's National Sage Grouse Habitat Conservation Strategy* and the *Management Plan and Conservation Strategies for Sage Grouse in Montana*.

Loss of some sagebrush cover was noted in the Stone Creek allotment. In several areas, located on both public and private land, conifer expansion into mountain big sagebrush habitat is reducing sagebrush abundance and productivity.

Objectives

- Maintain residual herbaceous cover for ground nesting birds, specifically sage grouse.
- Prevent spread of noxious and invasive species into and within the watershed, and reduce or eradicate existing infestations.

Resource Concern # 2: Travel Management

There are approximately 21 miles of designated motorized vehicle routes on BLM administered public land within the EBW providing access to the Ruby Mountains and Sweetwater Hills. Public recreational use of these routes occurs primarily during the big game hunting season.

Objectives

- Implement the Dillon Resource Management Plan (RMP) Travel Management Plan.
- Maintain motorized wheeled vehicle access to those areas where it already exists, and improve access to public lands where opportunities are currently limited.
- Maintain or improve opportunities for big game hunting, fishing, wildlife viewing, horseback riding, and other backcountry recreation.
- Reduce unauthorized (non-designated route travel) motor vehicle use, especially during the hunting season.

Resource Concern # 3: Special Status Species
Special Status Species (SSS) include federally listed Threatened, Endangered, Proposed and Candidate Species, and BLM Sensitive Species. See the Biological Evaluations (BE) on Threatened and Endangered (T&E) species, Special Status Plants, and Special Status Fish in Appendix C.

Objective

- Provide habitat to maintain viable and diverse populations of native plant and animal species, including special status species.

Resource Concern # 4: Socioeconomics
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.

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

Businesses in Dillon, Twin Bridges, and Sheridan are likely to profit from recreational uses that occur in the EBW area. In addition to dispersed recreational activities, the BLM currently provides outdoor recreational opportunities to the public by authorizing two commercial operators access to BLM lands in the Ruby Mountains and Sweetwater Hills.

Table 56 on page 286 of the Proposed Dillon RMP and Final Environmental Impact Statement (EIS) shows employment and labor income response related to livestock grazing management, timber management and recreation use for the area influenced by the Dillon Field Office.

Objective

- Continue to contribute to the local economy by providing an opportunity for sustainable uses on public land through livestock grazing, utilization of forest products, and recreational activities.

Resource Concern # 5: Wilderness Characteristics
The EBW contains a portion of the RMWSA which is managed in accordance with the *Interim Management Policy (IMP) for Lands Under Wilderness Review* (BLM Handbook H-8550-1). The RMWSA contains a total of 26,611 acres, of which 11,326 acres are within the EBW. A total of 6,855 acres within the EBW are recommended suitable for wilderness designation. Important wilderness characteristics that were identified in the Statewide Wilderness Report (1991) included: naturalness (with some exceptions), outstanding opportunities for solitude, and primitive and unconfined recreation. Special features of the RMWSA included outstanding scenic values.

Objectives

- Maintain or improve the wilderness characteristics that were present at the

time of the wilderness inventory (1979-80).

- Reduce occurrence and impacts of unauthorized motor vehicle use.

1.5 Scope of this Environmental Analysis – Scope, Plan Conformance, Critical Elements

1.5.1 Scope

The scope of the proposed action includes implementing commercial and non-commercial vegetation treatments, prescribed burning, minor changes in travel management, and authorizing livestock grazing. 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, roads, and stream crossings.

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

1.5.2 Conformance with BLM Land Use Plans, Programs, and Policies

This document is tiered to the Dillon RMP approved in 2006. The management alternatives considered are in conformance with the RMP, and 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. Specific to the EBW, the southern Ruby Mountains were identified in the Dillon RMP as one of the three geographic areas prioritized for treatment to meet the objectives for Forest and Woodland Vegetation and Forest Products (Forest and Woodland Management, Actions 4 and 5). 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 the Federal Land Policy and Management Act, 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 policies and Federal regulations.

All treatments of invasive species in the proposed action will conform to the 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, and the Management Plan and Conservation strategies for Sage Grouse in Montana were also considered during alternative development.

1.5.3 Critical Elements of the Human Environment

Critical Elements of the Human Environment, as defined by BLM Manual 1790-1, must be considered in all BLM EAs and EISs. The scoping process indicated which Critical Elements 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
Air Quality			X	Burning of slash materials 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	X			
Cultural Resources		X		See features common to all alternatives in section 2.3.1, and a broader discussion of Cultural Resources in section 3.2.4.4
Environmental Justice		X		
Farmland (prime or unique)	X			
Floodplains[1]			X	Discussed under Issue # 1 – Riparian, Wetland and Aquatic Habitat and Associated Species.
Hazardous and Solid Wastes	X			
Invasive Non-native Species			X	Discussed under Issue # 1, Riparian, Wetland and Aquatic Habitat and Associated Species, and Issue #3, Sagebrush Steppe Habitat and Associated Species
Native American Religious Concerns	X			
Threatened & Endangered (T&E) species			X	See BE in EA file MT-B050-2009-02 in the Dillon Field Office.
Water Quality (drinking or ground)			X	Discussed under Issue # 1 – Riparian, Wetland and Aquatic Habitat and Associated Species.
Wetlands/Riparian Zones			X	Discussed under Issue # 1 – Riparian, Wetland and Aquatic Habitat and Associated Species.
Wild and Scenic Rivers	X			

Critical Element	Not present	Present, but not affected	May be affected*	Comments
Wilderness Characteristics			X	Discussed under Resource Concern #5 – Wilderness Characteristics
* An "X" in this box means that the resource is further evaluated in the affected environment and environmental impacts sections. [1] 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.				

1.6 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 habitat, maintaining/enhancing sagebrush steppe habitat, improving forest and woodland conditions, enhancing biodiversity, adjusting motorized route designations, and revising or renewing term grazing leases. Revised grazing leases would contain appropriate terms and conditions to initiate significant and measurable progress towards achieving the Standards and established goals and objectives within the EBW.

The Dillon Field Manager will choose the alternatives that best addresses the issues and resource concerns identified through public scoping and in the EBW Assessment Report.

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 EBW management plan can proceed.

Implementation of the Decisions issued as a result of this EA will begin in 2009, 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.

1.7 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
- 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

1.8 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 EBW 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.

2.0 Description of Alternatives

This chapter will describe the alternative development process, alternatives considered but eliminated from further analysis, and alternatives that will be carried forward and fully analyzed. Up to three management alternatives will be fully analyzed: the No Action Alternative (continuation of current management) and up to two action alternatives. Based on identified issues, various combinations of allowable use levels, grazing strategies, stocking rates, vegetative treatments and program specific projects were discussed at length and carefully considered during scoping and the formulation of the alternatives by the IDT.

2.1 Process Used to Formulate Alternatives

The development of all the alternatives is guided by provisions of FLPMA, NEPA, and the planning criteria listed in Chapter 1. Other laws, regulations and policies also directed alternative considerations and focused the alternatives on appropriate watershed or allotment level decisions. Chapter 1 discloses the driving issues and resource concerns considered during alternative development (section 1.4). The Affected Environment (Chapter 3) discloses resource concerns and other factors considered during the development of the alternatives.

Three primary resource issues and four additional resource concerns were identified by the IDT during the EBW assessment process. Up to two management action alternatives, Alternatives B and C, described below, have been developed to address specific resource problems. The alternatives are designed, and intended, to facilitate affected resources making significant progress towards meeting the Standards of Rangeland Health within specific allotments or on a broader landscape scale. The alternatives would also achieve site-specific resource objectives where Standards were met.

Changes to livestock management, including structural projects, are being proposed in allotments where current livestock management has been determined to be a causal factor in the Riparian Health Standard not being met.

2.2 Alternatives Considered but Eliminated from Further Analysis

Proposed alternatives that would not make significant progress towards 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 within the EBW 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.

2.2.1 Elimination of Livestock Grazing

Eliminating livestock grazing from all BLM-administered lands in the watershed was considered, but eliminated from detailed study because it does not meet the purpose and need of this EA and it was previously analyzed in the Mountain Foothills EIS (March 1980). The recently updated and approved Dillon RMP identifies 17,479 acres of public land in the EBW as open to livestock grazing and 5,374 acres of land closed to livestock grazing, so a watershed wide "No Grazing" alternative would not be consistent with the Dillon RMP, would not meet the objectives for this planning effort, and is not consistent with the intent of other applicable acts, laws, and policies.

2.2.2 Prescribed Burning in Upper Spring Creek

Prescribed burning to reduce conifers expanding into sagebrush/grasslands within an identified unit in the upper Spring Creek area was considered, but eliminated from detailed study due to the low likelihood of meeting project objectives. Snow accumulations melt slowly on the potential treatment area due to the relative high elevation and a north-facing aspect. Past experience has proven that the opportunities to implement a prescribed burn, which would meet resource objectives, are very limited given the environmental parameters of the area.

2.2.3 Four Pasture Grazing Rotation in Stone Creek Allotment

Creating an additional pasture by reconstructing and moving the Talc Mine fence in the Left Fork pasture of the Stone Creek allotment was considered, but eliminated from detailed study due to several physical and topographical factors. The northern expansion of the Treasure Talc Mine prevents cattle from accessing the pasture from the south. North of the mine's haul road the terrain is too steep for herding cattle effectively into and out of the area. Also, the haul road, which would have been the southern boundary of the newly incorporated pasture, is very wide and used extensively in the mining operations. Constructing an effective cattle barrier across the road would be problematic.

2.2.4 Reducing the Season of Use in the McHessor Creek allotment

A short 30 day grazing season in the McHessor Creek allotment to enhance WCT habitat in Trout Creek (reach 425) was considered, but eliminated from detailed study due to land ownership patterns within the allotment, and the presence of the RMWSA. To effectively control access to BLM land within the allotment, fences would have to be built along the boundaries with private land and state land. A total of 15 miles of new internal fence would have to be constructed. Much of the terrain is very steep and heavily timbered so fencing is not practical. The average cost of 4 strand barbed wire fence is $5,000 per mile, more in steep and rocky country, so the cumulative cost of implementation would be in excess of $75,000. Maintenance would be expensive and time consuming. Impacts to the landscape associated with construction would include tree removal and new two track trails which would encourage repeated all-terrain vehicle (ATV) use after project completion. All the fences would have to be built on private or state land to ensure compliance with the IMP for the RMWSA. Technically, fences built outside the RMWSA are in compliance with the letter of the IMP, but the presence of 15 miles of fence on the RMWSA boundary would have impacts to the visual and other wilderness values diminishing the wilderness characteristics of the area. Fifteen miles of fence in this terrain and habitat would also present substantial entanglement hazards for wildlife.

2.3 Description of Alternatives

2.3.1 Features Common to all Alternatives, Including the No Action

Livestock Management
Term Grazing Leases for nine allotments will be renewed under current terms and conditions. All have been determined **not** to have resource issues or concerns relating to current livestock management. These allotments are: Belmont South Isolated, Big Sheep, Carter Creek, Hoffman Creek Isolated, Lark Isolated, McHessor Creek Isolated, North Fork AMP, Nyhart and Spring Canyon.

The grazing lease for the Stone Creek Isolated allotment (40 acres) will be reissued under current terms and conditions while the BLM pursues disposal (Map 2, Appendix A). If the disposal process is unsuccessful the lease will remain in effect for the full ten year term.

Temporary electric fence, livestock supplement placement, riding, and herding are encouraged and, if warranted, may be required as 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 live water source and in areas naturally devoid of vegetation.

Projects

- Water developments and associated stock tanks no longer in use would be removed, but spring fence exclosure fences may be retained and maintained.
- Wildlife escape ramps would be installed in all water troughs.
- Existing BLM fences that impede wildlife movement would be modified or rebuilt to BLM specifications on a prioritized schedule. Dysfunctional or unnecessary fences on public land would be removed.

Flexibility
With prior approval, flexibility will be authorized for the season of use on each allotment to address varying local weather and forage conditions on an annual basis. The beginning and ending date may vary up 7 days depending on variations in weather and forage. Livestock may need to be removed from a specific pasture prior to the maximum number of days specified in the grazing plans rotation schedule. If this occurs, the grazing dates for the next pasture will be adjusted proportionally. Conversely, if annual production is unusually high, livestock may be allowed to remain in a given pasture for up to 5 additional days and the remainder of the rotation schedule adjusted accordingly. The maximum authorized AUMs, as specified in the Term Grazing Permits, cannot be exceeded by allowing this flexibility.

After consultation with the BLM, and written approval, lessees may be required to adjust the pre-planned pasture grazing sequence, or allotment management plan (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 animal unit months (AUMs), or season of use, as specified in the Term Grazing Leases cannot be exceeded by allowing this flexibility.

Fire Management
The management of naturally occurring wildfire in the northern portion of the Ruby Mountain RMWSA will continue as defined in the Dillon RMP and Dillon Fire Management Plan. Fire is desired in this area and may be managed to improve forest health and watershed conditions. Suppression will be initiated on fires that do not fall within defined parameters or are a threat to public safety or private property.

Travel Management and Roads
Travel management as prescribed in the Dillon RMP Travel Management Plan will be implemented. 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 will 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 Weeds
Management of noxious weeds will continue in cooperation with Madison and Beaverhead Counties, 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 actively cooperate, participate, and support the BLM's weed management strategies, will become 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 will 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 will be mitigated through project redesign or abandonment.

Sagebrush habitat within the EBW has been inventoried to identify important sage grouse seasonal habitats with emphasis on locating leks and brood-rearing habitats. At this time, there are no known active sage grouse leks within the watershed's boundaries, and relatively little activity has been observed or recorded. Radio collars have been placed on grouse captured, and released, in the Sweetwater area a few miles southeast of the EBW. Radio telemetry based data from this population is being compiled. Monitoring plots will be established within the EBW if collared birds migrate into the watershed or nesting hens are located.

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

Wilderness
Manage the RMWSA in accordance with the Interim Management Policy for Lands Under Wilderness Review (BLM Handbook H-8550-1).

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 will 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 will be mitigated through project abandonment or redesign. Care will be taken to avoid and protect significant cultural resources and any standing structures during the course of any proposed prescribed fire treatment. 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.

Monitoring
Under all alternatives, resource monitoring will be conducted 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 The No Action Alternative, livestock management would continue under the current Terms and Conditions in all 14 grazing allotments (Table 2.1). No new range improvement projects would be constructed.

Table 2.1: Current EBW Grazing Allotments Summary

Allotment, Number & Category	Grazing Authorization Number	Season of Use	Livestock Number and Kind	Grazing System	BLM Active AUMs	BLM Acres	Other Ownerships Acres	Total Acres
Belmont South Isolated #20320 Custodial	2500150	03/01-02/28	26 Indigenous	Seasonal use with private	38	255	5620	5940
Big Sheep #10513 Custodial	2505765	05/01-11/19	28 Sheep 5 Cattle	Seasonal use with private	73	499	0	499
Cater Creek #10534 Custodial	2501490	05/15-11/14	3 Cattle	Seasonal use with private	23	282	0	282

Allotment, Number & Category	Grazing Authorization Number	Season of Use	Livestock Number and Kind	Grazing System	BLM Active AUMs	BLM Acres	Other Ownerships Acres	Total Acres
Garden Creek Isolated #30601 Custodial	2505730	05/15-11/01	12 Cattle	Seasonal use with private	66	1176	1876	3052
Hoffman Creek Isolated #10511 Custodial	2505764	05/01-11/25	13 Cattle	Seasonal use with private	35	285	0	285
Lark Isolated # 30678 Custodial	2505770	05/01-11/25	13Cattle	Seasonal use with private	89	1025	4	1029
McHessor Creek #10530 Improve	2055783	07/01-10/15	91 Cattle	Seasonal use with private	159	4364	2710	7074
McHessor Creek Isolated #10680 Custodial	2505783	06/01-11/15	1 Cattle	Seasonal use with private	6	967	3195	4162
Middle Fork #20525 Improve	2505617	06/20-10/15	225 Cattle	Rest Rotation	862	1818	1520	3338
	2505030		112 Cattle					
North Fork AMP #10482 Maintain	2505733	03/01-04/30	371 Cattle	Seasonal use with private	222	1736	5587	7323
		12/01-02/28	371 Cattle					
Nyhart #20470 Custodial	2505765	05/01-11/30	30 Sheep 5 Cattle	Seasonal use with private	85	782	0	782
Spring Canyon #10527 Custodial	2500129	06/15-09/01	15 Cattle	Seasonal use with private	38	515	0	515
Stone Creek #10498 Improve	2505749	07/15-09/30	600 Cattle	Rest Rotation	776	3699	4681	8380
Stone Creek Isolated #10674 Custodial	2505749	10/01-10/31	6 Cattle	Seasonal use with private	6	39	0	9

Under the No Action Alternative, all other currently authorized activities (recreation permits, mineral development, etc.) would continue as permitted. No forest and woodland treatments, changes to travel management designations, or other vegetative treatments would be implemented. Treatment of noxious weeds would continue as in the past with roads, trails, and

washes (spread vectors) being the primary targets. An average of 25 acres would be treated with herbicides annually within the EBW under the No Action Alternative.

2.3.3 Features Common to Alternatives B and C

This section covers proposed actions that would be implemented regardless of which action alternative or combination of action alternatives is chosen by the Authorized Officer.

Livestock Management

- Livestock management changes would be initiated during the 2009 grazing season. Full implementation that is not dependent on other proposals, i.e. 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.
- Annual utilization guidelines on cool season bunch grasses would be 50% (to maintain plant health/vigor) or when livestock use on sedges averages four inches along the greenline on non-fisheries or non-native fisheries streams and six inches on WCT streams, whichever occurs first. These annual use guidelines would be applicable to all allotments included in the EBW as a tool to help determine moves between pastures, and in conjunction with long term trend data to determine management effectiveness.

Forest and Woodland Treatments

- Unit boundaries for commercial harvest units are shown on Map 3 in Appendix A. Actual harvested areas would be within the units identified, but may not cover the entire area within unit boundaries.
- Within commercial harvest units, conventional ground-based harvesting equipment and/or helicopter logging will be analyzed.
    - Ground based harvest techniques would include hand or machine felling (on slopes <45%) and then tractor and/or cable yarding the merchantable timber to landings. Ground-based harvest equipment generally requires yarding distances of less than 1,500' for practical operations and access to log landings.
    - Helicopter harvesting would include hand or machine felling (on slopes <45%) and then helicopter yarding the merchantable timber to landings. Helicopter yarding distances would be up to one mile but usually under ½ mile.
- 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.
- Harvest activity and associated operations in the Stone Creek units would be allowed year-round.
- Harvest activity and associated operations in the Spring Creek unit would be permitted between December 2 and October 15.
- Silvicultural prescriptions were designed to reduce the hazard for Douglas-fir beetle activity. If a Douglas-fir beetle outbreak occurs before treatment is implemented, prescriptions would be altered to implement salvage and sanitation harvests in areas of Douglas-fir beetle activity as follows:
    - Harvest and remove green Douglas-fir trees with evidence of successful beetle attack.

- Harvest and remove up to 90% of recent dead (red-needled) Douglas-fir.
- Harvest and remove up to 80% of older dead Douglas-fir.
- Leave the majority of smaller Douglas-fir trees (generally less than 12" DBH) that do not have evidence of successful attack by Douglas-fir beetle.
- Areas within the treatment unit unaffected by Douglas-fir beetle would be treated under the same prescriptions as described in the Forest and Woodland Treatments sections of Alternatives B and C (Sections 2.3.4 and 2.3.5).

- At the minimum, an average of two to five existing snags or green recruitment snags would be left per acre within all commercial harvest units.
- Retention patches of uncut timber would be scattered throughout the harvest units to provide wildlife screening cover and reduce sighting distances.
- If market conditions permit, biomass material may be removed from within treatment units. Sufficient residual biomass material would be left on site to maintain nutrient recycling and desirable micro-site conditions.
- Log landings would be reseeded with native grasses/forbs.
- State of Montana Best Management Practices (BMPs) and the Streamside Management Zone (SMZ) laws would be followed for all forest health 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.
- Existing two track or currently closed roads that do not meet State of Montana BMP standards would either be upgraded to meet BMPs or would not be used for forest product removal. Use of existing public access roads would be evaluated for additional watershed protection measures as needed on a case-by-case basis.
- Construction standards on new temporary roads would be to the minimum required for safe transport of merchantable material. Road locations would be designed to minimize stream or wet area crossings. Exact road locations may be adjusted for archaeological and/or sensitive plant clearances, to avoid wet areas, to adhere to SMZ laws, to provide best access for yarding, or to reduce the amount of road building. Road mileage amounts identified in this EA will not be exceeded without additional NEPA clearance.
- All currently closed two track and new temporary roads used for forest health treatments would be closed upon the completion of forest management activities except in Unit Stone 1 as specified in section 2.3.4 below. Post-treatment road closures would be accomplished by placing slash material on the road surface to preclude vehicle use, and/or re-contouring, and reseeding with native grasses/forbs.
- An approved burn plan would be completed prior to implementing prescribed burns.
- 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 will be required following burns to allow re-growth and re-establishment of vegetation in the treated areas.
- Temporary fencing or hot tape (electric fence) may be used to allow the appropriate rest before or after the prescribed burns.
- Prescribed burning treatments to consume residual slash and/or to kill understory conifers less than 30 feet tall would be considered within all commercial harvest units, and would take place within five years following completion of harvest operations.

- Treatment of noxious weeds and cheatgrass in association with forest and woodland treatment units would be determined on a case-by-case basis.

Noxious Weeds

- Work with Beaverhead and Madison counties to establish a community spray day on Stone Creek and McHessor Creek.
- Seed head weevils, root boring weevils, and root boring moths, 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.
- When a biological control becomes available for houndstongue, it would be considered for release on infestations within the watershed.

Water Developments

- All applicable State and Federal Permits for water developments would be obtained and the terms and conditions applied.
- Springs and natural wet meadows would be protected when developing water for livestock. Spring sources, and in most situations, associated riparian wetland habitat would be fenced to exclude livestock use on developed springs. Adequate water would be left at the spring source to maintain wetland hydrology, hydric soils, and hydric vegetation.
- 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.
- No new roads would be authorized as a result of water developments. Permit holders may be authorized to travel along pipeline routes to perform maintenance as defined in the term grazing permit.
- All old materials (pipeline, troughs, head boxes, etc) would be cleaned up and removed when springs are re-developed or maintained.
- Soil disturbance resulting from pipeline installation would be seeded with a native seed mix following construction.

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.

Travel Management

- Designate open-to-motorized-wheeled-vehicles approximately 1.5 miles of previously constructed timber access roads, and close approximately 0.75 miles of a steep two-track road north of the Treasure Mine on the Stone Creek Road (T7S R 6W sections 11, 12, & 13), (Map 4, Appendix A).
- Sign the old two-track route going up Ladder Canyon as closed.

2.3.4 Description of Alternative B

Livestock Management

This alternative addresses riparian concerns on four grazing allotments (Garden Creek Isolated, McHessor Creek, Middle Fork and Stone Creek), one un-allotted parcel, Stone Creek un-allotted, and the RMWSA. One or a combination of the following actions is proposed under this alternative: administrative changes, modification of grazing management plans, the construction or modification of range improvement projects, and/or the implementation of vegetative treatments.

Garden Creek Isolated Allotment *(Map 5, Appendix A)*

Livestock Management - Administrative Action

- Prohibit livestock trailing up Ladder Canyon along Big Dry Creek (reaches 880 and 881) (Map 5, Appendix A).
- Continue current terms and conditions of the grazing lease for Garden Creek Isolated allotment (Table 2.2).

Projects

- Construct jack and rail protective exclosures around the headbox, spring source and wetlands at Big Dry Spring development.

Travel Management

- Close approximately 0.4 miles of road north of Big Dry Creek to motorized vehicles, which is currently designated as open, in order to enhance elk hunting opportunities in that area.

Table 2.2: Current Authorized Use for Garden Creek Isolated

Allotment	Number/Kind	Begin Date	End Date	% Public Land	Active AUMs
Garden Creek Isolated	12 cattle	05/15	11/01	100	66

McHessor Creek Allotment *(Map 6, Appendix A)*

Livestock Management

- Continue current terms and conditions for the McHessor Creek and McHessor Creek Isolated allotments (Table 2.3).

Projects

- Maintain and/or re-construct portions of the Malesich/Walsh boundary fence (1.2 miles) between the Spring Creek pasture and private land to prevent unauthorized use along Spring Creek reach #400.
- Construct a corridor fence, approximately 50 feet wide, on public and private land along Trout Creek (reaches 426 and 425). The lower ½ mile running through narrow, rocky and wooded terrain, would be traditional four-strand barbed wire fence. The upper section of Trout Creek running through relatively open, narrow riparian meadows would be a three strand high tensile electric fence.
- Remove the wood culverts from Spring Creek reach #400

Table 2.3: Current Authorized Use for McHessor Creek and McHessor Creek Isolated

Allotment	Number/Kind	Begin Date	End Date	% Public Land	Active AUMs
McHesssor Creek	91 cattle	07/01	10/15	50	160
McHessor Creek Isolated	1 cattle	06/01	11/15	100	6

Middle Fork Allotment *(Map 7, Appendix A)*

Livestock Management

- Decrease annual AUM authorization by 15% to account for the AUMs not harvested in the rested pasture (Table 2.5).
    - Adjust active AUMs on the Hamilton Ranches grazing lease from 576 to 497 AUMs.
    - Adjust active AUMs on Lottco's grazing lease from 287 to 243 AUMs.
- Continue current seven pasture rest-rotation system implemented in 2003, which includes two privately owned pastures, used and rested, in conjunction with five pastures within the allotment containing public land. Each pasture would be rested every seventh grazing season (Table 2.6).
- After the completion of the Middle Fork fence (see projects), authorize grazing in the Middle Fork riparian pasture every third year for a maximum of seven days.

Projects

- Construct approximately 1.5 miles of three-strand high-tensile electric fence on the north side of the Middle Fork (reach 408), creating a riparian pasture. Two jack and rail water gaps would be included to provide livestock access to water.
- Using the water in the old Beaverhead mine reservoir, pump water to a storage tank, pipeline and two 1100 gallon watering troughs located along the ridge north of the Middle Fork (T7S R6W, section 23).
- Re-construct the Stone Creek Spring water development in the South Driveway pasture.

Table 2.4: Current Authorized Use for Middle Fork

Allotment	Number/Kind	Begin Date	End Date	% Public Land	Active AUMs
Middle Fork Hamilton Ranches	225 cattle	06/20	10/15	66	576
Middle Fork Lottco	112 cattle	06/20	10/15	66	287

Table 2.5 Proposed Authorized Use for Middle Fork – Alternative B

Allotment	Number/Kind	Begin Date	End Date	% Public Land	Active AUMs
Middle Fork Hamilton Ranches	194 cattle	06/20	10/15	66	497
Middle Fork Lottco (Pond Pasture only)	95 cattle	06/20	10/15	66	243

Table 2.6: Proposed Pasture Rotation for Middle Fork – Alternative B

Year, Lessee, Number	North Driveway	South Driveway	North Big Field	South Big Field	Pond	Beef (private)	Meadow (private)	Total Annual BLM AUMs
2009 Hamilton Ranches 225 cattle	07/20-08/16 28 days 137 BLM AUMs	09/19-10/10 21 days 103 BLM AUMs	**REST**	06/20-07/19 30 days 147 BLM AUMs		08/17-09/06 18 days	09/07-09/19 13 days	**387**
2009 Lottco 150 cattle					08/21-09/19 30 days 98 BLM AUMs			**98**
2010 Hamilton Ranches 225 cattle	06/20-07/17 28 days 137 BLM AUMs	09/04-09/18 15 days 73 BLM AUMs	09/19-10/15 27 days 132 BLM AUMs	**REST**	08/14-09/03 21 days 103 BLM AUMs	07/18-07/31 14 days	08/01-08/13 13 days	**445**
2010 Lottco 150 cattle								**0**
2011 Hamilton Ranches 225 cattle	**REST**	09/22-10/12 21 days 103 BLM AUMs	07/11-08/10 30 days 147 BLM AUMs	08/25-09/21 28 days 137 BLM AUMs	06/20-07/10 21 days 103BLM AUMs	08/25-08/11 13 days	08/11-08/24 13 days	**490**
2011 Lottco 150 cattle								**0**
2012 Hamilton Ranches 225 cattle	09/18-10/15 28 days 137 BLM AUMs	09/03-09/17 15 days 73 BLM AUMs	08/04-09/02 30 days 147 BLM AUMs	07/19-08/03 21 days 103 BLM AUMs	**REST**	06/20-07/05 16 days	07/06-07/18 13 days	**460**
2012 Lottco 150 cattle								**0**
2013 Hamilton Ranches 225 cattle	07/19-08/07 21 Days 103 BLM AUMs	07/04-07/18 15 days 73 BLM AUMs	09/07-10/11 35 days 171 BLM AUMs	08/08-09/06 30 days 147 BLM AUMs		**REST**	06/20-07/03 13 days	**494**
2013 Lottco 150 cattle					06/20-07/19 30 days 98 BLM AUMs			**98**
2014 Hamilton Ranches 225 cattle	08/20-09/10 21 days 103 AUMs	09/11-09/25 15 days 73 BLM AUMs	07/16-08/19 35 days 147 BLM AUMs	06/20-07/15 26 days 171 BLM AUMs		09/26-10/15 15 days	**REST**	**494**
2014 Lottco 150 cattle					09/16-10/15 30 days 98 BLM AUMs			**98**

2015 Hamilton Ranches 225 cattle	09/25-10/15 21 days 103 BLM AUMs	**REST**	06/20-07/19 30 days 147 BLM AUMs	07/20-08/16 28 days 137 BLM AUMs	09/09-09/24 16 days 78 BLM AUMs	08/30-09/08 10 days	08/17-08/30 13 days	**465**
2015 Lottco								**0**

*One pasture in the rotation would be rested each year. To compensate for the rested pasture, the number of active AUMs in the allotment would be reduced proportionally, but the season of use would remain intact. In order to harvest the allocated AUMs, herd size would vary up to 225 cow/calf pairs for Hamilton Ranches and up to 150 cow/calf pairs for Lottco.

Stone Creek Allotment *(Map 8, Appendix A)*

Livestock Management

- Shorten livestock season of use from 77 days to 70 days (10%). The adjusted season of use would be July 15 to September 23 (Table 2.8).
- The number of authorized cattle would remain 600.
- The number of active AUMs billed would be reduced to a maximum of 607, reflecting the shortened season of use.
- Actual Use billing would continue, which would reflect the actual number of AUMs consumed on an annual basis, not to exceed 607.
- Three pastures would be included in a three year rest-rotation system. Length of use in the Spring Creek, Mine Gulch and Left Fork pastures would not exceed 35 days in any given year (Table 2.9).

Projects

- Remove the Talc Mine pasture division fence (BLM project # 0160). Remove all materials associated with the old fence.
- Upgrade or reconstruct two water developments:
  - Left Fork North: New jack and rail exclosure fence and new trough.
  - Middle Fork Spring: Jack and rail exclosure replacement/expansion, and new trough.
- Maintain and expand exclosure fence around the spring source and associated wetland of the Left Fork South water development.
- Construct an additional water development off-site from upper Corral Creek, reach # 448.
- Construct jack and rail exclosure fences to protect three springs and associated wetlands that make up reach 401.

Table 2.7: Current Authorized Use for Stone Creek

Allotment	Number/Kind	Begin Date	End Date	% Public Land	Active AUMs
Stone Creek	600 cattle	07/15	09/30	44	677
Stone Creek Isolated	6 cattle	10/01	10/31	100	6

Table 2.8: Proposed Authorized Use for Stone Creek – Alternative B

Allotment	Number/Kind	Begin Date	End Date	% Public Land	Active AUMs
Stone Creek	600 cattle	07/15	09/23	44	607
Stone Creek Isolated	6 cattle	10/01	10/31	100	6

Table 2.9: Proposed Pasture Rotation for Stone Creek – Alternative B

Year	Spring Creek	Left Fork	Mine Gulch	Total Annual BLM AUMs
2009	07/15-08/19	REST	08/20-09/23	607
2010	REST	08/20-09/23	07/15-08/19	607
2011	08/20-09/23	07/15-08/19	REST	607

Stone Creek Un-allotted *(Map 2, Appendix A)*

Administrative Action

- Pursue the disposal of this 40 acre tract of public land.

<u>Riparian Juniper Treatments</u>

Stone Creek Allotment (Map 8, Appendix A)

- Mechanically remove all Rocky Mountain junipers within approximately 50 feet on both sides of the Corral Creek (reach 412) stream channel using chainsaws and other hand tools. Juniper would be cut and oriented along the channel to protect stream banks from ungulate traffic and allow riparian vegetation to regenerate. The goal would be to kill/remove 100% of the juniper within the riparian zone.
- Seed the riparian area with an appropriate native mix of herbaceous species to protect bare soil and banks from erosion and increase plant and wildlife biodiversity.
- Post treatment management may require a minimum of two growing seasons of rest from livestock use to allow vegetative response from existing or seeded understory vegetation. Orienting the felled juniper along the stream, temporary fencing, or hot tape may be used to allow the appropriate rest.

<u>Forest and Woodland Treatments</u>

Alternative B would implement mechanical treatments (commercial and/or non-commercial) and/or prescribed fire treatments in two units within the EBW to address forest and woodland health and fuels management.

Table 2.10 outlines the proposed units, objectives, treatment types, and the affected allotments under Alternative B. Unit locations and boundaries are shown on Map 3, Appendix A.

Table 2.10: Forest and Woodland Treatments - Alternative B

Unit Name	Allotment	Acres	Objective(s)	Treatment Type(s)
Stone1	Stone Creek/ Belmont	52	Salvage harvest dead/dying timber, reintroduce a diversity of age classes	Commercial harvest

Unit Name	Allotment	Acres	Objective(s)	Treatment Type(s)
SpringMahog	Stone Creek	313	Decrease conifer encroachment into mountain mahogany and sagebrush/grasslands	Mechanical and/or prescribed fire

Stone 1 – The objective of treating this unit would be to recover the economic value of dead/dying timber before it is lost to decay, reintroduce a diversity of age classes, and improve growing conditions for residual trees. Treatment would involve commercially harvesting live and recent dead trees using the following prescription:

- Cut all live/recent dead lodgepole pine greater than six inches (6") diameter at breast height (DBH).
- Leave all patches of lodgepole pine seedlings and saplings, and minimize disturbance to these areas.
- Where patches of Douglas-fir and/or spruce exist, thin to an average basal area of $80ft^2$/acre, selecting leave trees with healthy crowns and/or which provide good wildlife habitat (e.g. large horizontal branches/forked tops for nesting, cavities, etc.). Leave trees may be selected individually or in groups; spruce would preferably be left in patches to minimize wind throw post-harvest.
- Clear out competing conifers within 40 feet of Douglas-fir leave trees greater than 18" DBH.

Up to 0.4 miles of the existing closed road traversing the unit would be temporarily re-opened. New road construction would be minimal (<0.1 mile) to connect the Stone Creek Road to the existing closed road. Ground based harvesting would be used and products would be hauled out via the Stone Creek Road. Skidding would not be allowed on the reclaimed slope of the mine.

Permitted removal of firewood or other minor forest products would be available to the public in this unit. After harvesting operations are completed, the new temporary road, and existing re-opened road, would remain open to the public for up to three years. Following this, these roads would be physically closed.

Spring-Mahog – The objectives of treating this unit would be to retain existing curl-leaf mountain mahogany, promote new mountain mahogany regeneration, and to reduce conifers that have encroached into sagebrush/grasslands. Within the treatment unit, 60% or more of conifers less than 30 feet tall would be killed using prescribed fire and/or mechanical methods. If market conditions permit, the removal and commercial use of conifers as biomass would be considered. No new roads would be constructed to implement this treatment.

Travel Management

- Designate approximately 1.25 miles of previously constructed timber access roads north of the Treasure Mine on the Stone Creek Road (in T7S R 6W through Sections 3 & 2) as open-to-motorized-wheeled-vehicles to provide further access for public recreation and create reasonable access for the private landowner in T6S R6W Section 35 (Map 4, Appendix A).

2.3.5 Description of Alternative C

Livestock Management

This alternative would address riparian concerns on three grazing allotments (McHessor Creek, Middle Fork and Stone Creek) and one parcel (Stone Creek un-allotted). One or a combination of the following actions is proposed under this alternative: administrative actions, adjusting grazing management, the construction or modification of range improvement projects, and/or the implementation of vegetative treatments.

McHessor Creek Allotment *(Map 6, Appendix A)*

Livestock Management

- Restrict grazing use in the Trout Creek pasture to 30 days once every third grazing season beginning in 2010 (contingent on completion of the fence projects below).
- Current authorized use would continue (see Table 2.3).

Projects

- Construct one or more short pasture boundary/drift fences as needed along the western boundary of the Trout Creek pasture (T6S, R6W section 26) to block trailing routes cattle use to access the Trout Creek area of the McHessor Creek allotment from the west.
- Construct one or more short internal drift fences in section 31 (T6S, R5W) to prevent cattle drifting into the Trout Creek pasture from the McHessor Creek pasture to the east.
- Remove the wood and metal culverts from Spring Creek reach #400.
- Maintain and/or re-construct portions of the Malesich/Walsh boundary fence (1.2 miles) between the Spring Creek pasture and private land to prevent unauthorized use along Spring Creek reach #400 (same as Alt. B).

Middle Fork Allotment *(Map 7, Appendix A)*

Livestock Management

- Decrease annual AUM authorization by 20% to account for the AUMs not harvested in the rested pasture (Table 2.11).
- Implement a five pasture rest-rotation system that includes only the pastures within the allotment containing public land. Each pasture would be rested every fifth grazing season (Table 2.12).
- Adjust active AUMs on the Hamilton Ranches grazing lease from 576 to 462 AUMs. One hundred and fourteen AUMs would be placed in suspended non-use.
- Adjust active AUMs on Lottco's grazing lease from 287 to 230 AUMs. Fifty-seven AUMs would be placed in suspended non-use.
- Authorize grazing in the Middle Fork Riparian pasture every third year for a maximum of seven days.

Projects

- Same as Alternative B

Table 2.11: Proposed Authorized Use for Middle Fork-Alternative C

Allotment	Number/Kind	Begin Date	End Date	% Public Land	Active AUMs
Middle Fork Hamilton Ranches	180* cattle	06/20	10/15	66	462
Middle Fork Lottco (Pond Pasture only)	90* cattle	06/20	10/15	66	230

*One in five pastures in the rotation would be rested each year. To compensate for the rested pasture, the number of active AUMs in the allotment would be reduced proportionally, but the season of use would remain intact. In order to harvest the allocated AUMs, herd size for Hamilton Ranches would vary up to 225 cow/calf pairs and for Lottco would vary up to 150 cow/calf pairs.

Table 2.12: Middle Fork Allotment Proposed Pasture Rotation - Alternative C

Year, Lessee, Number	North Driveway	South Driveway	North Big Field	South Big Field	Pond	Total Annual BLM AUMs
2009 Hamilton Ranches 225 cattle	07/20-08/16 28 days 137 BLM AUMs	09/13-10/10 28 days 137 BLM AUMs	**REST**	06/20-07/19 30 days 146 BLM AUMs		**420**
2009 Lottco 150 cattle					08/21-09/19 30 days 98 BLM AUMs	**98**
2010 Hamilton Ranches 225 cattle	06/20-07/17 28 days 137 BLM AUMs	07/18-08/01 15 days 73 BLM AUMs	09/11-10/15 35 days 137 BLM AUMs	**REST**	08/07-08/27 21 days 103 BLM AUMs	**450**
2010 Lottco 150 cattle						**0**
2011 Hamilton Ranches 225 cattle	**REST**	09/25-10/15 15 days 73 BLM AUMs	07/11-08/10 30 days 146 BLM AUMs	08/26-09/15 28 days 137 BLM AUMs	06/20-07/10 21 days 103BLM AUMs	**459**
2011 Lottco 150 cattle						**0**
2012 Hamilton Ranches 225 cattle	09/28-10/15 18 days 88 BLM AUMs	06/20-07/04 15 days 73 BLM AUMs	08/29-09/27 30 days 146 BLM AUMs	08/01-08/21 21 days 103 BLM AUMs	**REST**	**410**
2012 Lottco 150 cattle						**0**
2013 Hamilton Ranches 225 cattle	09/10-09/30 21 Days 103 BLM AUMs	**REST**	08/10-09/08 30 days 146 BLM AUMs	07/15-08/09 26 days 127 BLM AUMs	10/01-10/15 15 days 73 BLM AUMs	**449**
2013 Lottco 150 cattle						**0**

[1] Later start dates, earlier end dates, and/or gaps in the season of use occur because Hamilton Ranches incorporates two private pastures in the grazing rotation.

Stone Creek Allotment *(Map 8, Appendix A)*

Livestock Management

- Shorten livestock season of use from 77 days to 60 days (22%). The adjusted season of use would be July 15 to September 13 (Table 2.13).
- The number of authorized cattle would remain 600.
- The number of active AUMs billed would be reduced to a maximum of 521, reflecting the shortened season of use.
- Actual Use billing would continue, which would reflect the actual number of AUMs consumed on an annual basis, not to exceed 521.
- As in Alternative B, three pastures would be included in a three year rest-rotation system. However, the length of use in the Spring Creek, Mine Gulch and Left Fork pastures would not exceed 30 days in any given year under Alternative C. Two of three pastures would be grazed annually as in Alternative B (Table 2.14).

Projects

- Same as Alternative B

Table 2.13: Proposed Authorized Use for Stone Creek – Alternative C

Allotment	Number/Kind	Begin Date	End Date	% Public Land	Active AUMs
Stone Creek	600 cattle	07/15	09/13	44	521
Stone Creek Isolated	6 cattle	10/01	10/31	100	6

Table 2.14: Stone Creek Allotment Proposed Pasture Rotation – Alternative C

Year	Spring Creek	Left Fork	Mine Gulch	Total Annual BLM AUMs
2009	07/15-08/19	REST	08/20-09/23	607
2010	REST	08/20-09/23	07/15-08/19	607
2011	08/20-09/23	07/15-08/19	REST	607

Stone Creek Un-allotted *(Map 2, Appendix A)*

Projects

- Construct a boundary fence south of Stone Creek reach 421 on ownership boundary to prevent livestock access from adjacent private land. Also, implement stream restoration project(s) to route stream back into its natural channel and restore native vegetation.

<u>Riparian Juniper Treatments</u>

Carter Creek Allotment (Map 9, Appendix A)

- Mechanically remove all Rocky Mountain juniper within approximately 50 feet on both sides of the Carter Creek (reach 433) stream channel by using chainsaws and other hand tools. Juniper would be cut and oriented along the channel to protect stream banks from ungulate traffic and allow riparian vegetation to regenerate. The goal would be to kill/remove 100% of the juniper within the riparian zone.

- Post treatment management may require 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 juniper along the stream, temporary fencing or hot tape may be used to allow the appropriate rest.

Stone Creek Allotment (Map 8, Appendix A)

- Same as Alternative B

Forest and Woodland Treatments

Alternative C would implement mechanical treatments (commercial and/or non-commercial) and/or prescribed fire treatments in five units within the EBW to address forest and woodland health and fuels management. Alternative C carries forward two of the forest and woodland treatment units identified in Alternative B (Stone 1 and Spring-Mahog), and also proposes three additional forest and woodland treatment units.

Table 2.15 outlines the proposed units, objectives, treatment types, and the affected allotments under Alternative C. Unit locations and boundaries are shown on Map 3, Appendix A.

Table 2.15: Proposed Forest and Woodland Treatments - Alternative C

Unit Name	Allotment	Acres	Objective(s)*	Treatment Type(s)
Stone1	Stone Creek/ Belmont	52	Salvage harvest dead/dying timber, reintroduce a diversity of age classes	Commercial harvest
Stone2	Stone Creek	110	↑ forest health, ↑ upland aspen	Commercial harvest
Spring1	Stone Creek/ McHessor Creek	147	↑ forest health, ↑ upland aspen, ↓ fuel loading	Commercial harvest
SpringMahog	Stone Creek	313	↓ conifer encroachment into mountain mahogany and sagebrush/grasslands	Mechanical and/or prescribed fire
SpringRx	McHessor Creek	up to 116	Maintain open Douglas-fir structure	Prescribed fire

* Abbreviations: ↑=increase ↓=decrease

Stone1 – Treatment would be the same as described under Alternative B.

Stone 2 – The objectives of treating this unit would be to reduce the hazard of Douglas-fir beetle and/or spruce budworm outbreaks, improve forest health, and promote aspen regeneration. Treatment would commercially harvest live and recent dead trees using the following prescription:

- Thin all size classes of Douglas-fir to a residual average basal area of 80ft^2/ac, leaving trees with healthy crowns and/or trees which provide wildlife habitat value (e.g. large horizontal branches/forked tops for nesting, cavities, etc.). Basal area may vary from 20 to 120 ft^2/ac; depending on site conditions and historic fire occurrence.
- Clear out competing conifers within 40 feet of Douglas-fir leave trees greater than 18" DBH.

- Leave all existing older snags (not red-needled), except in roads/landings or where a need for removal exists for safety reasons.
- Cut all conifers within two aspen tree heights of viable aspen clones. Viable aspen clones are defined as five or more live aspen stems ≥ 2" DBH, located within 100 feet of each other. Leave non-merchantable material on site to protect aspen sprouts from browsing.

Trees would be cut by hand and products would be helicopter yarded to designated landing areas along the old haul road adjacent to the Left Fork of Stone Creek. Landing areas would not be allowed within the SMZ. Products would be hauled out via the Stone Creek Road.

Spring 1 – The objectives of treating this unit would be to reduce the hazard of Douglas-fir beetle and/or spruce budworm outbreaks, improve forest health, promote aspen regeneration, reduce fuel loading, and increase understory vegetation diversity. Treatment would include commercially harvesting live and recent dead trees using the following prescription:

- Cut all live/recent dead lodgepole pine greater than six inches (6") DBH.
- Thin all size classes of Douglas-fir to a residual average basal area of 80ft^2/ac, leaving trees with healthy crowns and/or trees which provide wildlife habitat value (e.g. large horizontal branches/forked tops for nesting, cavities, etc.). Basal area may vary from 20 to 120 ft^2/ac; depending on site conditions and historic fire occurrence.
- Clear out competing conifers within 40 feet of Douglas-fir leave trees greater than 18" DBH.
- Leave all healthy limber pine except in roads/landings or where a need for removal exists for safety reasons.
- Leave all existing older (not red-needled) snags, except in roads/landings or where a need for removal exists for safety reasons.
- Cut all conifers within two aspen tree heights of viable aspen clones. Viable aspen clones are defined as five or more live aspen stems ≥ 2" DBH, located within 100 feet of each other. Leave non-merchantable material on site to protect aspen sprouts from browsing.

Up to one mile of new, temporary road would be constructed at the top of the unit. Ground based harvesting (cable yarding) would be used, and products would be hauled out via the Spring Creek Road. The new road would be re-contoured following the completion of timber harvest and associated operations.

Spring-Mahog – Treatment would be the same as described under Alternative B.

Spring-Rx – Treatment would use prescribed fire to maintain the open Douglas-fir structure in the previously harvested timber units in Spring Creek. The objective would be to reduce Douglas-fir regeneration that has established in the understory of the stand since harvest in the late 1990's.

2.4 Summary Comparison of Alternative Actions

Table 2.16: Comparison of Proposed Alternatives by Allotment

Garden Creek Isolated	**Alternative A**	**Alternative B**	**Alternative C**
Season of Use	05/15 – 11/01	05/15 – 11/01	No Alternative C
Livestock Number and Kind	12 cattle	12 cattle	
Active BLM AUMs	67	67	
Grazing Management	Custodial	Custodial	
Projects	None	· Construct Big Dry Spring exclosure fence	
Administrative Action	None	· Permanently Close Ladder Canyon to livestock trailing	
McHessor Creek	**Alternative A**	**Alternative B**	**Alternative C**
Season of Use	07/01 – 10/15	07/01 – 10/15	07/01 – 10/15
Livestock Number and Kind	91 cattle	91 cattle	91 cattle
Active BLM AUMs	160	160	160
Grazing Management	Deferred rotation	Deferred rotation	Deferred rotation
Projects	None	· Corridor fence Trout Creek, reach 425 and 426 · Maintain/reconstruct Malesich/Walsh boundary fence in the Spring Creek Pasture · Remove wood culverts from Spring Creek, reach 400	· Construct drift fences to manage cattle access into the Trout Creek pasture · Maintain/reconstruct Malesich/Walsh boundary fence in the Spring Creek Pasture · Remove wood and metal culverts from Spring Creek, reach 400
Administrative Action	None	None	Authorize grazing for up to 30 days every third year in the Trout Creek Pasture

Middle Fork	**Alternative A**		**Alternative B**		**Alternative C**	
Season of Use	06/20 – 10/15		06/20 – 10/15		06/20 – 10/15	
Livestock Number and Kind	Hamilton Ranches	225 cattle	194-225 cattle		180-225 cattle	
	Lottco	112 cattle	95-150 cattle		90-150 cattle	
Active BLM AUMs	Hamilton Ranches	576	Hamilton Ranches	497	Hamilton Ranches	462
	Lottco	287	Lottco	243	Lottco	230
Grazing Management	Seven pasture rest-rotation		Seven pasture rest-rotation		Five pasture rest-rotation	
Projects	None		· Construct approximately 1.5 mile of three-strand high-tensile electric or four- strand barbed wire fence on the north side of the Middle Fork (reach 408), creating a riparian pasture. Two jack and rail water gaps		Same as Alternative B	

		would be included providing livestock access to water. · Using the water in the old Beaverhead Mine reservoir, pump water to a storage tank, pipeline and two 1100 gallon watering troughs located along the ridge north of the Middle Fork (T7S R6W, section 23) · Re-construct the Stone Creek Spring water development in the South Driveway pasture	
Stone Creek	**Alternative A**	**Alternative B**	**Alternative C**
Season of Use	07/15 – 09/30	07/15 – 09/23	07/15- 09/13
Livestock Number and Kind	600 cattle	600 cattle	600 cattle
Active BLM AUMs	677	607	521
Grazing Management	Three pasture rest-rotation	Three pasture rest-rotation: 35 days maximum in two of three pastures per season	Three pasture rest-rotation: 30 days maximum in two of three pastures per season
Projects	None	· Remove the Talc Mine pasture division fence · Left Fork North Spring: Construct new jack and rail exclosure fence and new trough · Middle Fork Spring: Replacement/expansion of jack and rail exclosure and new trough · Construct exclosure fence around the head box of the Left Fork South water development · Construct new water development adjacent to upper Corral Creek, reach # 448 · Construct jack and rail exclosure fences to protect three springs and associated wetlands along reach 401	Same as Alternative B
Stone Creek Un-allotted	**Alternative A**	**Alternative B**	**Alternative C**
Administrative Action	None	· Disposal of 40 acre tract	None
Projects	None	None	· Construct fence(s) around BLM administered land

			· Re-route Stone Creek, reach 421, to its natural channel.
Ruby Mountain RMWSA	**Alternative A**	**Alternative B**	**Alternative C**
Administrative Action	None	· Prohibit livestock trailing up Ladder Canyon to Garden Creek Allotment	· Prohibit livestock trailing up Ladder Canyon to Garden Creek Allotment
Projects	None	None	None

Table 2.17: Comparison of Proposed Alternatives for Conifer Treatments

	Alternative A	**Alternative B**	**Alternative C**
Forest and Woodland Treatments			
Commercial Harvest	0	52	309
Mahogany Treatment (mechanical and/or prescribed fire)	0	313	313
Maintenance burning	0	0	Up to 116
Total acres	0	365	738
Riparian Juniper Treatments			
Total miles	0	0.25	0.50
All Treatments			
Total	0 acres; 0 miles	365 acres; 0.25 miles	738 acres; 0.50 miles

Table 2.18: Comparison of Proposed Alternatives for Travel Management Actions

Designated Route changes (miles)			
	Alternative A	**Alternative B**	**Alternative C**
Change to Open	None	2.75 miles	1.50 miles
Change to Closed	None	1.15 miles	0.75 miles
Route signage changes (miles)			
Re-sign Open	None	None	None
Re-sign Closed	None	2.5 miles	2.5 miles

3.0 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 EBW. This chapter provides a summary of the baseline environment.
A more detailed and comprehensive description of the current conditions in the watershed are provided in the East Bench Assessment Report, December 2008, and is available at the Dillon Field Office or on line at http://www.blm.gov/mt/st/en/fo/dillon_field_office.html.

3.1 General Setting

Elevations within the EBW range from approximately 4,700 feet near the Beaverhead River to 9,200 feet on Ruby Peak in the RMWSA. Topography varies from rolling sagebrush and grass covered bench lands to high alpine slopes. The headwaters of several stream systems are found high on the western and southern slopes of the Ruby Mountains. Stone Creek, Trout Creek, Spring Creek, McHessor Creek, and their tributaries bisect the landscape through deep drainages and ravines, eventually flowing into the Beaverhead River.

The soils within the watershed formed from a variety of parent materials and the major landforms include: flood plains, stream terraces, outwash terraces, alluvial fans, escarpments, hills, moraines and mountain slopes. Slopes range from nearly level and undulating (1 to 8 percent) to very steep (more than 45 percent). Soil textures are mainly sandy loams, loams, and clay loams; soil depths vary from shallow (less than 20 inches to a root restrictive layer) to very deep (more than 60 inches to a restrictive layer).

Present vegetation reflects the diversity of ecological conditions across the landscape. The dominant plant communities and habitat types change according to soils, precipitation, elevation, slope and aspect. A wide variety of vegetation is found within the EBW, from wetland and riparian species dependent on water and moist soils to sagebrush and grass dominated plant communities that thrive on dryer upland sites. Forested habitats cover the higher elevations. The watershed's diverse landscape and vegetation provides habitat and structural niches for a wide variety and abundance of wildlife.

Average annual precipitation within the watershed varies from less than 14 inches on the lower benches to more than 24 inches on the higher peaks of the Ruby Mountains.

3.2 Description of Affected Issues, Resource Concerns, and Critical Elements

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

Comprehensive digital National Wetland Inventory (NWI) mapping is not available throughout the State of Montana, thereby limiting the ability to summarize the extent of wetland resources. However, the BLM does have NWI draft maps from the 1990s that provide valuable baseline data within the assessment area. The majority of wetlands in the watershed fall into two broad categories: palustrine and riverine. The water regime for the majority of these wetlands is

intermittent (i.e. they are only seasonally wet), making them difficult to identify in the field. Generally, they are found in depressions and drainage ways. The recent drought has had an effect on vegetation wherein upland vegetation is outcompeting wetland vegetation. It is common, however, for wetlands to expand and contract in response to hydrologic cycles (Tiner, 1999).

There are approximately 20 miles of stream flowing through public land in the EBW. The majority of the streams originate on the western slope of the Ruby Mountains and flow across the East Bench. As surface water and/or groundwater, they eventually run into the Beaverhead River. The primary streams in the watershed are McHessor Creek, Spring Creek, Stone Creek and Trout Creek. Each of these creeks has numerous tributaries. Additional creeks include Carter, Hoffman and Sage Creeks. Sage Creek is the only stream in the assessment area flowing, by way of Sweetwater Creek, to the Ruby River.

Mining has impacted streams, wetlands, wildlife habitat, and hydrology in the EBW. The Treasure Mine has disturbed 375 acres of sagebrush, forested, wetland and stream habitat. The Beaverhead Mine has disturbed another 105 acres.

Almost ten stream miles, 25 of 38 reaches on BLM administered public land in the EBW, are in PFC. One stream reach, which is 0.8 miles in length, is FAR with an upward trend. Seven and one half miles of riparian habitat on eight stream reaches are FAR with a downward or static trend. The riparian conditions on the remaining four stream reaches, covering 1.2 miles, are non-functional (NF).

Physical resource concerns associated with FAR or NF streams include alteration of stream morphology (channel shape and gradient), sedimentation and deposition. Vegetation related concerns include lack of regeneration of woody species (i.e. willow, aspen), composition, cover, structure, and vigor of streamside vegetation.

Authorized livestock grazing is impacting riparian habitat conditions in Garden Creek Isolated, McHessor Creek, Stone Creek and Middle Fork allotments, the RMWSA, and the Stone Creek un-allotted parcel. Site-specific riparian concerns are discussed below by allotment and reach number.

<u>Garden Creek Isolated and RMWSA</u>: Big Dry Creek (reaches 880 & 881) – Livestock trailing and ATV traffic in Ladder Canyon have resulted in channel over-widening, excessive sediment inputs and deposition and bank disturbances.

<u>McHessor Creek</u>: Trout Creek (reaches 400, 425,426, 440) – On the main reach of Trout Creek, reach 425, stream banks are being impacted by livestock hoof action. There is also a higher than desirable amount of sediment in the channel, coming from an unknown source upstream. Three head-cuts make the channel vertically unstable. Reach 440 is a small spring fed side reach of the main channel (425) and is in similar condition. A ¼ mile section of Trout Creek, reach 426, flows through a narrow, rocky, confined canyon. Excessive browsing by ungulates (wild and domestic) on woody riparian vegetation is reducing aspen and willow regeneration. Livestock crossings and ATV traffic within the channel are contributing to higher than desired sediment

loads. Upper Spring Creek, reach 400, flows through three different habitat types in an area that was logged in the early 1990s. Resource concerns for this reach include raw stream banks, sediment input and channel over-widening. Logging roads and culverts were installed in 1994 to facilitate a BLM timber sale. These roads are stable and do not seem to be a big factor in current riparian health status. The IDT identified two wood culverts and one metal culvert remaining on reach 400. The wood culverts are limiting natural stream adjustments and sediment transport. The metal culvert has become plugged and is no longer functioning as designed.

Stone Creek: Stone Creek tributaries (reaches 401, 412, 415, 448) - Reaches 412 and 448 are sections of the same stream separated by private and state land. The lower reach, 412, flows through a draw and was devastated by an intense weather event in the early 1980s. The stream's banks were washed away and the channel was severely down-cut. In some places the stream is entrenched 6 to 8 feet. Juniper encroachment has severely impacted riparian vegetation vigor and composition, in turn increasing the amount of bare ground which has resulted in erosion and high sediment input into the system. Livestock trailing and watering is also contributing to bank destabilization and decreased woody and herbaceous vegetation recruitment. Reach 415, above the Treasure Mine, has localized channel over-widening and reduced aspen and willow regeneration. Reach 401 consists of a series of springs and spring brooks with no connecting channel. The springs and adjacent wetlands are being impacted by livestock.

Middle Fork: Middle Fork of Stone Creek (reach 408) – The Middle Fork is being heavily impacted by livestock and wildlife, as well as current and historic beaver activity. Impacts to the ecosystem include very little aspen recruitment, willow and other woody vegetation browsing, beaver dam blow-outs resulting in channel down-cutting and incisement, heavy sedimentation, and bank destabilization.

Stone Creek un-allotted: Stone Creek (reach 421) – The willows are dead or dying, the stream bank severely damaged and the channel course has been altered and entrenched from continuous livestock use.

Six developed springs in the EBW were inventoried to determine flow, wetland function and infrastructure condition. Four of the developed springs are in the Stone Creek Allotment: Left Fork North, Left Fork South, Middle Fork and Spring Creek. Spring Creek has good flow, the wetlands were properly functioning, the exclosure is adequately sized and in good condition. Left Fork North and South Springs and Middle Fork Spring need repairs to both the troughs and the exclosures. The wetland area of Middle Fork Spring is being negatively impacted by soil compaction, which has reduced its water holding capacity. Vegetative vigor and regeneration are being diminished by trampling and browsing.

There are two spring developments in the Middle Fork Allotment: Pond Pasture Spring and Stone Creek Spring. The Pond Pasture Spring is properly functioning, has good flow, and is protected by an exclosure fence which is in good condition. Stone Creek Spring has an undersized exclosure which has deteriorated. Livestock traffic in the area has negatively impacted wetland function and woody vegetation health. The exclosure needs to be reconstructed and the stock tank needs to be replaced.

Wildlife associated with riparian habitat, seasonally or year around, include, but are not limited to, elk, mule deer, moose, sage grouse, bald eagles, hawks and migratory birds. Many species of migratory birds use this riparian habitat for nesting, while sage grouse rely on this habitat for brood rearing during the summer.

Within the EBW there are six perennial streams on public land that support cold water fisheries. These streams are Trout Creek, Spring Creek, Stone Creek, McHessor Creek, Carter Creek and Hoffman Creek. Common cold water species found in the area are brook trout, rainbow trout and rainbow trout/cutthroat trout hybrids. The native mottled sculpin is found in most of the streams in the area.

Native westslope cutthroat trout are found in three drainages within the assessment area. Stone Creek is the only known stream within the EBW that supports genetically pure WCT on public land. A population of WCT is found in Trout Creek; genetic samples from this population were collected for analysis during the 2008 field season and results of genetic purity are pending. Spring Creek supports a population of genetically pure WCT below BLM on private land. The majority of habitat on BLM is low quality headwater habitat that may provide some minor seasonal use, but does not support year round use.

Westslope cutthroat trout habitat in Trout Creek, and the Middle Fork of Stone Creek, is being negatively impacted by livestock grazing activity. Impacts include bank trampling, reduction of deep-rooted riparian vegetation and heavy utilization of willows. Increased sedimentation is likely reducing WCT spawning success. Bank trampling and heavy woody utilization is reducing overhead cover and hiding cover along banks.

Houndstongue and Canada thistle are found scattered throughout the watershed, primarily along riparian bottoms, roads and trails. Treatment options are limited in riparian areas enhancing the potential for houndstongue and Canada thistle to spread. Both are very efficient invaders in riparian and upland disturbances. Canada thistle can reproduce by seeds, creeping roots and/or plant fragments, and houndstongue seeds cling to hair and clothing.

3.2.2 Issue # 2: Forest and Woodland Health and Fuels Management

Forest and woodland habitats comprise approximately 9% of all ownerships, and approximately 49% percent of BLM-administered lands within the EBW. Douglas-fir is the dominant tree species, with interspersed Rocky Mountain juniper, limber pine, and mountain mahogany on rocky slopes and lower elevations. Lodgepole pine and subalpine fir are present at higher elevations, and spruce is found in some mid to high elevation canyon bottoms and wetter areas. Whitebark pine is a minor component, found at the highest forested elevations, generally above 8,600 feet on wind-swept ridges. Patches of Rocky Mountain maples have been found on old mud flow areas in the Ruby Mountains.

The majority of forested land administered by the BLM in the EBW is found in the Ruby Mountains. The Northern Rubys (north of McHessor Creek) consists of very steep and rocky terrain dissected by steep canyons, with nearly continuous forest canopy. The majority of the BLM administered land within the RMWSA north of McHessor and Hinch Creeks is classified as Fire Management Category D by the Dillon RMP. This designation means that prescribed fire

or naturally ignited fire is desired in this area to benefit resource conditions. The flexibility of fire management in the Northern Rubys is due to few social, economic, or political constraints that exist in the area, and because fire control would be difficult due to poor access and steep terrain.

Evidence of historic fire (e.g. fire scarred trees, breaks in age classes) is extensive throughout the Northern Rubys, and indicates a highly variable mixed severity fire regime. In some portions of the Northern Rubys, frequent, low intensity fires historically maintained a Douglas-fir savannah structure (mature large trees that are openly spaced). As a result of fire exclusion, these historic Douglas-fir savannahs have filled in with high densities of young (<120 years) trees.

In other portions of the Northern Rubys, severe stand replacing fires resulted in a homogenous age class of Douglas-fir trees. Most of the Douglas-fir on the east side of the Ruby Mountains is 100-120 years old, indicating that a widespread fire event occurred around the turn of the century. The extremely rugged topography of this area likely contributed to these stand-replacing events, even at elevations and in fuel types that more commonly supported lower intensity fires.

In the Southern Rubys (south of McHessor Creek), forest and woodlands are interspersed with sagebrush and grasslands. Effective precipitation and aspect influences the establishment of forests and woodlands. Historically, natural disturbances such as re-occurring fire regulated the extent of these forests and woodlands. In most of the Southern Rubys, low severity fire historically maintained a Douglas-fir savannah structure, which has now filled in with young (<120 years) trees.

Previous timber harvests on BLM-administered lands in the EBW were completed on approximately 20 acres adjacent to the Treasure Mine (Stone Creek Allotment) and approximately 120 acres in the Spring Creek area (McHessor Creek and Stone Creek Allotments). The Stone Creek harvest removed mostly larger diameter trees, and the post-harvest stand contains primarily younger Douglas-fir trees that appear healthy and growing vigorously. Douglas-fir trees within this unit are generally younger than 120 years old and less than 12" DBH. The Spring Creek timber sale completed shelterwood, clearcut, and partial cut harvest to remove Douglas-fir, lodgepole pine, Engelmann spruce, subalpine fir, and whitebark pine. These previously harvested units are proposed for follow-up prescribed burning in Alternative C (Unit SpringRx), and are described further below in this section under Description of Conifer Treatment Units.

Throughout the EBW, western spruce budworm is present and is likely to increase due to suitable stand conditions and climatic patterns. Defoliation caused by spruce budworm is most evident on Douglas-fir, but also affects subalpine fir and spruce species. While spruce budworm does not usually cause direct tree mortality, it will predispose trees to attacks by other insects or diseases. Budworms grow more vigorously in stressed trees, and budworm populations can increase dramatically during drought conditions. The highest degree of spruce budworm defoliation on BLM administered lands in the EBW was found in the untreated stands in the Spring Creek area.

Douglas-fir beetle activity is currently at endemic levels in the Rubys, but is likely to increase due to suitable stand conditions. Douglas-fir most susceptible to beetle attack are those larger than 14 inches DBH, older than 120 years, and growing in dense stands (Weatherby and Their, 1993). Beetles are also attracted to wind-throw and trees weakened by fire, drought, defoliation, or root disease (Kegley, 2004). A few scattered patches of recent Douglas-fir mortality from Douglas-fir beetle were noted in the Northern Rubys.

Mountain pine beetle is active in the EBW, and is causing mortality of mature lodgepole pine. Most of this activity is in the Southern Rubys. Throughout the EBW, mountain pine beetle and/or white pine blister rust is affecting and killing many of the limber and whitebark pine. However, some individual limber pine trees are healthy and may have some degree of resistance to the blister rust. Whitebark pine is declining rapidly across many parts of its range due to the combined effects of the exotic white pine blister rust, the native mountain pine beetle, and the exclusion of fires (Arno 1986; Kendall and Keane 2000; Tomback and others 2000).

Fire exclusion, caused primarily by fire suppression and livestock management on rangelands over the last century, has changed the structure, density, and species composition within forest and grassland communities (fire dependent ecosystems) throughout the EBW. Conifer densities have increased within forested stands, particularly within Douglas-fir forest types. Forested stands have more continuous cover than occurred historically, and there has been a loss of mountain mahogany, aspen, and mountain meadows due to conifer expansion. The recent drought and increased densities has resulted in forest susceptibility to insect and/or disease infestations and subsequent mortality, which in turn has led to a decrease in forest health and an increase in fuel loading throughout forested areas in the EBW.

The close association between the forested habitat and adjoining sagebrush, grassland and riparian habitats support a broad array of wildlife species. Forested habitat in the watershed provides important security and thermal cover for deer and elk. The timber stands provide habitat for a variety of birds and mammals: hairy woodpecker, blue and ruffed grouse, northern goshawk, red-naped sapsucker, mountain cottontail and snowshoe hare.

Description of Conifer Treatment Units

Stone1- This unit is a Cool/Moist habitat type group, and is composed of mostly lodgepole pine with scattered Douglas-fir, subalpine fir, and spruce. Throughout the stand there are dense patches of sapling and pole size lodgepole pine regeneration. Mountain pine beetle activity started in this area in 2006 and has increased substantially in the last few years, resulting in successful beetle attack on approximately 50-60% of mature lodgepole pine. Western gall rust and/or Commandra blister rust is also present in the stand and is resulting in mortality of some smaller trees and scarring on larger trees. Spruce budworm has caused light defoliation on Douglas-fir trees and moderate to heavy defoliation on spruce trees. Defoliation by spruce budworm is heaviest on seedling/sapling size trees within this unit. Douglas-fir beetle hazard rating throughout the stand is low. However, the southern edge of the unit has higher potential for Douglas-fir beetle activity due to the greater proportion of Douglas-fir and density of mature trees.

Stone2 - This unit is a Warm/Dry habitat type group and is composed of almost entirely Douglas-fir with a very small amount of scattered limber pine and some juniper in the understory. Individual and groups of large (>17" DBH), mature (>200 years old) Douglas-fir trees are surrounded by high densities of second-growth Douglas-fir trees which are generally less than 120 years old. Basal area generally averages 200 ft^2/ac. Forested canopy is continuous and is lightly to moderately defoliated by spruce budworm. Small patches of aspen with very little regeneration were found within the forested area and in the riparian area of the Left Fork of Stone Creek. Douglas-fir beetle hazard rating is high.

Spring1- Most of this unit is in a Cool/Moist habitat type group, with inclusions of Warm/Dry habitat types. The majority of the unit is composed of Douglas-fir, but also contains small amounts of limber pine, lodgepole pine, and spruce in wetter areas. Stands have very high densities (basal area of 200-300+ ft^2/ac), and are being affected by spruce budworm and mountain pine beetle. This unit had the highest degree of spruce budworm activity noted during the EBW assessment. Individual and groups of large (>17" DBH), mature (>200 years old) Douglas-fir trees are surrounded by high densities of second-growth Douglas-fir trees which are generally less than 120 years old. Understory vegetation within forested areas is very limited to almost non-existent. Aspen skeletons scattered throughout thick Douglas-fir stands are evidence of a loss of upland aspen. Douglas-fir beetle hazard rating is high.

SpringMahog – This unit is located in the northern portion of the Stone Creek allotment. Within the unit there is currently a relatively dense stand of curleaf mountain mahogany that is providing habitat diversity and important wildlife forage. Sagebrush/grassland habitat is found on sites with more favorable growing conditions. Douglas-fir and juniper is beginning to dominate the site, and shading out curleaf mountain mahogany and sagebrush. Mountain mahogany regeneration is minimal due, in part, to lack of disturbance.

SpringRx – This unit consists of the approximately 120 acres previously harvested in the Spring Creek timber sale. Trees within the previously harvested units appear to be vigorously growing, and a sample taken within one of the harvest units showed a two-fold increase in radial growth immediately following a timber harvest in the 1990s. Spruce budworm defoliation is less in previously harvested units than in un-harvested stands in the Spring Creek drainage. Currently this area exhibits good structural diversity, with extensive conifer reproduction in previously harvested areas.

3.2.3 Resource Concern # 1: Sagebrush Steppe Habitat and Associated Species

The upland plant composition in the upper elevations of the EBW is changing as the result of ecological succession. The natural progression from early seral stage plant communities towards a climax plant community (the final vegetation community and highest ecological development) is inevitable without disturbance. The spread of primarily Douglas-fir and Rocky Mountain juniper can be attributed, in part, to the reduced frequency of wildfire which has changed the dominant plant species and habitat types on some of the public lands in the Ruby Mountains.

According to satellite imagery, 42% of the public land within the watershed is classified as sagebrush-steppe uplands. This type of plant community provides crucial habitat for wildlife

species such as mule deer, pronghorn antelope, and sage grouse, and nesting and foraging habitat for golden eagles and other raptors.

The lower elevations on the terraces and benches west and south of the Rubys are dominated by several species of sagebrush: mountain big sagebrush, basin big sagebrush, and black sagebrush. Mountain big sagebrush habitat within the EBW supports a diversity of sagebrush-dependent wildlife species. Some of the prominent understory herbaceous species include bluebunch wheatgrass, western wheatgrass, Sandberg bluegrass, needle-and-thread grass, Prairie junegrass and Idaho fescue. Winterfat and gray horsebrush are found in limey soils along with Indian ricegrass, western wheatgrass and needle-and-thread grass. Rubber rabbitbrush, green rabbitbrush, fringed sagewort and broom snakeweed are common native shrubs found on ecological sites in the watershed.

Scattered patches of curleaf mountain mahogany are found on rocky slopes and ridges throughout the watershed. Most of these areas are becoming decadent as a result of conifer encroachment. These remaining patches are sustaining heavy browsing use in the winter by mule deer, elk and moose.

Spotted knapweed is widely scattered along a few roads and/or disturbed areas within the EBW. However, because it is one of the more aggressive noxious weeds in Montana, and currently is found at relatively low infestation levels in the watershed, it is considered a high priority for preventative treatment.

Cheatgrass, a winter annual invasive species, is also a concern within the EBW. It is currently found in small patches throughout the watershed in disturbed areas, past wildfire areas, riparian bottoms and adjacent south facing slopes.

Important sage grouse breeding and winter habitat is located south of the EBW in the Sweetwater area. During the assessment, sage grouse use was noted in Stone Creek, Nyhart, Hoffman Creek Isolated and Middle Fork allotments. Sage grouse use is also likely in Big Sheep, Carter Creek and Lark Isolated due to favorable habitat and proximity to active leks in the Sweetwater Basin. The upland assessments in the above allotments were all found to be meeting standards.

With the exception of some old droppings located in the Middle Fork allotment, there was no indication of pygmy rabbits in the assessment area. However, suitable habitat is present in the assessment area, so it is likely that some pygmy rabbit use occurs in the EBW.

3.2.4 Resource Concern # 2: Travel Management

There are approximately 21 miles of designated motorized vehicle routes within the EBW. Public recreational use of these routes occurs primarily during the big game hunting season providing access to BLM lands in the Ruby Mountains and Sweetwater Hills. The Dillon RMP (2006) provides guidance for potential future travel management actions stating; “Update and maintain the road and trail database to correct mapping errors and refine decisions.”

The EBW assessment process identified two areas where currently designated open motorized routes will be considered for closure. One area is just north of the Stone Creek Road near the Treasure mine, and one is on the west side of the RMWSA in the area of Big Dry Creek (Ladder Canyon) and Spring Creek. In the area near Stone Creek Road, a steep two-track road was designated open to motorized vehicle use in the same area where a previously constructed timber access road was not designated open. In the Big Dry Creek area, representatives of a sportsmen's group and Madison County requested that the BLM consider closing a short segment of road to improve elk hunting opportunities in that area. Alternatives will be considered within the context of this EA to address these issues.

3.2.5 Resource Concern # 3: Special Status Species

The EBW supports habitat for 15 SSS. A complete list of SSS and a brief description of their habitats is presented in the 2008 EBW Assessment Report on page 36. For additional information see the BE on T&E species, Special Status Plant, and Special Status Fish and Wildlife in Appendix C.

The two documented occurrences of the sensitive plant species Taper-tip Desert-parsley in the EBW are on BLM lands in the Ruby Mountains. Competition from invasive, introduced species and noxious weeds, especially spotted knapweed, yellow sweet clover, and cheatgrass, is probably the biggest threat to Taper-tip Desert-parsley. Indiscriminate chemical treatment of invasive species could pose a secondary threat to this plant.

Ute Ladies' Tresses and Mealy Primrose aren't known to occur on BLM, but have been found in private wetlands in the EBW. Both species are vulnerable to competition from noxious weeds and activities that alter the hydrology of occupied wetlands.

Special status species such as sage grouse and pygmy rabbits are discussed above under issue #3 Sagebrush Habitat and Dependent species. Westslope cutthroat trout are discussed above under issue #1 Riparian Habitat.

With the recent delisting of gray wolves there are no known T&E species known to be present within the watershed. Gray wolves will now be treated as a SSS and Montana's wolf management plan will be followed.

3.2.6 Resource Concern # 4: Socioeconomics

There are 10 operators currently authorized to graze livestock and harvest 2,192 public land AUMs on the 14 allotments in the EBW. Qualified individuals and business enterprises are authorized to graze livestock by a 10 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, the public land. Changes in numbers of livestock, seasons of use, and/or increased labor inputs may have a considerable economic impact on some operators.

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 14 and 17% of total employment in Beaverhead and Madison counties, respectively. The National

Agricultural Statistics Service data from 2007 reports that, of Montana's 56 counties, Beaverhead and Madison counties ranked 2nd and 4th, respectively, in total hay production; 1st and 10th, respectively, in total cattle numbers; and 3rd and 12th, respectively, in sheep numbers. Page 251 of the Proposed Dillon RMP/Final EIS presents personal income statistics from 2000 that indicate that labor earnings were the largest source of income in Beaverhead and Madison counties (57 and 50%, respectively). The Proposed Dillon RMP/Final EIS is available at http://www.blm.gov/mt/st/en/fo/dillon_field_office/rmp/Final.html.

3.2.7 Resource Concern # 5: Wilderness Characteristics

The EBW contains a portion of the RMWSA which is managed in accordance with the *IMP for Lands Under Wilderness Review* (BLM Handbook H-8550-1). The RMWSA contains a total of 26,611 acres, of which 11,326 acres are within the EBW. A total of 6,855 acres within the watershed are recommended suitable for wilderness designation. Important wilderness characteristics that were identified in the Statewide Wilderness Report (1991) included: naturalness (with some exceptions), outstanding opportunities for solitude, and primitive and unconfined recreation. Special features of the RMWSA included outstanding scenic values.

Although some impacts from ATV use were documented within the RMWSA in the Big Dry Creek area, and there were some concerns identified with regard to the natural vegetative communities and associated natural processes, the RMWSA, on the whole, continues to exhibit the wilderness characteristics that were identified in the initial inventory of 1979–1980.

3.2.8 Critical Element: Cultural Resources

In conjunction with the Mountain Foothills Grazing EIS in the late 1970s, a Class II cultural resources inventory was conducted for a 10% sample of lands within the Dillon Resource Area. Results of the sample inventory indicated that cultural site densities in the East Bench Planning Area were much lower than those observed in other planning areas, with the average site density for one site being just under every two square miles.

An examination of existing records on file with the BLM Dillon Field Office has provided information on the number and type of known cultural resources and level of previous cultural resource inventory conducted on public lands within the EBW. Within the EBW, approximately 2,602 acres of public land have been intensively inventoried for cultural resources at the Class III level. Inventories are subject to specific project compliance in advance of all proposed federal undertakings including: small range improvements (fences, water developments), road rights-of-ways, timber sales, and land exchanges. The inventory projects vary from as little as one-half acre, to as much as 830 acres in extent, and BLM administered public lands within at least five grazing allotments have had no Class III cultural resources inventory at all.

As a result of past Class II and Class III cultural resource inventory, there are a total of 13 recorded cultural properties within the EBW study area. Of that number 80% are prehistoric, 20% are historic. Four paleontological sites are located within the watershed.

The majority of the sites associated with the study area are prehistoric in general, and more specifically, temporary campsites. Recorded prehistoric site types include: lithic scatters; rock shelter; isolated tool fragment. Site types associated with historic sites include: cabins; historic

rock structure; cairns. Of the 26 sites identified, two have been recommended eligible for the National Register of Historic Places. Of the two sites recommended, one has been formally evaluated for significance and eligibility to the National Register of Historic Places.

An examination of individual site forms also indicated that potential adverse impacts had occurred at 40% of the recorded sites. These impacts were primarily the results of stream erosion, mining, road maintenance, and viewshed.

To date, traditional cultural properties or traditional life-way values of special concern to American Indian Groups have not been specifically identified within the EBW. However, certain site types such as food processing, rock art and habitation locations retain particular importance to most American Indian Groups. For that reason, sites 24MA1022 and 24MA1334 are expected to hold importance to American Indians and should be afforded special considerations. There are no proposed projects in these sites.

4.0 Environmental Consequences

4.1 Introduction

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

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

4.2 Predicted Effects of Alternatives

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

Issue # 1: Riparian, Wetland, Aquatic Habitat and Associated Species
Land Health Standards on nine allotments in the EBW are being met under current management. Therefore, the grazing leases for these allotments will be re-issued under current terms and conditions. Current management is facilitating/allowing healthy conditions on BLM administered public lands within these allotments and current trends would continue. These allotments are: Belmont South Isolated, Big Sheep, Carter Creek, Hoffman Creek, Lark Isolated, McHessor Creek Isolated, North Fork AMP, Nyhart and Spring Canyon.

The grazing lease for the Stone Creek Isolated allotment will be reissued under current terms and conditions while the BLM pursues disposal of this 40 acre parcel. If the disposal process is unsuccessful the lease will remain in effect for a ten year term and current resource trends would continue.

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. 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. 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).

Effective animal husbandry practices, riding and herding, will continue to be emphasized and utilized to improve distribution, sustain resources and increase animal production. Low stress livestock management may increase the success of riding and in turn mitigate riparian resource concerns. The 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 it can lead to improved riparian conditions that benefit fisheries and wildlife while improving water quality."

The grazing flexibility provision would provide the BLM and affected grazing lessees the 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. Adjusting stocking rates and rotation dates will keep livestock numbers in balance with forage supply (Howery, 1999). Upland and riparian health will benefit with more applicable timing of resource use. The authorized AUMs on all grazing leases or permits will not be exceeded. All management decisions to implement annually reviewed and approved adjustments to on-off dates, pasture rotations, numbers of livestock and duration of pasture use will not increase the overall amount of forage harvested within the allotment. EBW grazing lessees may benefit economically by increased weight gain of calves on mother cows grazing more nutritious forage.

Issue # 2: Forest and Woodland Health and Fuels Management

Throughout the EBW, limber pine and whitebark pine will continue to decline due to mountain pine beetle and/or white pine blister rust, and may become nonexistent in some areas. Management strategies to reduce white pine blister rust are cost and labor intensive (Hagle et al, 1989). Information on treatment methods shown to effectively promote limber pine and reduce mortality from white pine blister rust are very limited (Schoettle, 2004).

With lack of disturbance, Douglas-fir stands throughout the RMWSA in the Northern Rubys will continue to increase in density. Areas of Douglas-fir savannah structure (open, mature stands) will continue to fill in with high densities of young conifers. Spruce budworm activity will continue to increase and predispose trees to attacks by other insects or disease, unless a natural budworm population decline occurs due to climatic influences. Current Douglas-fir beetle activity is at endemic levels, but is likely to increase due to suitable stand conditions. During Douglas-fir beetle outbreaks, groups of 100 dead trees or more are not uncommon (Schmitz and Gibson, 1996). Large-scale tree mortality from Douglas-fir beetle can cause degradation of wildlife habitat, increased wildfire risk, and diminished aesthetic values associated with forests (Dodds et al., 2006).

The management of wildland fire in northern portion of the RMWSA will continue as defined in the Dillon RMP and the Dillon Fire Management Plan. Wildland fires managed for resource benefit would produce smoke which may affect air quality and visibility. Vegetative succession would be suppressed (set back to early seral stage species) in burned areas. Burned areas would promote overall ecological diversity at the landscape level.

Resource Concern # 1: Sagebrush Steppe Habitat and Associated Species
Human activities, such as road maintenance activities, recreation, gravel mining, and other disturbances, as well as livestock, wildlife and birds, 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, Madison and Beaverhead Counties, private landowners and other partners. This will likely maintain noxious weed infestations at current low levels or allow for a slow decrease in plant densities.

Resource Concern # 2: Travel Management
Implementation of the travel management plan in the Dillon Field Office RMP (2006) will discourage the creation of new vehicle routes on public lands. This strategy limits the spread of noxious weeds and motorized vehicle-caused soil erosion throughout the watershed.

Recreational motorized vehicle users will continue to benefit from the signing of designated open routes, which will aid navigation in remote backcountry areas of public lands.

Resource Concern # 3: Special Status Species
Predicted effects under all alternatives are not expected to affect any T&E species.

A summary table and a detailed discussion of predicted effects and potential impacts to special status plants and their habitat is provided in the BE for Special Status Plants on BLM Lands in the EBW (see Appendix C). A Short Form BE for Special Status Fish and Wildlife Species provides a summary of whether or not special status fish and wildlife species are affected by the proposed alternatives (see Appendix C). Potential site-specific impacts to SSS are included in the allotment discussions below where appropriate.

Amending grazing permits to state that livestock losses may occur from wolves would create awareness, and minimize conflicts between lessees and agencies responsible for managing the wolf population.

Competition with non-native eastern brook trout in Trout Creek will continue to adversely influence WCT populations in this drainage.

Resource Concern # 4: Socioeconomics
The BLM does not have access to financial or business records for lessees authorized to 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. The 2009 BLM AUM cost is $1.35 while private land lease rates in Montana for 2009 average $18.10/AUM.

Economic impacts to businesses and commercial outfitting operations 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 # 5: Wilderness Characteristics
Wilderness characteristics will continue to be maintained through management in accordance with the Interim Management Policy for Lands Under Wilderness Review (BLM Handbook H-8550-1). Important wilderness values and special features identified in the Statewide Wilderness Report (1991) will be maintained.

Current bark beetle activity is still seen in relatively isolated pockets on the densely timbered slopes within the RMWSA, but in the presence of other forest pests (i.e. spruce budworm), and in the absence of fire, bark beetle populations could reach epidemic levels impacting scenic quality of the RMWSA. According to Samman and Logan (2000), "Large-scale [bark beetle] outbreaks have short-term effects on recreational use of wilderness areas, particularly in regard to scenic quality, trail access, and public safety."

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

Issue # 1: Riparian, Wetland, Aquatic Habitat and Associated Species
The No Action Alternative would not accomplish riparian, wetland, or aquatic objectives along stream reaches or at springs where resource concerns were identified. Where these concerns were noted, alteration of stream morphology (channel shape and gradient), vegetative composition, vigor, structure and cover, conifer encroachment and excess sediment input would continue. Negative impacts to wet meadows, spring sources, and spring brooks would continue, and ecological functions would continue to be degraded in areas with identified concerns.

Dysfunctional spring developments and/or spring exclosures would not be improved under the No Action Alternative.

Under this Alternative, none of the livestock management related riparian issues or concerns identified by the IDT and documented in the EBW 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).

The EBW Assessment Report determined that current livestock management is contributing to not meeting the riparian health standard in four grazing allotments. These allotments are: Garden Creek Isolated, McHessor Creek, Middle Fork, and Stone Creek. Maintaining current authorized use on FAR and NF streams would perpetuate undesirable impacts to herbaceous, and in some cases, woody plant communities. Under the No Action Alternative, no new AMPs or projects (fences, water developments, etc.) would be initiated to address concerns on 12 stream reaches (nine miles) that failed to meet the Riparian Health Standard.

Livestock induced impacts such as heavy utilization of deep rooted bank holding sedges, increasing non-native herbaceous species, bank disturbances, over-widening of stream channels, sedimentation and hummocking would continue at current unfavorable levels. Sedge utilization in some riparian areas and meadows would remain higher than preferred for maintenance of proper functioning streams and riparian plant communities. 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, species composition and structural diversity. Decreased aspen, willow and sedge dominated communities limit biodiversity by reducing habitat available for amphibians, migratory birds, nesting waterfowl, and browse for wild ungulates.

Impacts from livestock, and wildlife, to fisheries habitat would continue at current levels. There would be no expected improvement to fish habitat on stream reaches that have been determined to be in FAR or NF condition. In streams such as Trout Creek and Middle Fork, where current conditions may limit access by WCT to suitable habitat and their population growth potential, habitat improvement would not be expected. However, habitat needs would continue be met in the streams in watershed currently at PFC.

Under this alternative, Rocky Mountain juniper would continue to increase at the expense of other riparian woody and herbaceous species on some streams. Increasing juniper was determined to be a primary cause for the NF riparian conditions on stream reach 412 in Corral Creek. Juniper are also a resource concerns on stream reach 433 in Carter Creek. Rocky mountain juniper has an extensive stoloniferous root system which is very efficient in competing for limited water and soil nutrients. The elimination of the understory, resulting in more bare ground, would enhance the potential for erosion resulting in increased sediment inputs into the streams. Increasing juniper stands on these reaches would continue to lower the water table. Consequently, further loss of riparian woody and herbaceous plants would adversely affect riparian health, wildlife habitat and species biodiversity.

Issue # 2: Forest and Woodland Health and Fuels Management

Implementation of the No Action Alternative would leave the forest and woodland stands undisturbed by the treatments proposed in the action alternatives. Current conditions and forest trends would continue until interrupted by natural events, insects and disease, or changes in weather or climate.

Areas of curleaf mountain mahogany and mountain meadows would continue to be replaced by conifer-dominated vegetation. The existing curlleaf mountain mahogany stand in the proposed SpringMahog treatment unit would continue to display decreased vigor, density and regeneration due to competition for resources from encroaching conifers. The conifers also reduce sunlight from reaching the ground, which restricts regeneration and eventually kills existing plants. The lack of fire or another disturbance that provide a mineral-soil seedbed would inhibit future mahogany regeneration.

Upland aspen stands would continue to decline, and without disturbances favoring new regeneration, would likely become nonexistent in some areas.

The density, structure and species composition of forest stands would continue to be departed from historic conditions. Conifer densities would continue to increase within forested stands, particularly within Douglas-fir forest types. These high density conifer stands would have

increased susceptibility to insect and/or disease infestations and subsequent mortality. These conditions would lead to a decrease in forest health and an increase in fuel loading, and the potential for more severe impacts from wildland fire throughout forested areas of the EBW.

In the Stone1 unit and other areas with existing infestations of mountain pine beetle, mortality of overstory lodgepole pine would continue. During epidemics, mountain pine beetle has been noted to attack trees as small as three inches (3") DBH on the Helena and Beaverhead-Deerlodge National Forests (pers. comm. Sturdevant, 2008). As these trees die and fall over, fuel loading would be increased within the stand. 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.

Continuation of the spruce budworm outbreak 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). The continued epidemic of spruce budworm in the EBW 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. Douglas-fir beetle activity, which is currently at endemic levels, would likely 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). In outbreak conditions, groups of dead trees may total 100 or more and yearly mortality may extend into the millions of board feet (Kegley, 2004).

Within the previously harvested stands in Spring Creek, conifer regeneration in the understory would continue to compete with mature trees for light, moisture and nutrients. A multi-storied stand would continue to develop, providing structural diversity, but over the longer term could result in a loss of Douglas-fir savannah structure (open, mature stands), which is generally lacking in the EBW.

Loss of overstory canopy cover, as a result of fire or bug kill, may cause short term displacement of big game species such as moose, deer and elk. Hiding and thermal cover may be greatly reduced for wildlife. The additional light and moisture in the stand may improve forage, but access may be restricted once dead trees start falling.

Due to the limited number of streams supporting fish populations in the EBW, a high to moderate severity fire would have impacts on fisheries only if it occurred in specific drainages. Increased runoff and sediment as a result of a high intensity fire could have a negative impact on WCT populations, at least in the short term, within the Spring Creek, Stone Creek, Trout Creek, and McHessor Creek drainages.

Resource Concern # 1: Sagebrush Steppe Habitat and Associated Species
Existing conditions and trends in sagebrush and upland habitats would continue under this alternative. Conifers would continue to expand into sagebrush/grassland habitats. As stated in Hyerdahl et al. (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.

Suitable habitat conditions exist for sagebrush obligate species on allotments meeting upland and biodiversity standards. Under the No Action Alternative, habitat conditions for sagebrush obligate species are expected to continue being met throughout the EBW with some conversion to conifer habitat as noted above.

Resource Concern # 2: Travel Management
Under the No Action Alternative erosion would continue to occur along the very steep and dangerous route proposed for closure just north of Stone Creek road. Public motorized access would continue to be limited to those individuals with more aggressive vehicles capable of negotiating the steep route. Some would continue to drive on the route which was not designated open to motorized use (Map 4, Appendix A) because it is a better route to access the area.

Resource Concern # 3: Special Status Species
Habitat conditions in less than PFC condition, in Trout Creek and the Middle Fork of Stone Creek, will continue to restrict WCT population abundance and viability. In Trout Creek and Upper Middle Fork of Stone Creek, where habitat conditions are limiting populations, habitat requirements would not be met. However, in streams with WCT habitat in PFC, such as Left Fork of Stone Creek, habitat requirements would continue to be met.

Upland habitat conditions in the EBW are currently suitable to support sage grouse. Under current management and trends sagebrush habitat would continue to meet their needs. Riparian areas in less than PFC may be limiting brood rearing habitat, however, due to the limited use this area receives, any impacts would be very minor. Recent radio telemetry data indicates light use by sage grouse in the southern portion of the EBW only.

Resource Concern # 4: Socioeconomics
Under The No Action Alternative, 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 23,000 acres of public lands would provide 2,192 AUM's of forage on 14 grazing allotments in Madison and Beaverhead Counties. The dependency of livestock operators on BLM forage would remain unchanged. Because authorized grazing use on public land allotments would remain static, real estate values of private base properties would not be influenced by BLM actions.

Without treatment, there would be no commercial removal of forest products, and the economic value of the timber resource would be lost. Under the No Action Alternative, there would be no short-term job opportunities created to treat forests and woodlands on BLM-administered lands.

Existing economic trends and BLM expenditures would continue under the No Action Alternative. 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: Wilderness Characteristics

Ecological conditions in the RMWSA would continue to change through ongoing natural processes. However, failing to close Ladder Canyon to livestock trailing, and not changing travel management signage to reinforce the road closure up Ladder Canyon, would fail to address impacts to riparian health along Dry Creek and their effect on wilderness characteristics and values.

4.2.3 Predicted Effects Common to All Action Alternatives

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

Under both Action Alternatives, impacts of livestock grazing on riparian vegetation composition are expected to be positive relative to the No Action Alternative.

Revised grazing systems included in the Action Alternatives were developed in consultation with the grazing lessees to support the implementation and success of resource objectives. Alternatives developed in consultation with affected lessees have an improved chance for success.

Management revisions in the Garden Creek Isolated, Stone Creek, Middle Fork and McHessor Creek allotments which limit the time cattle spend in riparian areas would improve riparian vegetation, stream channel morphology and sediment transport. 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 others (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." Myers (1989), reviewing 34 allotments in southwestern Montana concluded, "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. An upward trend in riparian vegetation vigor and streambank stability is expected on streams that were FAR or NF.

A four inch or six inch sedge stubble height guideline (as applicable) should benefit stream channel morphology by reducing impacts to streambanks and bank-holding riparian vegetation in most areas, but is not expected to initiate significant progress toward meeting PFC on its own. Clary and Leninger (2000) recommend a four inch residual stubble height as a starting point for improved riparian grazing management while acknowledging that six inch of stubble height may be required to reduce browsing of willows or limit trampling impacts to vulnerable streambanks. Excessive wetland hummocking and drying is expected to be reduced where wetlands are adjacent to streams. Reducing impacts to the wetlands and stream banks would decrease channel erosion and sediment inputs into affected stream reaches. These improvements would enhance fisheries habitat where a sedge component is present.

Maintaining/reconstructing six existing and constructing one new proposed water development in the EBW would facilitate more efficient livestock control, distribution, and management. 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 prevent livestock induced hummocking, the compaction of moist wetland soil, and the subsequent raising of bumps or mounds. Hummocking can dry out the mounds, may affect the riparian herbaceous vegetation and lower the water table.

The proposed water developments would improve site conditions at spring sources by fencing the source and developing offsite water sources. Fencing the source would protect the associated habitat in the immediate vicinity. Ehrhart and Hansen, 1997, report cases where offsite water was "the key" to successful riparian management. Clawson, 1993, evaluated the effectiveness of an off stream water source where livestock also had access to a stream and a bottomland spring. The study found that the water development reduced the time livestock spent watering from the stream and spring. However, soil compaction and impacts to vegetation occur where livestock concentrate near water troughs.

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. Prior to developing any springs in the EBW flow measurements would be obtained to determine project feasibility.

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.

Restoring deciduous riparian woody species is expected to have a beneficial impact to riparian health as well as wildlife/fisheries habitat.

Forest and woodland health and prescribed fire are limited in extent and proposed only in McHessor Creek and Stone Creek allotments. These treatments would result in short term effects which would diminish as vegetation responds to new conditions. Changes in forest structure would reduce snow and rainfall interception, and increase infiltration and runoff. According to Robichaud et al. (2006), "no measurable increase in runoff can be expected from thinning operations that remove less than 15 percent of the forest cover or in areas with less than 18 inches of annual precipitation". Data from 95 watershed experiments conducted in the United States shows that, on average, streamflow increases by nearly 2.5 mm for each percent of watershed harvested (Troendle, et al. 2006). Streamflow is quite variable and basal area change within the EBW is well below the threshold necessary to detect statistically significant change.

The potential for runoff, erosion, and sediment input into streams increases with the amount of soil disturbance associated with treatments. Treatments using ground-based equipment (i.e. commercial timber harvest units with conventional yarding) and those requiring construction of new temporary roads would result in more soil disturbance. Commercial timber harvest treatments utilizing helicopter yarding would result in less soil disturbance. Use and

maintenance of BMPs are likely to mitigate the effects of increased runoff and minimize erosion thus reducing the likelihood of sediment entering streams.

Following conifer removal treatments (commercial timber harvest, non-commercial mechanical and/or prescribed fire, and riparian juniper treatments), there would be a positive herbaceous vegetative response which would reduce the amount of bare ground and reduce the potential for erosion and runoff. Over the long term, treatment of juniper in specified riparian areas is expected to increase deep-rooted riparian vegetation and improve stream channels. Treatment of western juniper using chainsaws and/or herbicides in riparian zones in northeastern California and western Nevada was followed by "greater than expected" release of deep rooted herbaceous and deciduous woody vegetation within three years (pers. comm. Don Lancaster, 2007).

Issue # 2: Forest and Woodland Health and Fuels Management

Commercial harvest treatments would decrease intrastand competition on the areas treated and would increase available moisture by allowing more precipitation to reach the forest floor and not be lost to evaporation and sublimation. The post-harvest stand would have increased availability of water and nutrients due to decreased competition, which would improve tree vigor and resistance to insects and/or disease.

Actions proposed in both action alternatives would make varying amounts of progress toward fulfilling the following goals and actions of the Forest and Woodland Vegetation and Forest Products section in the Record of Decision and Approved Dillon Resource Management Plan:

- Goal 1, Action 4: Treat up to 4,000 acres in the Cool and Moist habitat type in the following geographic areas (south Tobacco Roots, southern Ruby Mountains, Barton/Idaho Gulch areas).
- Goal 1, Action 5: Treat up to 10,000 acres in the Warm and Dry and Warm and Very Dry habitat types in the following geographic areas (south Tobacco Roots, southern Ruby Mountains, Barton/Idaho Gulch areas)

Resource Concern # 1: Sagebrush Steppe Habitat and Associated Species

On the vast majority of BLM uplands within the EBW, utilization of forage plants was found to be substantially less than 50% under current management. In the Middle Fork allotment, where upland utilization was an identified concern in some areas, managing for <50% livestock utilization during spring and summer treatments is expected to benefit water infiltration, plant vigor of upland forage species, reduce soil loss through overland erosion and leave adequate residual cover and forage for wildlife.

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.

The Stone Creek Isolated allotment did not meet the Biodiversity Standard because about 25 acres of this 40 acre parcel has been seeded with the non-native species crested wheatgrass. Because this isolated parcel is surrounded by private land, with no public access, and contains no additional resources values, (e.g. recreational opportunities, hunting access, timber), disposal is proposed. Current conditions and trends related to biodiversity would not be expected to change as a result of this action.

Resource Concern # 2: Travel Management
The travel management adjustments proposed for the area north of Stone Creek Road would have no adverse impact on recreational users of the area since the routes proposed to be opened would provide better access into the same area than those proposed to be closed. The closure of the steep, badly eroded segment of road in favor of the longer, previously constructed route would make recreational vehicle travel easier, safer and more accessible for a wider variety of vehicle types while reducing resource impacts (i.e., erosion and associated stream sedimentation) in the area.

Resource Concern # 3: Special Status Species
Improving riparian conditions on the Middle Fork of Stone Creek would enhance brood rearing habitat for sage grouse. Additionally, it would improve habitat for WCT downstream of this stream reach in the lower Middle Fork.

Resource Concern # 4: Socioeconomics
The economies of Beaverhead and Madison Counties are highly dependent on agriculture. Jobs and tax revenue generated by livestock associated activities are important economic components of southwest Montana. The alternative or combination of alternatives selected by the BLM Authorized Officer may have a financial impact on an individual grazing lessee and cumulatively on the economic and social fabric of the larger community.

Modifications of use periods in specific pastures or within an allotment, incorporating additional rest or deferment, reducing AUMs and/or reducing numbers of livestock would economically impact ranchers who rely on public land grazing. Operators may have to use private pastures or other areas for longer periods of time and/or may be required to reduce herd size. Additional range improvement projects would increase construction and maintenance expenses for the lessees and the BLM in the short term. In addition, use guidelines in the uplands and riparian areas may necessitate increased labor inputs (riding) by the lessees in order to harvest authorized AUMs.

A variety of projects are proposed on BLM-administered lands to improve land health. 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
AUMs reductions (units)	193	327
New fence construction, including riparian exclosures/ pastures (miles)	5.0	2.5
Fence reconstruction (miles)	1.2	1.2
Fence removal (miles)	1.0	1.0

New spring developments (units)	2	2
New 1,000g troughs (units)	6	6
New stockwater pipelines (miles)	1.25	1.25
Spring exclosure reconstruction (units)	4	4
New wetland exlosures (units)	3	3
Treat riparian conifers (acres)	3	6
Re-designate roads (miles)	4.9	3.1
Commercial timber harvest (acres)	52	309
Non-commercial mechanical or burns (acres)	313	313
Maintenance burns (acres)	0	up to 116
Land Disposals (acres)	80	40

The forest health treatments under Alternatives B and C include actions identified in Alternative B of the Dillon RMP. The RMP specifically identified the southern Ruby Mountains as a priority treatment area. Implementing commercial harvest treatments would recover the economic value of the timber resource before it is lost due to mortality and decay, and would create short term employment opportunities.

BLM expenditures would temporarily increase under both action alternatives during the implementation period.

Socioeconomics was fully analyzed under Alternative B in Chapter 4 pp 331-332 of the Final EIS for the Dillon RMP.

Resource Concern # 5: Wilderness Characteristics
Signing Ladder Canyon closed to motorized vehicles at the intersection with the designated county road would discourage users from driving up the private road to the mouth of Ladder Canyon and into the RMWSA. The closure would be signed at a location where there is an opportunity for people to park their vehicles and either walk or ride horseback on the designated county road into the RMWSA. Any motorized vehicle, foot and/or horseback traffic across the private lands to the mouth of Ladder Canyon would continue to be in trespass. There would be a slight decrease in the disturbance to the old stock driveway route, a slight decrease in the spread of noxious weed seeds within the RMWSA, and reduced impacts to the riparian condition along the route.

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

For each grazing allotment, or un-allotted parcel, where management changes or actions are proposed, the predicted effects of each applicable action alternative(s) are presented for each of the issues in the following order and are arranged accordingly:

Issue # 1: Riparian, Wetland, Aquatic Habitat and Associated Species
Issue # 2: Forest and Woodland Health and Fuels Management
Resources Concern # 1: Sagebrush Steppe Habitat and Associated Species
Resource Concern # 2: Travel Management
Resource Concern # 3: Special Status Species
Resource Concern # 4: Socioeconomics
Resource Concern # 5: Wilderness Characteristics

Headings are omitted under those allotments within which certain issues are not present, are present, but not affected or previously addressed under section 4.2.3, Predicted Effects Common to All Action Alternatives.
Wilderness Characteristics are discussed under the grazing allotment in which the RMWSA is located. Portions of the Garden Creek Isolated and McHessor Creek allotments are located within the RMWSA.

Carter Creek Allotment
Alternative C (there is no Alternative B)

Issue # 1: Riparian, Wetland, Aquatic Habitat and Associated Species
Predicted effects of treating juniper within the riparian area of Carter Creek would be an increase in deep-rooted riparian vegetation (aspen, willows, red-osier dogwood, sedges, etc.) which would be followed by stream channel improvements, increased water storage capability and widening riparian zones. Sediment input into the treated reaches may increase initially and then decrease from current levels due to an increase in vegetative cover, which would be more effective at trapping sediment coming from both instream and upland sources.

Fisheries habitat on Carter Creek is currently meeting habitat requirements. Removing the juniper would further enhance conditions by allowing deciduous woody vegetation such as willow and aspen to regenerate providing better quality fisheries habitat through improved stream bank cover and stability as well as an increase in aquatic insect productivity.

Resource Concern # 4: Socioeconomics
Mechanical treatment of juniper along Carter Creek would cost the BLM, and tax payers, up to $600 per acre. The project would be implemented by a contractor, providing jobs and short term economic benefits.

Garden Creek Isolated Allotment
Alternative B (there is no Alternative C)

Issue # 1: Riparian, Wetland, Aquatic Habitat and Associated Species
Permanently prohibiting livestock trailing and ATV use up Ladder Canyon would allow degraded banks an opportunity to re-vegetate and heal. Eventually, vegetation would reestablish along the banks in impacted areas which is critical to proper functioning riparian systems. Improved bank structure, and healthy riparian vegetation would facilitate sediment trapping during seasonal high flows, increase water absorption and recharge, narrowing and deepening of the channel, natural stream sinuosity, raising the water table and widening of the riparian zone.

Discouraging off road vehicle use would reduce erosion, decrease sediment inputs, weed seed dispersion, and bank degradation from vehicles crossing Dry Creek (reaches 880 and 881). With time, bank stabilization would provide the stream channel the opportunity to find its natural width, depth and sinuosity and riparian vegetation would increase.

Resource Concern # 2: Travel Management
Closing approximately 0.4 miles of road currently open to motorized travel north of Big Dry Creek could potentially impact the ability of disabled hunters to access this area. This closure was recommended to the BLM by a group of local sportsmen; the net result would potentially improve hunting opportunities for the general public while restricting access by vehicles for disabled hunters. It would remove nearly ½ mile of motorized routes from the more than 1,300 miles of designated routes within the BLM Dillon Field Office

Resource Concern # 4: Socioeconomics
Eliminating livestock trailing in Ladder Canyon would result in increased operating costs and labor inputs to the Garden Creek Isolated allotment grazing lessee. Cattle would have to be trucked from the East Bench to the Ruby Reservoir area and then herded up into their summer allotment in the Ruby Mountains.

Resource Concern # 5: Wilderness Characteristics
Permanently eliminating livestock trailing through Ladder Canyon would substantially improve the natural character of the RMWSA by restoring the health of the riparian area through the canyon, improving natural stream flows, and other natural processes that would be restored through the re-establishment of a natural vegetative community. With the elimination of livestock trailing, the constructed livestock driveway through the high mountain meadows could be allowed to recover, eliminating the most prominent impacts of man's activity within the interior of the RMWSA. The *Montana Statewide Wilderness Study Report, Volume II* (September, 1991) stated, "The intensive inventory concluded that this large RMWSA appears natural in character, with the major impact being a stock driveway." (p. 205) Allowing this "major impact" to naturally recover, or potentially even assisting with the reclamation of the impact, would substantially benefit the wilderness characteristics within the RMWSA as a whole by eliminating evidence of man's activity that is visible over large parts of the area. Given the extent of the disturbance and the availability of noxious weed seed sources, it might prove necessary to plant native seeds to discourage spread of weeds within the RMWSA.

McHessor Creek Allotment
Alternative B

Issue # 1: Riparian, Wetland, Aquatic Habitat and Associated Species
Corridor fencing would be the most effective way to protect and improve WCT habitat on Trout Creek (reach # 425). Seasonal impacts from authorized livestock to the riparian corridor, and fisheries habitat, would be eliminated by constructing the corridor fence. The riparian health concerns are primarily: lack of willow and aspen regeneration/recruitment, stream bank alterations and shearing at crossings, stream channel over-widening and increased sediment inputs into the system. The high tensile electric let down fence would prevent livestock browsing on willow and aspen seedlings, as well as herbaceous species, when in the Trout Creek pasture. This would be particularly important during summer when cattle tend to concentrate use on high nutrient riparian vegetation. Also, during the fall, livestock browse riparian woody species because of nutrient content and palatability compared to cured upland forage. Browsing by wildlife species would continue to impact woody species recruitment. Stream bank damage,

and associated localized sediment inputs, would also be reduced by protecting the banks from livestock crossing, trailing, watering or loafing adjacent to the channel.

Reconstructing and maintaining the Malesich/Walsh allotment boundary fence would keep unauthorized cattle from adjacent private land in the Stone Creek allotment from grazing the riparian area of upper Spring Creek (reach # 400). Because of topographical features separating this area from the McHessor and Trout Creek drainages, this isolated area of the McHessor Creek allotment is rarely used by the lessee's cattle, but unauthorized livestock have been accessing this area and contributing to riparian impacts. Plant community succession is converting lower section of Spring Creek from willow and aspen to a Douglas fir/dogwood type and is greatly reducing recruitment of young willow and aspen. The upper reach is dominated by spruce and the heavy sun blocking canopy has created a bare ground understory. Erosion and run off are contributing to increased levels of sediment in the system. Cattle trailing and crossings are also a factor in bank destabilization and sediment loads. Eliminating unauthorized livestock use to the area would help, but not entirely eliminate sediment problems.

Removing the wood culverts from Spring Creek reach 400 would facilitate channel adjustments and sediment transport associated with natural stream processes. No long-term measurable increases in sediment would be expected.

Resource Concern # 3: Special Status Species
Corridor fencing approximately one and one half miles of Trout Creek would improve WCT habitat by decreasing the amount of bank trampling and sediment inputs into the stream. Fencing would also promote vigorous and diverse riparian herbaceous and woody vegetation. Improved riparian conditions would provide better quality spawning conditions as well as provide additional security habitat for juvenile WCT. Corridor fencing with let-down electric fence would greatly reduce the potential for big game entanglements, but would not eliminate them completely. Proper tension adjustment and lowering of the wires immediately after the cattle are out of the allotment would further reduce conflicts.

Resource Concern # 4: Socioeconomics
The one-time cost to the BLM for the proposed three strand high tensile electric fence along Trout Creek would be approximately $5,000. The expense of maintaining the fence and the labor required to raise and lower wires before and after the cattle are in the Trout Creek pasture would be the grazing lessee's responsibility. Fencing materials for the upgrade of the Malesich/Walsh boundary fence would be provided by the BLM; labor and maintenance would be shared by the grazing lessees on the McHessor Creek and Stone Creek allotments (Alternatives B&C).

Resource Concern # 5: Wilderness Characteristics
A corridor fence would create approximately one linear mile of additional fencing within the RMWSA (two total miles of fence in order to fence both sides). Most of the fencing within the RMWSA would be constructed of three-strand high tensile electric wire that would be let down when cattle were not within the area. Wire would be mounted on a combination of wood and fiberglass posts. All of these materials would be evidence of man-made intrusions on the natural conditions within the RMWSA. During the period of time when the fence is activated, the fence

would also influence the natural movements of big game wildlife within the area including elk, deer, bears, cougars, etc. Impacts to wilderness values would be substantially reduced during the periods of time when cattle are not present and the fence is let down, reducing the visual impact of the fence as well as allowing unrestricted wildlife passage and recreational travel by humans.

The IMP states that "permanent installations to protect sources of water on which native wildlife depend, such as exclosures and protective fencing, may be built if they enhance wilderness values, are substantially unnoticeable, and cannot be located outside the RMWSA boundary. Permanent riparian, wetland, and aquatic enhancement installations may be permitted as long as their purpose is to enhance wilderness values, protect or maintain natural conditions, and restore deteriorated habitat. These installations must also be substantially unnoticeable." (p. 44). The IMP allows for the construction of new temporary or permanent livestock developments (including fencing) only when they "truly enhance wilderness values" and are substantially unnoticeable. The man-made intrusion of the proposed fence would cause visual impacts to the natural appearance of the landscape as well as impacts to natural processes such as wildlife movements. Visual impacts would be most apparent when livestock are in the area and the fence is intact and electrified. The linear visual disturbance will be apparent to users of the area on both sides of the drainage from points on the ridges overlooking Trout Creek. Once the livestock have moved out of the area, the fence would be "let down," and visual impacts would be substantially reduced while the high tensile wire is laying in the grass and brush and essentially unnoticeable. The only remaining visual evidence of the fence would be the posts approximately every 100 feet along the stream corridor. The posts with small insulators to hold the wire would be occasionally visible to visiting recreationists amongst the other predominantly vertical lines of vegetation and timber within the creek drainage.

The proposed fence would protect native WCT which is a BLM sensitive species. The presence of this species supports the natural processes within the stream. The proposed fence would "protect or maintain natural conditions, and restore degraded habitat." Enhancing wilderness values is subjective based on the relative merits of the protection of the fish over the visual intrusions on the otherwise natural appearance of the landscape in this particular drainage. In light of the visual intrusions being limited to the specific viewshed of the Trout Creek drainage, and further limited by the season of use when the livestock would be present within the drainage, it could be argued that the fence would be "substantially unnoticeable" in the area as a whole.

Other, less intrusive actions to reduce impacts to the fish, such as reductions in livestock stocking rates, are unlikely to produce the desired level of protection for the fish due to the topography in the drainage and interspersed private land.

<u>Alternative C</u>

Issue # 1: Riparian, Wetland, Aquatic Habitat and Associated Species
Constructing three drift fences would allow the Trout Creek drainage/pasture to be managed as a riparian pasture and limit the amount of time that cattle have access to Trout Creek. The pasture would be completely rested two out of three seasons, and grazed 30 days during the third year. This would enhance plant vigor, initiate bank building, reduce sediment, and allow willow and aspen seedlings to grow to a more grazing resistant stage which would improve WCT habitat.

Predicted effects of reconstructing the Spring Creek pasture boundary fence would be the same as described above under Alternative B.

Removing the metal culvert would require some earthwork and could result in temporary increases in sediment. Once the section stabilizes, effects would be similar to the removal of the wood culverts (Alternative B).

Issue # 2: Forest and Woodland Health and Fuels Management
Under Alternative C, commercial timber harvest would be implemented on up to 147 acres in the Spring1 unit, which falls in both the McHessor Creek and Stone Creek allotments. Approximately 53 acres of this unit is within the McHessor Creek allotment. Due to the majority of this unit being located within the Stone Creek allotment, predicted effects are discussed below under the Stone Creek allotment.

Implementing the SpringRx treatment unit would complete prescribed burning on up to 116 acres of previously harvested timber stands in the Spring Creek drainage. As a result, growing conditions would improve for residual trees as competition for water, light and nutrients is reduced by the removal of conifer regeneration. Shrubs and grasses would be revitalized by low-intensity under-burning, and vigor of understory plants would increase. Completing this maintenance prescribed burning would maintain the Douglas-fir savannah structure (open, mature trees) and maintain long-term structural heterogeneity in the Spring Creek drainage.

Resource Concern # 3: Special Status Species
Constructing several short drift fences and limiting livestock use to 30 days one year in three would allow for rapid improvement in riparian and WCT habitat conditions. Providing these fences are effective in preventing access to the Trout Creek drainage, this alternative would meet all requirements for WCT habitat while also reducing the threat of wildlife entanglement inherent with wire fence.

Resource Concern # 4: Socioeconomics
Material cost of the drift fences would be approximately $2,500. Required labor inputs are estimated to be an additional $2,500, and would be the responsibility of the BLM grazing lessee.

Resource Concern # 5: Wilderness Characteristics
Three short drift fences are proposed in Alternative C that could potentially impact the wilderness values in the RMWSA. All three of these fences are proposed on the boundaries of BLM lands. If it is possible to construct these fences on the adjacent state or private lands, there would be no adverse impacts to the RMWSA and some associated clear benefits since their construction would protect the native WCT populations in Trout Creek within the RMWSA.

The exact location of these fences on the ground would be determined by choosing the place that most effectively prevents the passage of livestock from surrounding lands into the Trout Creek drainage. If it is necessary to construct all or a part of these fences within the RMWSA, their construction would be consistent with management of the RMWSA in accordance with the IMP. Due to the limited extent of the fencing (short sections of roughly ¼ - ½ mile each) and the expected benefits of protecting the native fish population in Trout Creek, this proposed activity

would enhance wilderness values. The minimal physical presence and isolated locations would cause very little visual evidence of man-made activities, making them substantially unnoticeable in the area as a whole. The overall effect of these fences would provide a clear benefit to the wilderness values by retaining the long-term viability of the native fish population and riparian conditions within the Trout Creek drainage.

Middle Fork Allotment
Alternative B

Issue # 1: Riparian, Wetland, Aquatic Habitat and Associated Species
Fencing the north side of the Middle Fork (reach # 408) would create a riparian pasture and limit access to the riparian zone by cattle to seven days once every three years. Resource concerns that would be addressed are: lateral stream movement, channel down cutting and incisement, high sediment loads, lack of recruitment and regeneration of willows and aspen as well as the health and vigor of deep rooted sedge where applicable.

Isolating the stream would allow cattle to graze the uplands while protecting the riparian and fishery habitat. Cattle preference for woody species often increases in late summer and fall. This is due to greater palatability and higher protein content compared with most herbaceous species (Kovalchik and Elmore 1992). Higher browse use may also reflect the fact that livestock are spending more time in riparian areas and have already consumed most of the available herbaceous forage. Controlling access late in the season may allow willows and aspen saplings and seedlings an opportunity to establish and grow to a more grazing resistant stage. However, browsing on willows, aspen, and other deciduous riparian woody species by moose and other wildlife species would continue.

In 2003, a riparian exclosure fence was constructed on the lower ¼ mile of the Middle Fork in this pasture. Currently within this exclosure, willows are flourishing, deep rooted herbaceous sedges have increased along the banks, and raw banks are healing. This reach has improved from NF to PFC in five years. Creating a riparian pasture by fencing the remaining mile or so on the north side of the Middle Fork would promote a similar response on reach 408. The lessee would be authorized to use the riparian pasture in conjunction with the overall pasture rotation strategy every third grazing season for up to seven days. According to Elmore and Kauffman (1994) riparian pasture use is applicable in areas where riparian areas encompass a large enough area to be managed separately from uplands. This pasture would enclose about 300 acres balancing upland and riparian forage availability. There would be enough upland forage in the pasture so that cattle would not overgraze the riparian forage during their short (seven day) time they were in the pasture. Along with improved riparian conditions within the riparian pasture, downstream habitat would improve with reduced levels of sediment moving downstream. While not currently occupied by WCT, it could potentially provide at least seasonal use as the habitat improves.

A second important component of the Middle Fork restoration plan would be the proposed pipeline and water troughs on the ridge north of the Middle Fork. This project would keep cattle from dropping down into the drainage to water. Cattle given a choice prefer to drink out of a trough 73% of the time (Clawson 1993). The North Big Field pasture is 1,100 acres and

providing strategically placed water and salt would help distribute cattle and utilize upland forage.

Resource Concern # 1: Sagebrush Steppe Habitat and Associated Species
The uplands are in PFC, but long term trend monitoring indicates a slight decrease in some cool season grasses and diminished plant vigor. This alternative would continue the current seven pasture rest rotation, but the number of authorized AUMs harvested would be reduced by 15%, reflecting the percentage of total AUMs rested each year. Because the size and carrying capacity of each pasture is different, the actual AUMs harvested in any given season would vary based on which pasture is rested. Overall, the reduction in AUM's would shorten the pasture rotation and decrease upland use. The health, vigor and abundance of key upland species like bluebunch wheatgrass and Idaho fescue would benefit from this change.

Resource Concern # 4: Socioeconomics
The expense of replacing 123 AUMs would be shared by both grazing lessees. The difference between the average private land AUM and an AUM on public land in 2009 is $16.75. The grazing lessee would incur this added operating expense.

Under both Alternatives B & C, the costs of the pipeline, storage tank, and water troughs, as well as installation expenses would be shared by the BLM and the grazing lessee. The materials for the Middle Fork riparian exclosure fence would be provided by the BLM. Installation would be a cooperative effort between the lessee and BLM.

<u>Alternative C</u>

Issue # 1: Riparian, Wetland, Aquatic Habitat and Associated Species
The proposed pasture rotation would include only the five pastures that contain public land administered by the BLM. One pasture in five would be rested each year. The active AUMs authorized on BLM lands would be reduced by 20%, reflecting the additional rest provided under this alternative. Resting pastures more often, and shortening duration of grazing in each pasture, would benefit plant production, recruitment and vigor. Rest- rotation has shown superiority over continuous and season-long grazing on mountain ranges where cattle may heavily use riparian areas under all grazing strategies (Platts and Nelson, 1989). Rotating grazing in each pasture through the season of use would provide upland and riparian plants more time for after grazing re-growth, and during most seasons, the opportunity to complete their physiological processes. Plant vigor, seed production and recruitment, and canopy cover is expected to increase.

Projects proposed and their predicted effects on riparian health would be the same as in Alternative B.

Resource Concern # 4: Socioeconomics
The grazing lessees would have to replace 171 AUMs of forage each season under Alternative C. The difference between the average private land AUM and an AUM on public land in 2009 is $16.75. The grazing lessee would incur this added operating expense.

Stone Creek Allotment
Alternative B

Issue # 1: Riparian, Wetland, Aquatic Habitat and Associated Species
The number of days cattle are authorized to be in the allotment would be reduced 10%, to 70. This reduction would limit the time cattle graze any given pasture to 35 days. The current pasture rotation would continue. Two of three pastures containing public land would be utilized each year, while the third would receive full rest.
Although specific proposals to address riparian issues by stream reach are included, limiting use to 35 days in each pasture would also decrease impacts from grazing to riparian areas. While there are different opinions regarding the best season of use, there is consensus that the length of time animals spend in a riparian area can be a significant factor in the condition of the area. With the exception of winter grazing periods, less than 20% of operations evaluated that exceeded 45 days in a pasture had healthy riparian zones (Ehrhart and Hansen, 1998).

Several stream reaches in the Left Fork and Spring Creek pastures did not fully meet the Riparian Health standard. Specific management actions are proposed that would, combined with the shorter season of use, address these concerns. Several springs in the allotment would be protected by building new, or re-constructing old, jack and rail spring exclosures around the spring source and associated wetlands. The benefits of these proposed projects are discussed under section 4.2.3 above. In addition, a new water development would be constructed on upper Corral Creek (reach # 448) which would reduce the impacts by cattle to the riparian zone along this reach.

Predicted effects of treating juniper within the riparian area of Corral Creek would be an increase in deep-rooted riparian vegetation (aspen, willows, red-osier dogwood, sedges, etc.) which would be followed by stream channel improvements, increased water storage capability and widening riparian zones. Sediment input into the treated reaches may increase initially and then decrease from current levels due to an increase in vegetative cover, which would be more effective at trapping sediment coming from both instream and upland sources.

Issue # 2: Forest and Woodland Health and Fuels Management
Under Alternative B, commercial timber harvest would be implemented on up to 52 acres in the Stone1 unit, which falls in both the Stone Creek and Belmont Allotments. Approximately 28 acres of this unit is within the Stone Creek Allotment. Implementing commercial timber harvest in the Stone1 unit would recover wood product value that would be lost without treatment due to mortality and decay from mountain pine beetle activity. Post-harvest, the stand would consist of more widely spaced individuals and groups of Douglas-fir and spruce trees, intermixed with patches of lodgepole pine seedling and saplings. Competing conifers would be cut within 40 feet of Douglas-fir leave trees greater than 18” DBH, which would increase vigor of these mature Douglas-fir trees and reduce their susceptibility to Douglas-fir beetle. Disturbance to existing

patches of lodgepole pine seedlings and saplings would be minimized, and these patches would provide hiding and thermal cover for some species of wildlife. These young patches of lodgepole would not be susceptible to mountain pine beetle for the next 40 to 80 years. Opening small patches in or around Engelmann spruce would promote a younger cohort of this species and increase stand diversity in this forest type. Increasing tree spacing would reduce spruce budworm activity by reducing interception of spruce budworm larvae by the understory and increasing their vulnerability to predators, parasites, and erratic weather conditions (USDA Forest Service, 2004). By removing trees which are weakened and more susceptible to damaging insects and improving environmental conditions in the stand, resistance to insect populations would increase (Furniss et. al, 1979). Throughout the stand, fuel loading would be decreased, and the treatment would increase horizontal structural diversity and improve growing conditions for residual trees.

The proposed commercial timber harvest treatments would not likely have any long term impacts to big game habitat in the treatment areas. It's likely that over the short term there would be displacement from the area while timber harvest was occurring, but in the long term, increased forage in these areas may also benefit wildlife.

Leaving up to 0.5 miles of new temporary road and existing re-opened road open for up to three years to allow permitted removal of firewood or other minor forest products would provide opportunities for traditional and non-traditional uses of forest products by the community, and help remove standing dead trees that have limited commercial value. If the timber sale Purchaser elects to remove this standing dead material as biomass, the fuel reduction effects would be the same but there would be no additional public firewood availability. Physically closing roads by using right-of-way debris has been a useful tool in the Dillon Field Office for over 15 years with nearly 100% success in prohibiting unauthorized road use, and it is anticipated this would also be the case in the EBW.

The use of mechanical treatments and/or prescribed fire to reduce conifers in the SpringMahog treatment unit would slow the conversion of this site from mountain mahogany and sagebrush/grasslands into forest habitat. Reducing conifers would support the reestablishment of sagebrush/grasslands on productive sites, and provide full sunlight to harsher sites favored by mountain mahogany. To conserve the existing mountain mahogany stand, conifer removal by mechanical means, rather than prescribed fire, would be considered. In areas of sagebrush/grassland habitat that is converting to forest/woodland, prescribed fire would be used to kill the young Douglas-fir and juniper. Exposing bare mineral soil would provide a seedbed for mountain mahogany regeneration.

Improving the viability of existing mahogany stands would improve winter forage for deer, elk and moose. The use of prescribed fire could create the potential for overuse of young mahogany. The current level of wildlife browse on mature mahogany in this area is very high. Young plants subjected to this level of use may not survive.

Resource Concern # 4: Socioeconomics
Reducing the season of use by seven days would result in the loss of 70 AUMs of forage. The difference between the average private land AUM and an AUM on public land in 2009 is $16.75. The grazing lessee would incur this added operating expense.

The proposed improvement projects are the same under both Alternatives B & C. The costs of materials and labor would be shared by the BLM and the grazing lessee. Each project, depending on its type, has a fixed cost sharing ratio. For example, the cost of the materials required to install the proposed new water development on upper Corral Creek would be shared evenly, but the BLM would install the headbox, pipeline, and trough. Therefore, the BLM covers three quarters of the initial expense of installing a new water development. However, long term maintenance on all range improvement projects on public land is the responsibility of the range user. Over the course of many years the amount of time and labor the grazing lessee is required to contribute for annual maintenance to a water development project is substantial.

Alternative C

Issue # 1: Riparian, Wetland, Aquatic Habitat and Associated Species
The season of use would be reduced by 22%, to 60 days. This would limit the duration of grazing in any given pasture to 30 days per year. In addition, the three pasture rest- rotation grazing system would utilize the pastures during different stages of plant physiological development as well as resting each pasture once every three years.

Limiting the intensity, frequency, or season of use, provides the opportunity for improved plant vigor and re-growth. Shortening the duration and providing growing season rest, deferment, or recovery in all pastures lessens animal impacts, provides for growth or re-growth, and causes livestock to be less selective in grazing (Provenza 2003).

Duration of grazing in pastures with riparian areas should be limited to 25-30 days. Vegetative cover is essential for maintaining healthy riparian ecosystems. Through a combination of rest and removing cattle in sufficient time to provide for re-growth, successful riparian systems provided residual cover 75% of years (Myers 1989).

Proposed projects and their predicted effects on riparian health would be the same as in Alternative B.

Issue # 2: Forest and Woodland Health and Fuels Management
Under Alternative C, three commercial timber harvest treatments would be implemented. These are units Stone1 (52 acres), Stone2 (110 acres), and Spring1 (147 acres). The SpringMahog treatment unit (313 acres) would also be implemented under Alternative C. Both the Stone1 and Spring1 units overlap allotment boundaries, and are not completely within the Stone Creek Allotment. Approximately 28 acres of the Stone1 unit and 95 acres of the Spring1 unit are within the Stone Creek Allotment boundary.

Predicted effects of implementing the Stone1 commercial timber harvest unit and the SpringMahog mechanical and/or prescribed fire unit would be the same as described above in Alternative B.

Implementing commercial timber harvest in the Stone2 unit would reduce stand density and result in a more open and structurally diverse stand post-harvest. Douglas-fir beetle hazard would be reduced from a high rating to a low to moderate rating. Although current levels of defoliation from spruce budworm are low to moderate, the post-harvest stand would have an increased resistance and reduced hazard for spruce budworm outbreak. Feasibility of helicopter use for logging has recently and substantially declined in the Intermountain Region due to declines in the timber market and increases in costs, and implementation of commercial timber harvest in the Stone2 unit would be dependent on receiving bids for the sale. Treatment in this unit may be delayed due to current market conditions and economic feasibility of helicopter logging operations.

Implementing commercial timber harvest in the Spring1 unit would reduce stand density, reduce fuel loading, and recover wood product value that would be lost without treatment due to mortality and decay from mountain pine beetle and spruce budworm. The post-harvest stand would be more open, structurally diverse, and have increased understory vegetation diversity. Douglas-fir beetle hazard would be reduced from a high rating to a low rating. The treatment would reduce spruce budworm activity and remove trees that were more heavily damaged by spruce budworm. With improved environmental conditions in the treated stand, remaining healthy limber pine would have increased vigor. However, due to the aggressive nature of white pine blister rust and mountain pine beetle, these limber pine trees may still be attacked and killed.

Building up to 1.0 miles of new temporary road for the Spring1 unit would temporarily displace wildlife during road construction and harvest activities. However, re-contouring this road upon completion of harvest operations would mitigate these short term impacts.

In both the Stone2 and Spring1 treatment units, removing competing conifers in and around aspen stands would stimulate aspen regeneration and revitalize these stands. The placement of slash and other non-merchantable material within and around these aspen stands would help protect aspen regeneration from browsing on a localized basis. Competing conifers would be cut within 40 feet of Douglas-fir leave trees greater than 18” DBH in both units, which would increase vigor of these mature Douglas-fir trees and reduce their susceptibility to Douglas-fir beetle. Spruce budworm activity would be reduced by increasing tree spacing, which would reduce interception of spruce budworm larvae by the understory and increase their vulnerability to predators, parasites, and erratic weather conditions (USDA Forest Service, 2004).

By using timber harvest as a tool, Douglas-fir stands in Units Stone2 and Spring1 would be thinned to provide more varied distribution and structural diversity throughout the landscape. Removing trees which are weakened and more susceptible to damaging insects and improving environmental conditions in the stand would increase resistance to insect populations (Furniss et. al, 1979).

Commercial harvest treatments in the Stone2 and Spring1 units are designed to reduce the hazard of Douglas-fir beetle outbreak before it occurs. However, if Douglas-fir beetle outbreak conditions occur prior to treatment being implemented, the harvest prescription would be changed to focus on salvage harvest of dead/dying trees due to Douglas-fir beetle (see section 2.3.3 Features Common to Alternatives B and C, Forest and Woodland Treatments). The longer treatment is delayed, the higher the probability is for a Douglas-fir beetle outbreak to occur. The Stone2 unit has a higher chance of delay of treatment, due to economic feasibility of helicopter logging.

Stone Creek Isolated Allotment
Alternatives B & C

Resource Concern # 1: Sagebrush Steppe Habitat and Associated Species
Disposing of this isolated 40 acres through sale or exchange would maintain the current trends of land health. The decreased plant community biodiversity from the crested wheatgrass seeding would not be mitigated by the BLM because the property would become privately owned. Disposing this 40 acre tract of public land is feasible because the Dillon RMP designates this parcel as Land Adjustment Category 3, i.e. most appropriate for sale or exchange.

Resource Concern # 4: Socioeconomics
This parcel is surrounded by private land and is there is no public access. The property would be made available for sale or exchange at the appraised market value.

Stone Creek un-allotted
Alternative B

Issue # 1: Riparian, Wetland, Aquatic Habitat and Associated Species
Disposal would put stream reach 421, which was determined to be NF, into private ownership. Non-functional riparian conditions would be expected to continue. Disposing this 40 acre tract of public land is feasible because the Dillon RMP designates this parcel as "unavailable" for grazing lease, and Land Adjustment Category 3, i.e. most appropriate for sale or exchange.

Resource Concern # 4: Socioeconomics
This parcel is adjacent to private land on the north and south side of Stone Creek Road. The property would be made available for sale or exchange at the appraised market value.

Alternative C

Issue # 1: Riparian, Wetland, Aquatic Habitat and Associated Species
Fencing approximately 15 acres would isolate Stone Creek; reach 421, from cattle on adjacent private land. Re-routing Stone Creek to its natural channel and associated floodplain would facilitate restoration of natural stream processes. Any existing water rights would be honored. This project would only move forward if permit conditions can be met and water rights are not violated.

Resource Concern # 4: Socioeconomics
This parcel is not a grazing allotment so the costs of building and maintaining the boundary fence and rehabilitating the channel would be the sole financial responsibility of the BLM.

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 the EBW assessment area and any adjacent continuous habitats. The EBW contains historical information that is applicable to this section. Also, 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 (hydrological and vegetative) of most mountain streams in the Intermountain West (Elmore and Beschta, 1987; Elmore and Kaufman, 1999; Naiman, 1988). Although there are still active beaver colonies in the watershed, 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).
- 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).
- Whitebark pine is declining rapidly across many parts of its range due to the combined effects of the exotic white pine blister rust, the native mountain pine beetle, and the exclusion of fires (Arno 1986; Kendall and Keane 2000; Tomback et al. 2000).
- Exclusion of fire from the landscape (e.g. removal of fine fuels by livestock, coupled with fire suppression over the past century), has resulted in the increase in accumulation of fuel loads and reduced forest health.
- Elk and moose populations in southwest Montana have increased over the past 20-25 years, primarily as a result of light snow conditions during fall and winter and low hunter harvest.
- Livestock impacts on lands upstream from BLM administered land may contribute sediment to streams and subsequently may adversely affect downstream water quality on public land.
- Road use and maintenance adjacent to or crossing streams, specifically Stone Creek

Road, 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 (camp sites, new trails and roads, spreading of weed seed, etc.).
- The WCT populations in the EBW are classified at high risk of extinction due to limited population segments in restricted habitat making remaining occupied habitat essential to supporting remaining populations. Competition with non-native eastern brook trout in Trout Creek continues to adversely influence WCT populations in this drainage. The high density of brook trout in Spring Creek on private lands will continue to adversely impact this population, possibly leading to extirpation of this small WCT population.
- There has been timber harvest, pole cutting, 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 140 acres across the watershed.
- Approximately 221 acres of commercial timber harvest has occurred on State of Montana lands in the EBW during the past 30 years.
- An unknown acreage of forested land has been harvested on private lands, primarily in the Spring Creek area.
- 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). 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.
- Mining in the EBW has directly and indirectly impacted the water quality and riparian and upland habitats on BLM and private land. The Beaverhead and Treasure Mines have disturbed a total of 480 acres (estimated), resulting in changes to topography and land cover. Mining activity has also altered the hydrologic regime. Runoff and infiltration patterns have been altered by the creation of excavating pits and settling ponds, waste dumps, and associated changes in topography. To support the Beaverhead mining operation a new haul road was constructed in the 1990s. The wider road has contributed to cumulative impacts by the loss of upland habitat and increased sediment inputs into Stone Creek. A cooperative restoration project, between the BLM, Barretts Minerals, the State of Montana and private land owners was completed in 2002. Changes to road maintenance procedures, narrowing the road in locations close to the stream, strategic placement of filter fabric to catch sediment flowing off the road, and in-stream restoration work have combined to reduce sediment inputs, restore natural channel characteristics, and improve the vigor and increase the diversity of riparian plant communities. The abandoned haul road, adjacent to the Left Fork of Stone Creek, was reclaimed in the mid 1990s, mitigating adverse impacts to the creek and fishery.

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 suppression efforts, utilizing Appropriate Management Response criteria, will continue on federally-administered lands in the watershed.
- 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, is expected to increase in the EBW 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.
- There are two aspects to climate change, impacts to climate change and impacts from climate change. The BLM expects only minor changes, likely positive, with regard to impacts to climate. 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 AMPs. While the long-term (100 year) trend clearly shows warming, local climatic records show great variability for any particular fifteen year window. This would make any analysis of short-term impacts from climate change purely hypothetical. While it would be nearly impossible to accurately predict short-term climatic conditions, the land health standards remain relevant during either warm/dry or cool/wet periods.
- Increasing loss of Basin and mountain big sagebrush habitat through Douglas-fir or juniper expansion can be anticipated. In areas that are prescribed burned to remove competing conifers, the seral stage of sagebrush would be set back to early seral and would take about 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 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 to lessees could add pressure to lessees to subdivide private land to maintain a cash flow.
- Sub-dividing of private land within the watershed is currently occurring on a small scale and is expected to continue or increase in the foreseeable future. Land use patterns on private and public lands in Madison County are changing. As traditional agricultural lands are converted to residential and recreational properties fewer large scale ranching operations remain. Access to public land across private land is becoming more restricted and will likely continue as traditional ranches are subdivided into smaller parcels.
- Restricted habitat and small isolated populations will continue to place WCT within the EBW at high risk of extinction. To protect pure populations of WCT, fish barriers would be considered on streams if genetic testing confirms streams support populations of 100% pure WCT and there is a threat from non-native species. Non native trout removal may occur on Trout Creek, depending on pending genetic tests.

- 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. Wildlife habitat needs are currently met within the watershed.
- The EBW contains numerous areas of high mineral potential and known mineral deposits. Many of these mineral deposits are industrial minerals such as talc and chlorite. The watershed area has seen numerous exploration projects over the years, many of them for talc and other similar minerals. There are currently two active exploration Notices (43 CFR 3809) in the watershed where drilling is taking place for talc. Mine expansion is a possibility, but uncertain economic conditions make it impossible to predict future mining activity.
- Commercial timber harvest would be considered on any BLM-administered land slated for mine expansion prior to surface disturbance.

4.3.2 Cumulative Effects of Alternative A – No Action (Continuation of Current Management)

Without grazing management changes and new range improvement projects, livestock induced riparian health concerns identified in the EBW Assessment Report would not be addressed and objectives for improving riparian health would not be accomplished. Downward trends would continue on stream reaches in four grazing allotments, in Ladder Canyon in the RMWSA, and in the Stone Creek un-allotted parcel which could affect riparian health, fisheries habitat and/or water quality downstream from BLM administered lands.

Forested habitats on BLM administered lands would continue to be departed from the historic range of variation (density, structure, and species composition) without a natural disturbance. Across the landscape, with lack of treatment or natural disturbance, forest health would continue to decline and the likelihood for large-scale insect infestations would be increased.

Fisheries habitat conditions and trends would continue on the public land portions of streams in the EBW watershed.

4.3.3 Cumulative Effects All Action Alternatives

Managing to improve riparian conditions throughout the watershed would allow for better dispersal of wildlife and reduce site specific riparian impacts. The proposed changes in livestock management would generally improve riparian function on BLM-administered land and other lands 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.

Forest health treatments completed on BLM-administered lands and other ownerships would increase the diversity of forest structure and composition throughout the EBW. This increase in structural diversity across the landscape would likely result in a more patchy spruce budworm outbreak regime in the future (Swetnam and Lynch, 1988). Treatment in lodgepole pine to remove bark beetle infested trees and promote regeneration of a new stand would result in

patches of lodgepole pine across the landscape that would be resistant to mountain pine beetle for up to 80 years (Mata et al, 2003). Increasing structural and compositional diversity across the landscape as a result of forest and mechanical treatments decreases the probability of large-scale disturbances that produces negative impacts over a large area. Large-scale disturbances would still have the potential to occur; however, areas treated would create buffers of less susceptible (in terms of insects/disease) and more fire resilient habitats.

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 bank disturbance and associated soil loss where these concerns were noted. As areas not meeting the Land Health Standards move towards PFC, 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.

The implementation of the selected alternative would maintain or restore the ability of these areas to perform their physical and biological functions including carbon sequestration. This would be an improvement to the current situation. The application of the Land Health Standards requires that they are met regardless of climatic conditions. The Dillon Field Office reduced livestock use from 2002 through 2005 in response to drought conditions to protect resources during the drought. The alternatives in this EA do not authorized additional livestock, therefore, the limited emissions associated with livestock digestion and excretion would not increase from current levels. Proposed alternatives and projects are not expected to cause negative impacts to climate change, and a reduction in net emissions as rangeland conditions improve would be expected.

Slightly increased labor costs are assumed under Alternatives B and C to check and employ the allowable use 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.

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 and Madison County tax revenues may result.

If the Stone Creek Isolated allotment is sold, a slight increase in property tax revenue for Beaverhead County would be expected. At the same time, it would reduce slightly the BLMs administrative and operational overhead. If this tract is exchanged for private property of similar value, the tax impact would be neutral. However, an exchange would benefit the general public by increased access and recreational opportunities on their public lands.

Improving the riparian conditions in the headwaters of Spring Creek (reach #400) is expected to improve WCT habitat downstream by reducing the amounts of sediment moving into occupied WCT habitat below the BLM boundary.

4.3.4 Cumulative Effects of Alternatives B

This alternative includes administrative actions, structural projects, vegetation treatments, and management changes on 4 grazing allotments, one un-allotted parcel, and the Ruby Mountain RMWSA. Since many allotments within the EBW 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, timber harvest and/or recreation on private and State lands, which are not subject to BLM Standards, 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, in addition to 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.

4.3.5 Cumulative Effects of Alternatives C

This alternative includes projects and management changes on five grazing allotments, the Stone Creek un-allotted parcel and RMWSA. The investment in projects, however, 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.

Impacts resulting from grazing, timber harvest and/or recreation on private and State lands, which are not subject to BLM Standards, 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.

5.0 List of Preparers - Consultation/Coordination

5.1 List of Preparers

Core IDT members:
David Early, IDT lead, Rangeland Management Specialist
Kipper Blotkamp, Fuels Specialist
Paul Hutchinson, Fisheries Biologist
Steve Armiger, Hydrologist/Riparian Coordinator
Pat Fosse, Assistant Field Manager for Renewable Resources
Aly Piwowar, Forester

Support IDT members:
Katie Benzel, Wildlife Biologist
Laurie Blinn, GIS Specialist
Jason Strahl, Archeologist
Michael Mooney, Weeds Specialist
Brian Hockett, SSS-plants
Bob Gunderson, Geologist/Mining
George Johnson, Fire Management Specialist
Rick Waldrup, Recreation Planer
Emily Guiberson, Forester

Other Support Personnel
Mike Philbin, Riparian & Soil, Water & Air Program Lead
Steve Lubinski, Range Technician
Kelly Urresti, Range Technician
Mary Koerner, Range Technician
Jordan Wells, Range Technician
Shane Trautner, Range Technician
Kate Given, Administrative Assistant
Ellen Daugherty, Administrative Assistant

5.2 Consultation/Coordination

5.2.1 Persons and Agencies Consulted

Chuck Barrone	Forester - Montana Department of Natural Resources & Conservation
Bob Brannon	Wildlife Biologist - Montana Fish, Wildlife & Parks
Beau Bradley	Bradley Livestock
John and Ed Malesich	Malesich Ranch
Richard Oswald	Fisheries Biologist- Montana Fish, Wildlife & Parks
Ted Stosich	Production Coordinator, Barrett Minerals
Town, Fred	Walsh Ranch
Trishman, George	Hamilton Ranches

Walsh, Robert	Walsh Ranch

5.2.2 Notifications

Assessment Initiation Notice; East Bench mailing list – May, 2008
Media Release; Assessment Initiation Notice – May, 2008
Internet NEPA Log – Dillon Field Office – October, 2008
Media Release; Assessment Completion and EA Initiation Notice – December, 2008
Montana/Dakotas External Website - Assessment Report - December, 2008
Montana/Dakota External Website – Executive's Summary and Authorized Determination – January, 2009

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

actual use: a report of the actual livestock grazing use certified to be accurate by the permittee of lessee. Actual use may be expressed in terms of animal months or animal months.

adaptive management: management in which monitoring measures progress toward or success at meeting an objective and provides the evidence for management change or continuation. In practice, most monitoring measures the change or condition of the resource; if objectives are being met, management is considered effective.

allotment: An area of land designated and managed for grazing livestock.

allotment management plan (AMP): a documented program which applies to livestock grazing on the public lands, prepared by consulting, cooperating, and coordinating with the permittee(s), lessee(s), or other interested publics.

analysis: (1) a detailed examination of anything complex in order to understand its nature or determine its essential features; or (2) a separating or breaking up of any whole into its component parts for the purpose of examining their nature, function, relationship, etc. A rangeland analysis includes an examination of both biotic (plants, animals, etc.) and abiotic (soils, topography, etc.) attributes of the rangeland.

animal unit month (AUM): the amount of dry forage required by one animal unit for one month, based on a forage allowance of 26 pounds per day.

apparent trend: an assessment, using professional judgment, based on a one-time observation. It includes consideration of such factors as plant vigor, abundance of seedlings and young plants, accumulation or lack of plant residues on the soil surface, and soil surface characteristics (i.e., crusting, gravel pavement and sheet or rill erosion).

authorized officer: The manager of a defined portion of public land. For example, the Dillon Field Manager is the Authorized Officer or line manager for the public lands administered by the Dillon Field Office.

basal area: the cross-sectional area (in square feet at diameter at breast height) of all tree stems, expressed on a per-acre basis; a measurement used to express stand density.

biomass: all vegetative materials grown in forest, woodland, or rangeland environments that are the by-products of management, restoration, or fuel reduction treatments (historically non-utilized or under-utilized material). This term usually refers to such material that can be gathered and transported to cogeneration plants, and utilized for the production of energy.

browse: (1) the part of shrubs, half shrubs, woody vines, and trees available for animal consumption; or (2) to search for or consume browse.

canopy cover: the percentage of ground covered by a vertical projection of the outermost perimeter of the natural spread of foliage of plants. Small openings within the canopy are included. Canopy cover is synonymous with crown cover.

community: an assemblage of populations and/or animals in a common spatial arrangement.

cool season species: plants whose major growth occurs during the late fall, winter and early spring.

DBH: Diameter at Breast Height: the diameter measurement of a tree at 4 ½ feet above the ground, on the uphill side of the tree.

evaluation: (1) an examination and judgment concerning the worth, quality, significance, amount, degree, or condition of something; or (2) the systematic process for determining the effectiveness of on-the-ground management actions and assessing progress toward meeting objectives.

forage: (1) browse and herbage which is available and can provide food for animals or be harvested for feeding; or (2) to search for or consume forage.

forb: (1) any herbaceous plant other than those in the Gramineae (true grasses), Cyperaceae (sedges), and Juncaceae (rushes) families—i.e., any non-grass-like plant having little or no woody material on it; or (2) a broadleaved flowering plant whose above ground stem does not become woody and persistent.

functional at risk (FAR): Riparian wetland areas that are functional, but an existing soil, water, or vegetation attribute makes them susceptible to degradation.

goal: the desired state or condition that a resource management policy or program is designed to achieve. A goal is usually not quantifiable and may not have a specific date by which it is to be completed. Goals are the base from which objectives are developed. (See objective)

grazing system: A systematic sequence of use and non use of an allotment.

greenline: the first perennial vegetation that forms a lineal grouping of community types on or near the water's edge. Most often it occurs at or slightly below the bankfull stage.

herbaceous: vegetation growth with little or no weedy component; non-woody vegetation such as graminoids and forbs.

herbivore: a plant eating animal

herbivory: the act of feeding on plants by an herbivore

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.

hot season: In southwest Montana, hot season grazing use is generally considered to include July 1 through September 15.

hummock: A mound rising above the surrounding land, usually overgrown with vegetation. In the southeast, a small hill or mound also referred to as hammock. Often used in reference to marsh lands.

interested public: An individual, group or organization that has submitted a written request to the authorizing 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.

inventory: the systematic acquisition and analysis of information needed to describe, characterize, or quantify resources for land-use planning and management or the public lands.

landing: A place in or near the harvest area where felled timber or logs are gathered for further processing or transport.

lentic: standing water riparian-wetland areas such as lakes, ponds, seeps, bogs, and meadows.

lotic: running water riparian-wetland areas such as rivers, streams and springs

monitoring: the orderly collection, analysis, and interpretation of resource data to evaluate progress toward meeting objectives.

objective: planned results to be achieved within a stated time period. Objectives are subordinate to goals, are narrower in scope and shorter in range, and have increased possibility of attainment. The time periods for completion, ant the outputs or achievements that are measurable and quantifiable, are specified. (See goal)

overstory: The canopy or upper layer of the habitat zone. This is generally referred to as the mature tree crowns of a forested habitat, but is also applied to uppermost layer of foliage in shrub dominated habitats.

pasture: a grazing area enclosed and separated from other areas by a fence or natural barrier.

proper functioning condition (PFC): A riparian-wetland area is considered to be in proper functioning condition when adequate vegetation, landform, or large woody debris is present to:

- Dissipate stream energy associated with high waterflow, thereby 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

public lands: any land interest in land outside of Alaska owned by the United States and administered by the Secretary of the Interior through the Bureau of Land Management (see 43 CFR 41000.0-5)

riparian zone: the banks and adjacent areas of water bodies, water courses, 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.

salvage harvest: the cutting and removal of dead or dying timber resources.

sanitation harvest: the cutting and removal of diseased trees or trees damaged by stress or mechanical agents such insects or wind.

seral stage: the developmental stages of an ecological succession; synonymous with successional stage.

shrub: a plant that has persistent woody stems and a relatively low growth habit, and that generally produces several basal shoots instead of a single bole. It differs from a tree by its low stature—less than 5 meters (16 feet)—and non-arborescent form.

shrubland: land on which the vegetation is dominated by shrubs. Non-forested lands are classified as shrubland if shrubs provide more than 20 percent of the canopy cover, excluding trees. Lands not presently shrubland that were originally or could become shrubland through natural succession may be classified as potential natural shrubland.

stoloniferous: plant development by the production of stolons which give rise to vegetative spread.

succession: the orderly process of community change; it is the sequence of communities that replace one another in a given area.

trend: the direction of change in ecological status or in resource value ratings observed over time. Trend in ecological status is described as “toward” or “away from” the potential natural community or as “not apparent.” Appropriate terms are used to describe trends in resource value ratings. Trends in resource value ratings for several uses on the same site at a given time may be

in different directions, and there is no necessary correlation between trends in resource value ratings and the trend in ecological status.

understory: plants growing beneath the canopy of other plants; usually refers to grasses, forbs, and low shrubs under a tree or shrub canopy.

use guideline: (1) a degree of utilization of current year's growth which, if continued, will achieve objectives and maintain or improve the long-term productivity of the site; or (2) the percentage of a plant that is utilized when the rangeland as a whole is properly utilized. This use level can vary with time and systems of grazing.

utilization: the proportion or degree of the current year's forage production by weight that is consumed or destroyed by animals (including insects). The term may refer either to a single plant species, a group of species, or the vegetation community as a whole. Utilization is synonymous with use.

vigor: relates to the relative robustness of a plant in comparison to other individuals of the same species. It is reflected primarily by the size of a plant and its parts in relation to its age and the environment in which it is growing.

yarding: The hauling of felled timber or logs from the harvest area to a central loading area or landing.

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