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East Pioneer Watershed Environmental Assessment

*Location: Townships 1-5 South and Ranges 9-10 West, Montana Principle Meridian
Beaverhead County, Montana*



Aspen at Seven Springs, South Seven Springs Allotment, September 2008

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1.0 Purpose of and Need for the Proposed Action

1.1 Introduction and Background

The East Pioneer Watershed (EPW) is located in Beaverhead County, Montana and drains portions of the East Pioneer mountain range. The watershed lies within Townships 1-5 South and Ranges 9-10 West, Montana Principal Meridian (MPM). All legal descriptions in this document are based off of the MPM.

The EPW covers public lands administered by the Bureau of Land Management (BLM) from the crest of the East Pioneer Mountains in the west to the Big Hole River in the east, and from Maiden Rock in the north, south to Birch Creek. The EPW boundary, shown on the East Pioneer Watershed map (Map 1), follows grazing allotment boundaries. Technically, the assessed area is not a distinct watershed. Watersheds are defined, and designated on maps, by natural topographical boundaries (i.e., ridgelines, drainages). The EPW lies within the larger Big Hole Watershed. Grazing allotment boundaries have been determined by previous BLM decisions based primarily on land ownership and these administrative boundaries may not follow topographical features. Therefore, not all of the public lands administered by the BLM in the Big Hole Watershed are included in the EPW Assessment. Additional BLM administered lands (grazing allotments) within the Big Hole Watershed have been assessed during previous watershed assessments (e.g., Beaverhead West, Southwest Highlands).

Within the EPW there are approximately 81,202 total acres of land, of which 26,635 are public lands administered by the BLM. Of the total BLM-administered lands within the EPW, 25,004 acres are allotted for livestock grazing, 253 acres are unleased, and 1,378 acres are unallotted (unavailable for livestock grazing).

In 2008, a BLM interdisciplinary team (IDT) assessed the land health of BLM administered land in the EPW. The IDT assessed the following 5 Rangeland (Land) Health Standards: Upland Health, Riparian Health, Water Quality, Air Quality, and providing for Biodiversity. The Watershed Assessment reported the condition/function of resources within the assessment area to the Authorized Officer. The Authorized Officer considered the Assessment Report to determine whether Land Health Standards (Standards) were met, and then signed a Determination of Standards documenting where Standards were or were not met. The EPW Assessment Report was completed and released to the public in January 2009. The Determination of Standards for the EPW was released in March 2009. Both documents are available at the Dillon Field Office or can be accessed online at http://www.blm.gov/mt/st/en/fo/dillon_field_office.html.

The assessed condition/function and recommendations in the Assessment Report and Determination of Standards, along with comments received through public scoping, have been used to develop alternatives to initiate progress towards Proper Functioning Condition (PFC) and address site specific resource concerns where needed. This Environmental Assessment (EA) was completed in accordance with established procedures to analyze and implement area, allotment, or site specific changes.

By working on a watershed basis, a broader landscape is considered and more consistent management can be applied. It is the BLM's intent to implement watershed management

cooperatively. Changes in management will be implemented through the BLM’s decision process.

1.2 Purpose of the Proposed Action

The BLM Dillon Field Office proposes to improve land health and public safety, and enhance biodiversity in the EPW by:

- Restoring/maintaining upland health and sagebrush habitats (species composition and structure) through revised livestock grazing management, structural projects, and vegetative treatments.
- Restoring/maintaining riparian, wetland and aquatic habitats (vegetation composition, structure, streambank stability, channel morphology) through revised livestock grazing management, structural projects, vegetative treatments, improved road maintenance practices and working cooperatively with Montana Fish, Wildlife and Parks (FWP) on wildlife management.
- Increasing desirable native plants and decreasing noxious and invasive species by eradicating new and reducing or containing existing noxious weed infestations through the use of Integrated Weed Management (IWM).
- Mitigating environmental and physical safety issues associated with abandoned mines through inventorying, assessing, and reclaiming mines as appropriate.

This EA analyzes livestock grazing management revisions and vegetative or structural projects. The BLM also proposes to renew term grazing permits on 17 allotments. Management changes will be considered on the following 12 allotments:

- | | |
|--------------------------|-----------------------------|
| 1. Birch Creek | 7. Skeeters |
| 2. Burk SGC | 8. Smith Individual SGC |
| 3. Cherry Creek | 9. South Seven Springs |
| 4. Childs Individual SGC | 10. Twin Adams |
| 5. Lost-Willow | 11. Vipond-Glendale |
| 6. Seven Springs | 12. Willow Creek Individual |

1.3 Need for the Action

The Fundamentals of Rangeland Health and subsequent 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. In the EPW Assessment Report, the IDT described several causal factors combining to negatively impact the biological, physical, and ecological processes in the watershed. As a result, the Authorized Officer determined that one or more of the Standards are not met in eight of the 17 assessed allotments. Table 1.1 lists the 17 allotments, as well as the unallotted and unleased parcels, and shows the determination of each standard by allotment.

Table 1.1: Determination of Standards by Allotment

ALLOTMENT NAME, NUMBER, CATEGORY, & BLM ACRES	ARE LAND HEALTH STANDARDS BEING MET?				
	UPLAND	RIPARIAN WETLAND	WATER QUALITY	AIR QUALITY	BIO- DIVERSITY
Birch Creek, 30365, (I), Acres: 2,881	YES	YES	N/A	YES	YES
Burk SGC, 20657, (C), Acres: 80	YES	NO	*	YES	YES
Cherry Creek, 20321, (M), Acres: 1,407	YES	YES	*	YES	YES
Childs Individual SGC, 20310, (C), Acres: 267	NO	YES	NO ¹	YES	NO
Lost Creek, 20322, (C), Acres: 80	YES	N/A	N/A	YES	YES
Lost-Willow, 30364, (I), Acres: 5,400	YES	YES	NO ¹	YES	YES
North Willow Creek, 30311, (C), Acres: 44	YES	N/A	N/A	YES	YES
Peck SGC, 20336, (C), Acres: 325	YES	N/A	N/A	YES	YES
Seven Springs, 20337, (I), Acres: 2,028	YES	YES	NO ¹	YES	YES
Sisterson, 20329, (M), Acres: 936	YES	N/A	N/A	YES	YES
Skeeters, 10332, (I), Acres: 723	YES	N/A	N/A	YES	YES
Skeeters Meadows, 30372, (C), Acres: 58	YES	N/A	N/A	YES	YES
Smith Individual SGC, 10346, (C), Acres: 165	YES	YES	*	YES	YES
South Seven Springs, 20362, (I), Acres: 4,496	YES	NO	*	YES	YES
Twin Adams, 20347, (M), Acres: 1,379	YES	YES	NO ¹	YES	YES
Vipond-Glendale, 30358, (I), Acres: 4,536	YES	YES	NO ¹	YES	YES
Willow Creek Individual, 20304, (C), Acres: 199	NO	N/A	N/A	YES	NO
Unalloted, Acres: 1,378	YES	YES	NO ¹	YES	YES
Unleased, Acres: 253	YES	N/A	N/A	YES	YES

¹ 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 EPW are not on the 303(d) list, are not priority streams, and are not scheduled to be evaluated by the DEQ.

Allotment category refers to BLM’s level of management for a given grazing allotment. Allotments in the improve (I) category are managed more intensively and are monitored more frequently. Allotments in the maintain (M) category are usually at a desired condition and are managed to maintain that condition. Custodial (C) category allotments are usually isolated

parcels with few resource concerns, are managed in conjunction with the permittee's/lessee's normal livestock operation, and are monitored less frequently.

The AML program is designed to address issues associated with abandoned mines which were left open by historic mining activities. This work is needed to protect the public from environmental harm or physical injury that may occur at abandoned mines.

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

1.4.1 Scope

The scope of the proposed action includes implementing specific use of herbaceous vegetation through the continued authorization of livestock grazing and implementation of vegetation treatments to restore specific habitats on public lands. The proposed action also includes installation, construction, removal or modification of specific structural projects such as fences and water developments. The proposed action is not an all-inclusive management plan for the area or a programmatic EA, but it addresses several program areas that affect land health.

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

The public lands included in the EPW are managed according to decisions in the Dillon Resource Management Plan (RMP) approved in 2006. The proposed action is in conformance with the RMP and applicable guidance is in the Record of Decision and Approved Dillon RMP on pages 24 through 74. The Dillon RMP can be accessed using the internet at http://www.blm.gov/mt/st/en/fo/dillon_field_office/rmp.html. This document is tiered to the Proposed Dillon RMP and Final Environmental Impact Statement (EIS). It is also tiered to 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.

The proposed action is also 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), and with BLM policies and Federal regulations.

The proposed action was developed while considering 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.

1.4.3 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 Critical Elements that may be affected by the alternatives described in Chapter 2 were identified through the scoping process and are presented in Table 1.2.

Table 1.2: Critical Elements of the Human Environment

CRITICAL ELEMENT	NOT PRESENT	PRESENT, BUT NOT AFFECTED	MAY BE AFFECTED*	COMMENTS
Air Quality			X	Discussed under Sections 4.2.1 and 4.2.3
Areas of Critical Environmental Concern	X			
Cultural Resources		X		Discussed under Sections 2.3.1, 2.3.3, and 3.2.6
Environmental Justice		X		No low income or minority groups will be disproportionately affected.
Farmlands (prime or unique)	X			
Floodplains ¹			X	Discussed under Issue #2 – Riparian, Wetland and Aquatic Habitat, and Associated Species
Hazardous and Solid Wastes	X			
Invasive Non-native Species			X	Discussed under Issue #1 – Upland Health, Sagebrush Steppe Habitat, and Associated Species and Issue #2 – Riparian, Wetland, and Aquatic Habitat and Associated Species
Native American Religious Concerns	X			
Threatened, & Endangered Species			X	See EPW Biological Evaluation (incl. BLM sensitive species) – Appendix C
Water Quality (drinking or ground)			X	Discussed under Issue #2 – Riparian, Wetland and Aquatic Habitat, and Associated Species
Wetlands/Riparian Zones			X	Discussed under Issue #2 – Riparian, Wetland and Aquatic Habitat, and Associated Species
Wild and Scenic Rivers	X			
Wilderness Characteristics	X			
* 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.				

1.4.4 Description of Issues, Resource Concerns and Objectives

Issues, as described below, have a direct bearing upon the proposed action and the process of how the purpose and need will be achieved. The identified issues are used to drive development of alternatives, and effects to these issues are analyzed in detail. Resource concerns do not drive the development of alternatives, but are used to analyze and disclose the effects of various actions. Issues and resource concerns were identified through the Watershed Assessment and

scoping process. Not all issues identified below are applicable to all the allotments or unallotted tracts in this EA.

Issue #1: Upland Health, Sagebrush Steppe Habitat and Associated Species

“Uplands are in Proper Functioning Condition” is identified as one of the Western Montana Standards for Rangeland Health. The determination of upland health was based on the evaluation of three criteria: degree of soil stability and watershed function, nutrient cycles and energy flows, and available recovery mechanisms. The indicators used to determine upland health are discussed in the EPW Assessment Report.

The upland health standard was **not** met in 2 allotments, Childs Individual SGC and Willow Creek Individual. Upland health concerns documented by the IDT include a decline in the composition and vigor of cool-season bunchgrasses on these two allotments, noxious weed and cheatgrass infestations occurring in various locations throughout the EPW, and conifer expansion into sagebrush/grasslands on the Vipond-Glendale Allotment.

Objectives:

- Increase cover and frequency of native perennial cool-season herbaceous species where concerns were documented.
- Prevent spread of noxious and invasive species into and within the watershed and reduce, contain or eradicate existing infestations.
- Maintain residual herbaceous cover for ground nesting birds, specifically sage grouse.
- Manage sagebrush habitats so that 70% or more of potential big sagebrush communities provide the vegetative composition and structure to sustain sage grouse populations and other sagebrush obligate species such as pronghorn antelope and pygmy rabbits.
- Maintain 15-25% sagebrush canopy cover and herbaceous cover conducive to nesting and brood-rearing success surrounding leks, as applicable within site potential.
- Restore or maintain grassland and shrubland habitat types affected by conifer expansion.

Issue #2: Riparian, Wetland, and Aquatic Habitat and Associated Species

“Riparian and Wetland Areas are in Proper Functioning Condition” is identified as one of the Western Montana Standards for Rangeland Health. 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 PFC or Functioning-at-Risk (FAR) with an upward trend meet the riparian health Standard. The indicators used to determine riparian health are discussed in the EPW Assessment Report.

The riparian health standard was **not** met in 2 allotments, Burk SGC and South Seven Springs. The EPW Assessment Report documents several contributing causal factors. Riparian health concerns documented by the IDT include trampling of the spring source on Burk SGC, altered vegetative composition along the riparian zone and/or reduced bank stability due to livestock trailing and/or grazing, increased sediment and over-widening from road crossings, fluctuating irrigation return flows, Rocky Mountain juniper (juniper) encroachment, and mortality and poor recruitment of aspen. On the Vipond-Glendale Allotment, poor aspen recruitment and width-depth ratio imbalance were noted as localized concerns.

Objectives:

- Maintain or improve conditions in riparian/wetland habitats that are in PFC.
- Restore deciduous woody habitat types (aspen, willow) in riparian areas that have been invaded by conifers (e.g., Brownes Creek).
- Maintain/enhance existing aspen stands and promote successful regeneration of aspen where concerns were documented (e.g., Seven Springs).
- Increase deep-rooted riparian vegetation (sedges, willows) where decreased composition was documented.
- Restore stream dimension, pattern, and profile to the natural range of variation where concerns were documented.
- Restore, maintain or enhance native vegetation and hydrology at springs, seeps and wet meadows where concerns were documented.
- Reduce sediment loads where uses on public lands are causing increased sediment (e.g., cattle loitering, road maintenance).
- Maintain or enhance habitat for cold water fisheries in occupied streams within the watershed.
- Prevent spread of noxious and invasive species into and within the watershed and reduce, contain, or eradicate existing infestations.

Resource Concern #1: Special Status Species

“Special Status Species” refers to both plants and animals and includes species listed as threatened or endangered (T&E) under the Endangered Species Act (ESA), species proposed for listing under the ESA, candidates for listing under the ESA, state listed species, and BLM Sensitive Species (USDI 2001).

The gray wolf was recently removed from protection under the ESA, but is listed as a BLM sensitive species. Sage grouse and pygmy rabbits are sagebrush-obligate species that have been petitioned for federal listing in the past and are currently BLM sensitive species. Objectives for sagebrush habitat are listed above under Issue # 1: Upland Health, Sagebrush Steppe Habitat and Associated Species.

Within the EPW, only the Cherry Creek drainage currently supports westslope cutthroat trout (WCT). Limited habitat and non-native salmonids place these populations at high risk of extirpation. Objectives for riparian habitat and aquatic species are listed above under Issue #2: Riparian, Wetland, and Aquatic Habitat and Associated Species.

The upper reaches of the Big Hole River support the last self-sustaining population of strictly fluvial Arctic grayling in the lower 48 states. Historically, grayling were found throughout the river. Non-native species, low water levels and degraded habitat are thought to be the primary factors influencing distribution. Recent population surveys have found historic low numbers in traditional upper river survey reaches for this population. Recent fishery surveys have not found grayling in the Big Hole reaches that lie within the EPW. The Big Hole River reaches within the EPW were rated as PFC.

Objectives:

- Maintain or enhance habitat for sensitive plant species and provide ample opportunity for reproduction and seedling establishment.
- Maintain or enhance habitat for sensitive wildlife species and provide ample opportunity for reproduction and recruitment.
- Maintain or enhance habitat for WCT on Cherry Creek, and other suitable habitat within the watershed.
- Protect the population of WCT in Cherry Creek from hybridization and competition from non-native salmonids.
- Cooperate with stakeholders to enhance native fluvial arctic grayling habitat on the Big Hole River.

Resource Concern #2: Socioeconomics

Many ranches that hold grazing permits on BLM-administered lands have developed operations that tightly weave public land grazing preferences together with private land management. For these ranches, calving, breeding, haying, feeding, shipping, summer pasturing, and marketing schedules have evolved in tandem with the stocking rates and season of use on the public land allotments.

One commercial outfitter is authorized under Special Recreation Use Permits to conduct big game hunting and/or summer horseback riding in all or part of this area. Total commercial use days associated with this permit is less than 100 client days. Non-commercial hunting and fishing opportunities on BLM lands in the EPW provide an important economic contribution to the local economies. Businesses in Butte, Divide, Glen, Melrose, and Dillon are likely to profit from recreation that occurs in the EPW.

Please refer to Table 56 on page 286 of the Proposed Dillon RMP and Final EIS, which shows employment and labor income response coefficients related to livestock grazing 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.

Resource Concern #3: Abandoned Mine Lands (AML)

In southwest Montana, AML projects are conducted under an ongoing zoned program which includes the Dillon, Missoula, and Butte Field Offices. Issues are generally divided into two categories; those with environmental issues and those with physical safety hazards. The Vipond/Quartz Hill and Lost Creek Mining Districts are located within the EPW. Neither district has any known environmental issues; however, the Vipond/Quartz Hill District contains mine openings in the Maiden Rock area (Sections 30, 31, and 32, T1S, R9W; Sections 6 and 7, T2S, R9W) that represent a public safety hazard.

Objectives:

- Continue inventorying abandoned mines on BLM lands, including but not limited to areas within the Vipond/Quartz Hill Mining District, located on the northern end of the

Pioneer Mountains, and Lost Creek Mining District, located on the east slope of the northern Pioneer range.

- Assess the impacts of each mine and conduct the appropriate closures, reclamation, or mitigation at each site as funding and staffing allow.

1.5 Decisions to be Made

The BLM is preparing this EA to allow the Authorized Officer to make a reasoned and informed decision regarding improving unhealthy riparian and upland conditions, enhancing biodiversity, improving public safety, and revision or renewal of Term Grazing Permits (i.e. changing livestock management) with appropriate Terms and Conditions to initiate significant and measurable progress towards achieving the Land Health Standards and established goals and objectives within the EPW, while achieving BLM's multiple use mission.

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

The Dillon Field Manager must also determine if the 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 EPW Management Plan can proceed.

Implementation of the Decisions resulting from this EA will begin in 2009. However, revised grazing management and/or structural and vegetative projects associated with these plans may take one to several years to fully implement. The new plans will be developed and implemented in consultation and coordination with the affected permittees, the agencies having lands or managing resources within the area and other interested parties. As with all similar BLM decisions, affected parties will have an opportunity to protest and/or appeal these decisions.

1.6 Applicable Legal and Regulatory Requirements

Title 43, Code of Federal Regulations (CFR), Part 4100

Taylor Grazing Act of 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

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 1978

Fish and Wildlife Improvement Act of 1978

State of Montana Streamside Management Zone Law of 1991

National Fire Plan of 2000

1.7 Coordination Requirements

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

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

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

2.0 Description of Alternatives

This chapter describes the alternative development process, alternatives considered but eliminated from further analysis, and alternatives that will be carried forward and fully analyzed. The alternatives that will be fully analyzed are the No Action (continuation of current management) Alternative and up to two action alternatives. Various combinations of tools, allowable use levels, stocking rates, grazing strategies, and projects were discussed at length and carefully considered during scoping and during the formulation of the alternatives by the IDT.

2.1 Process Used to Formulate Alternatives

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

2.2 Alternatives Considered but Eliminated from Further Analysis

Analysis of alternatives that would not make significant progress towards meeting the objectives of the proposed action or alternatives not consistent with the intent of current BLM legal and regulatory requirements or policy are not carried through. Alternatives proposing exclusive production or protection of one resource at the expense of other resources were 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 or oil and gas leasing, or managing only for wildlife values at the exclusion of other considerations. In addition, resource conditions in the EPW do not warrant watershed area-wide prohibitions of any particular 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 Eliminating livestock grazing from all BLM-administered lands in the watershed.

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 25,257 acres of public land in the EPW as open to livestock grazing and 1,378 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 on only BLM lands in Louie Lowe Basin.

Implementing a prescribed burn on strictly BLM lands in Louie Lowe Basin was considered, but eliminated from detailed study due to the necessity of burning on a large enough area to adequately distribute ungulate use. The treatment area size that is required to avoid severe impacts to post-fire vegetation from wildlife and livestock would need to include land that is managed by the Forest Service and the State of Montana. Coordination constraints and other higher priority BLM projects make pursuing this treatment exclusively on BLM lands impractical at this time.

2.2.3 Creating a riparian pasture within the Grose Pasture of the South Seven Springs Allotment.

Cross-fencing the Grose Pasture of the South Seven Springs Allotment to create a riparian pasture was considered, but eliminated from detailed study because of the topography involved, the length of fence necessary, and the limited benefit, since the pasture is presently used for only two weeks every other spring. Instead, fencing the area immediately adjacent to the spring province, in conjunction with treating the infested aspen stand, is analyzed in Alternative B.

2.3 Description of Alternatives

2.3.1 Features Common to all Alternatives, Including the No Action

Livestock Management:

- Renew Term Grazing Permits for those six allotments determined to be meeting Land Health Standards, had no identified site specific concerns related to current management, and needed no changes to facilitate improved management. These allotments are:

- | | |
|----------------|-----------------------|
| 1. Birch Creek | 4. North Willow Creek |
| 2. Lost Creek | 5. Peck SGC |
| 3. Lost-Willow | 6. Sisterson |

Term permits for other allotments may be modified as analyzed in this document.

- Encourage, and if warranted, require use of temporary electric fence, livestock supplement (e.g., salt, protein block) placement, riding, and herding as a means of improving livestock distribution in all alternatives. When used, livestock supplement should be placed on ridges or terraces at least ¼ mile from the nearest livestock water source.
- Continue to manage the unallotted parcels as unavailable for livestock grazing. No term grazing permits or leases will be issued for these areas.
- Amend term grazing permits to state that depredation losses from wolves may occur.
- Increase compliance inspections on the South Seven Springs and Vipond-Glendale Allotments to detect unauthorized livestock use and reduce resource impacts.
- Adjust the northern allotment boundary of the Seven Springs Allotment to accurately reflect the deeded property and Public Lands currently within the allotment.

Special Status Species:

- Conduct field inspections to search for special status plant species prior to authorizing surface disturbing activities in habitats likely to support rare plants. If rare plants are found in the course of the botanical survey, adverse impacts will be mitigated through project abandonment or redesign. Activities that disturb mineral soil (such as blading, trenching, ripping, etc.) won't be allowed within the boundaries of populations of special status plants.
- Attempt to locate sage grouse leks in the EPW, and monitor sage grouse habitat associated with breeding, nesting, and brood rearing habitat.

Noxious Weeds:

- Continue management of noxious weeds in cooperation with Beaverhead County, federal and state agencies, private landowners and other partners.
- Treat all invasive species on the Montana state noxious weed list as resources allow.
- Give areas where adjacent landowner support and cooperation is the highest the highest priority for treatment.

Abandoned Mine Lands:

- Continue inventorying abandoned mines on BLM lands, including but not limited to areas within the Vipond/Quartz Hill and Lost Creek Mining Districts and address problems with environmental and/or physical safety hazards through reclamation or mitigation.
- Assess the impacts of each mine and conduct the appropriate closures, reclamation, or mitigation at each site as funding and staffing allow.
- Prioritize reclamation by the magnitude of the environmental issue, the severity of the safety risk, available funding, and/or the partnerships available to conduct the work.
- At present, mines in the Maiden Rock area (Sections 30, 31, and 32, T1S, R9W; Sections 6 and 7, T2S, R9W), of the Vipond/Quartz Hill Mining District, are being evaluated and will be reclaimed and/or fenced to ensure public safety. Once the best closures method has been determined, specific actions will be analyzed in a separate EA.

Cultural Resources:

- Personnel from the BLM should be notified of the presence and location of any cultural resources should they be encountered by any permittees or contractors during the course of operations on public lands.

Structural Projects:

- Install wildlife escape ramps in all existing and new water developments.
- Remove, modify, or rebuild existing BLM fences that impede wildlife movement to BLM specifications on a prioritized schedule.
- Coordinate with landowners to modify, remove, or rebuild fences that border BLM lands, but are not owned by BLM, which impede wildlife movement. Fences in the Childs Individual SGC, Sisterson, South Seven Springs, and Vipond-Glendale allotments have been identified.

Monitoring:

- Conduct resource monitoring 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 here 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. Selection of the No Action Alternative may not be in conformance with the Dillon RMP.

Livestock Grazing Management:

Under Alternative A, livestock management would continue as per the Terms and Conditions contained in the current Term Grazing Permits. No new range improvement projects would be constructed. Existing livestock grazing management, as shown in Table 2.1, would continue on 17 allotments.

Table 2.1: Livestock grazing allocation and management within the East Pioneer Watershed.

Allotment Name, Number, and Category ¹	Livestock Number & Kind ²	Season of Use	Grazing System ³	BLM Stocking Rate	BLM AUMs	BLM Acres	Acres in Other Ownership	Total Acres
Birch Creek, 30365, (I)	40 C	05/15-10/15	CU	19.0	38	2,881	12,434	15,315
	146 C	05/22-08/01	RR		114			
Burk SGC, 20657, (C)	1 C	05/01-11/30	CU	10.0	7	80	647	727
Cherry Creek, 20321, (M)	100 C	05/28-06/15	SL	22.7	62	1,407	119	1,526
Childs Individual SGC, 20310, (C)	10 C	05/15-11/14	CU	4.5	60	267	0	204
Lost Creek, 20322, (C)	1 C	03/01-02/27	CU	10.0	12	80	572	652
Lost-Willow, 30364, (I)	125 C	05/15-06/16	RR	16.6	136	5,400	22,575	27,975
	174 C	05/15-06/16			189			
North Willow Creek, 30311, (C)	1 C	05/15-11/14	CU	14.7	3	44	0	44
Peck SGC, 20336, (C)	6 C	03/31-11/30	CU	6.6	49	325	0	325
Seven Springs, 20337, (I)	255 C	05/28-06/15	SL	8.8	104	2,028	1,486	3,514
Sisterson, 20329, (M)	(YR 1) 75 C	05/05-06/15	RR	13.0	72	936	233	1,169
	(YR 2) 75 C	10/15-12/15			107			
	(YR 3)	REST			-			
Skeeters, 10332, (I)	57 C	05/15-06/15	RR	13.9	52	723	153	876
Skeeters Meadows, 30372, (C)	1 C	03/01-02/28	CU	5.8	12	58	0	58
Smith Individual SGC, 10346, (C)	1 C	03/01-02/28	CU	11.0	12	165	0	165
South Seven Springs, 20362, (I)	80 C	06/06-06/15	RR	31.2	24	4,496	265	4,761
	59 C	06/01-06/15			26			
	63 C	06/01-06/15			28			
	62 C	06/01-06/15			28			

Allotment Name, Number, and Category ¹	Livestock Number & Kind ²	Season of Use	Grazing System ³	BLM Stocking Rate	BLM AUMs	BLM Acres	Acres in Other Ownership	Total Acres
	85 C	06/01-06/15			38			
Twin Adams, 20347, (M)	(YR 1) 317 C	04/10-05/15	RR	3.5	244	1,379	578	1,957
	(YR 2) 88 C	08/15-11/03			152			
	(YR 3)	REST			-			
Vipond-Glendale, 30358, (I)	669 C	06/01-06/15	RR	9.3	238	4,536	17,199	21,735
	174 C	10/15-12/14			251			
Willow Creek Individual, 20304, (C)	17 C	03/01-02/28	CU	11.7	17	199	0	199
BLM Totals	2,519 C			AVG = 12.8	1948	25,004	56,261	81,202
¹ Allotment Category: I=improve, M=maintain, C=custodial ² Livestock Kind: C=cattle, Y=yearlings, S=sheep, H=horses ³ Grazing System: SL=season long, RR=rest rotation, DR=deferred rotation, DU=deferred use, DS=dormant season use, CU=custodial use								

Allotment category refers to BLM’s level of management for a given grazing allotment. Allotments in the improve (I) category are managed more intensively and are monitored more frequently. Allotments in the maintain (M) category are usually at a desired condition and are managed to maintain that condition. Custodial (C) category allotments are usually isolated parcels with few resource concerns, are managed in conjunction with the permittee’s/lessee’s normal livestock operation, and are monitored less frequently.

Under this alternative, all other currently authorized activities (recreation permits, mineral development, etc.) would continue as permitted. No vegetation treatments (prescribed burns or mechanical treatments) would be completed under the No Action Alternative.

Noxious Weeds:

Under Alternative A, treatment of noxious weeds would continue as in the past with the vectors of spread (roads, trails, and washes) being the primary targets. An average of approximately 30 acres would be treated with herbicides annually within the EPW.

2.3.3 Features Common to all Action Alternatives

Cultural Resources:

- As required by Section 106 of the National Historic Preservation Act, Class III cultural resource inventories are required prior to the implementation of any proposed range or habitat improvement projects. If significant cultural resources are identified, adverse impacts would be mitigated through project abandonment or redesign. Care would be taken to avoid and protect significant cultural resources and any standing structures during the course of any proposed prescribed fire treatments.

Structural Projects:

- Obtain all applicable State and Federal Permits and follow all permit conditions.
- Protect springs and natural wet meadows when developing or redeveloping water for livestock. Fence spring sources and in most situations, associated riparian wetland habitat, to exclude livestock use on all developed springs. Leave adequate water at the spring source to maintain wetland hydrology, hydric soils, and hydric vegetation. Gather flow measurements 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.
- Remove any water developments and associated stock tanks that are no longer in use. Fence exclosures to protect the spring source may be maintained or expanded.
- 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.
- Clean up and remove all old materials (pipeline, troughs, head boxes, etc) when springs are re-developed or maintained.
- Seed areas of soil disturbance resulting from pipeline installation with a native seed mix during the fall following construction.
- Construct all new permanent wire fences and livestock exclosures to specifications for wildlife, as per BLM Handbook H-1741-1, consisting of a smooth bottom wire, and wire spacing of 16", 22", 28" and 40" from the ground on 4-wire fences or wire spacing of 16", 26", and 38" from the ground on 3-wire fences. Other fencing methods may include jack-and-rail, in wetlands and subirrigated areas, or jack and wire, on rocky sites.
- Consider three-wire high-tensile electric fences in areas where they may provide an effective alternative to traditional barbed-wire construction.
- Fences around springs or tanks will be modified to prevent avian predators from using posts as hunting perches. Modifications include installing spikes or cone-tops to wood posts, replacing wood posts with metal t-posts, and using metal t-posts, instead of wood posts and jack and rail, where practical.

Livestock Management:

- The following six allotments had no concerns related to livestock grazing and no requests to change management: Birch Creek, Lost Creek, Lost-Willow, North Willow Creek, Peck SGC, and Skeeters Meadows. These allotments would continue to be managed as described under Alternative A (Section 2.3.2), with the addition of the terms and conditions defined under Features Common to All Action Alternatives (Section 2.3.3).
- 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 (to prevent excessive trailing along streams) 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 EPW as a tool to help determine moves between pastures and in conjunction with long term trend data to determine management effectiveness.

- With prior approval, more livestock may be grazed for a shorter period, within the authorized dates, so long as the active AUMs are not exceeded.
- With prior approval, authorize flexibility 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 seven 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 five 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.
 - The grazing sequence may be changed on an annual basis due to drought or other unforeseen natural events after consultation with BLM and written approval.

Noxious and Invasive Species:

- Target any new noxious weed infestations for prompt eradication before they have a chance to get well established.
- When a biological control becomes available for houndstongue, consider release on infestations within the watershed.
- Release seed head weevils, *Larinus minutus*, root boring weevils, *Cyphocleonus achates*, and root boring moths, *Agapeta zoegana*, as biological controls on larger infestations of spotted knapweed to reduce the competitiveness and help control spread of knapweed.
- Target the small infestations of leafy spurge in the Lost-Willow, Vipond-Glendale, and Birch Creek Allotments for eradication.
- Work with the county and the private landowner on a management plan to treat the Russian knapweed infestation found in the Trapper Creek drainage.

2.3.4 Description of Alternative B

This alternative includes adjustments to grazing management, the construction or modification of structural range improvement projects, and/or the implementation of vegetative treatments on the following 12 allotments and one unallotted parcel within the EPW:

- | | |
|--------------------------|-----------------------------|
| 1. Birch Creek | 8. Smith Individual SGC |
| 2. Burk SGC | 9. South Seven Springs |
| 3. Cherry Creek | 10. Twin Adams |
| 4. Childs Individual SGC | 11. Vipond-Glendale |
| 5. Seven Springs | 12. Willow Creek Individual |
| 6. Sisterson | 13. Unallotted Parcel |
| 7. Skeeters | |

The proposed projects are shown on individual Allotment Maps in Appendix A.

The following design features are common to the proposed prescribed burns and/or mechanical aspen treatments on the South Seven Springs and Vipond-Glendale Allotments.

- A burn plan would be prepared and approved prior to implementation of prescribed burning. Actual prescribed burn unit boundaries within the unit boundaries shown on Maps 2 and 3 would be determined during preparation of the prescribed burn plan. If the need arises to adjust unit boundaries beyond those identified on Maps 2 and 3, additional NEPA documentation would be completed.
- One season of rest from livestock grazing may be needed prior to prescribed burning to allow sufficient fine fuels (grasses) to ensure a successful burn. Generally, at least two growing seasons of rest will be required following burns to allow re-growth and re-establishment of vegetation in the treated areas. Temporary fences or hot tape may be used to allow the appropriate rest.
- Units would be burned as fuel and weather conditions allow. Fire managers would coordinate the timing of prescribed fire treatments (seasonally) and the area treated per year to minimize public resource use conflicts.

Birch Creek #30365 (Map 4)

Livestock Management:

- Active permitted use would remain 152 AUMs, with 126 AUMs suspended.

Authorization #	Pasture	Livestock Number and Kind	Begin & End Dates	%PL	Active AUMs
2505589	Bryan	40 Cattle	5/15 – 10/15	85	38
2505593	Greenstone, Limestone, Barbour Gulch	146 Cattle	5/22 – 8/1	33	114

Structural Projects:

- Extend the pipeline from NW¼ NE¼ Section 8 T5S, R9W to SE¼ SW¼ Section 5, T5S, R9W in the Barbour Gulch pasture.
- Install a wildlife guzzler in Section 6 or 7, T5S, R9W.

Burk SGC #20657 (Map 3)

Livestock Management:

- Livestock management would be the same as under Alternative A.

Structural Projects:

- Construct an enclosure (up to two acres) around the spring source at Greasewood Spring and, if feasible, redevelop the spring to provide water to both Burk SGC and the Rieber Pasture of the South Seven Springs Allotment.

Cherry Creek #20321 (Map 5)

Livestock Management:

- Active permitted use would be 62 AUMs, with 0 AUMs suspended.

Year	Livestock Number and Kind	Begin & End Dates	%PL	Active AUMs
1 & 2	100 Cattle	5/28 – 6/15	100	62
3	49 Cattle	4/1 – 4/30	100	62

Structural Projects:

- Remove old fence and construct ½-mile of new fence around approximately 40 acres of unleased Public Land in the NE¼ NE¼ Section 8, T3S, R9W.

- Coordinate the installation of a fish barrier on private land along the lower reaches of Cherry Creek, about 1 mile downstream from reach (526) in NE¼ Section 9, T3S, R9W.
 - After placement of the fish barrier, and in cooperation with Montana FWP and the Beaverhead-Deerlodge National Forest (BDNF), remove non-native eastern brook trout in Cherry Creek to eliminate the threat of extirpation to the WCT population resulting from the expanding eastern brook trout population. In preparation for the removal project, overhanging willows, brush, and other obstructions to upstream travel would be removed or pruned to allow fisheries crews access to the stream channel to effectively conduct non-native trout removals.

Childs Individual SGC #20310 (Map 4)

Livestock Management:

- Active permitted use would be 59 AUMs, with 0 AUMs suspended.

Pasture	Livestock Number and Kind	Begin & End Dates	%PL	Active AUMs
South	5 Cattle	6/1 – 6/30	100	5
North	11 Cattle	8/1 – 12/31	100	55

- The South Pasture would be used for a two-week period, within the authorized season, every other spring.

Vegetative Treatments:

- Maintain the Childs Reseeding #476537 project by seeding about 50 acres of the South Pasture with a mix of crested wheatgrass, intermediate wheatgrass, and dryland alfalfa. At least two growing seasons of rest would be required to allow for establishment.

Lost-Willow #30364 (Map 6)

Structural Projects:

- Remove the trough and materials from McGinnis Spring.
- Remove the troughs from McVee Spring.
- Redevelop Kambich Spring. Remove the deteriorated enclosure and construct an enclosure (approximately one acre) to protect the wetland resource.

Seven Springs #20337 (Map 5)

Livestock Management:

- Active permitted use would be 104 AUMs, with 126 AUMs suspended.

Livestock Number and Kind	Begin & End Dates	%PL	Active AUMs
255 Cattle	5/28 – 6/15	65	104

- Up to 364 yearlings may be grazed within the authorized dates.

Structural Projects:

- If feasible, redevelop Louis Spring, relocate the troughs away from the spring source and out of the draw, and construct an enclosure (up to two acres) around the wetland.

Skeeters #10332 (Map 2)

Livestock Management:

- Active permitted use would be 52 AUMs, with 0 AUMs suspended.
- The grazing rotation and authorized use would be as follows:

Year	Livestock Number and Kind	Begin & End Dates	%PL	Active AUMs
1	120 Cattle	6/1 – 6/30	87	52
2	24 Cattle	10/1 – 12/15	87	52
3	REST			

- Use this allotment in conjunction with the Glendale Common Pasture of the Vipond-Glendale # 30358 Allotment.
- Spring grazing would be for 15 days during the authorized season.
- During the fall treatment, more cattle may be grazed for a shorter period, so long as authorized AUMs are not exceeded.
- Pasture moves may occur over a five-day period.

Smith Individual SGC #10346 (Map 6)

Livestock Management:

- Active permitted use would be 15 AUMs, with 0 AUMs suspended.

Livestock Number and Kind	Begin & End Dates	%PL	Active AUMs
2 Cattle	11/1 – 2/28	100	8
3 Cattle	3/1 – 3/31	100	3

Structural Projects:

- Redevelop or maintain Loose Nut Spring and remove unnecessary fences. Expand spring enclosure (up to one acre).

South Seven Springs #20362 (Map 3)

Livestock Management:

- Livestock management would be the same as under Alternative A.

Structural Projects:

- Redevelop Alkali Spring in the Rieber Pasture to water both the Middle and Rieber Pastures. Construct an enclosure (up to two acres) to protect the spring source.
- Remove the troughs and clean up Cherry Hill Spring.
- Level the trough, clean up around the head box and expand the enclosure (up to one acre) at Cherry Hill Spring No. 2.
- Remove the wood trough and replace the leaking metal trough at Seven Springs spring source. Clean up around the head box and expand the enclosure (up to two acres).
- Replace the leaking metal trough, clean up around the head box and expand the enclosure (up to five acres) at Seven Springs East Spring to enclose the wet meadow and adjacent small aspen stand.

Vegetative Treatments:

- Regenerate up to 89 acres of aspen stands at Seven Springs by cutting all mature aspen stems. Follow up prescribed burning may be used to further stimulate aspen regeneration.

- Fence treated areas to exclude grazing until aspen regeneration is a minimum of five feet tall on average.
- Treat one mile, a maximum of 12 acres, of Rocky Mountain juniper encroachment along Brownes Creek (540) as follows:
 - Cut juniper within 50 feet from the stream centerline on each side of the stream using chainsaws or other hand tools.
 - Orient or pile felled junipers parallel to the stream to prevent livestock access to the streambanks.
 - Post treatment management would include a minimum of two growing seasons of rest from livestock use to allow vegetative response from existing or seeded understory vegetation. Tools, such as orienting and leaving the felled juniper, temporary fencing or hot tape may be used to allow the appropriate rest.
 - If necessary, seeding with native upland or riparian species may be completed following juniper removal along riparian areas that do not have adequate understory of desirable native deciduous woody or herbaceous species.

Twin Adams #20347 (Map 6)

Livestock Management:

- Active permitted use would be 244 AUMs, with 0 AUMs suspended.

Livestock Number and Kind	Begin & End Dates	%PL	Active AUMs
243 Cattle	3/15 – 4/30	65	244

- This allotment would be used during the authorized season for 2 years and rested during the third year.

Structural Projects:

- Extend the pipeline about ½ mile from deeded property in Section 18, T4S, R9W south onto BLM administered land and install a water trough.
- Install a wildlife guzzler, if feasible, in south half of Section 19 or north half of Section 30, T4S, R9W.

Vipond-Glendale #30358 (Map 2)

Livestock Management:

- Active permitted use would be 496 AUMs, with 0 AUMs suspended.

Livestock Number and Kind	Begin & End Dates	%PL	Active AUMs
670 Cattle	6/1 – 6/30	72	238
143 Cattle	10/1 – 12/15	72	257

- The grazing rotation would be as follows:

Year	Pasture		
	Ponderosa	Glendale	Louie Lowe
1	Spring	Fall	REST
2	Fall	REST	Spring
3	REST	Spring	Fall

- Spring grazing would be for 15 days during the authorized season.
- During the fall treatment, more cattle may be grazed for a shorter period, so long as authorized AUMs are not exceeded.
- Pasture moves may occur over a five-day period.

Structural Projects:

- Construct a pipeline and pump water from deeded property onto or across BLM administered land in Section 15, T2S, R8W and install troughs in Section 15 or coordinate with MT Department of Natural Resources and Conservation (DNRC) to install troughs in Section 16.
- Coordinate with FWP to construct a pipeline, and pump water to a trough in SW¹/₄ Section 10 or NW¹/₄ Section 15, T2S, R8W.
- Construct an off-site water development including an enclosure (up to two acres) at the spring source, in Section 35, T3S, R10W.
- Coordinate with the Beaverhead-Deerlodge National Forest (BDNF) regarding maintenance of the elk let-down fence in Section 35, T3S, R10W.
- Remove the infrastructure and abandon Butcher Spring.

Vegetative Treatments:

- Use prescribed fire on up to 936 acres to reduce conifers that are expanding into sagebrush/grassland in Louie Lowe Basin. Due to multiple agencies managing the land in this area, and the necessity to treat a large enough area to disperse wildlife and livestock use, cooperation with the Forest Service and the State of Montana would be required to implement this treatment. Burn unit boundaries would need to span agency management boundaries to make this project feasible.
 - Objectives would be to kill at least 60% of conifers less than 30 feet in height, and kill less than 10% of conifers greater than 30 feet in height where prescribed fire treatments are implemented.

Willow Creek Individual #20304 (Map 4)

Livestock Management:

- Active permitted use would be 17 AUMs, with 0 AUMs suspended.

Livestock Number and Kind	Begin & End Dates	%PL	Active AUMs
4 Cattle	9/1 – 12/31	100	16

- Livestock grazing may occur between 4/15 – 5/15 one year out of three.

Structural Projects:

- Coordinate with the permittee and MT DNRC to develop a well on State Lands in or adjacent to N¹/₂ NE¹/₄ Section 9, T5S, R9W.

Unallotted Parcel (Map 2)

Structural Projects:

- Construct an enclosure around and mechanically remove juniper within the wetland (515) in SE¹/₄ NE¹/₄ Section 25, T2S, R10W.

2.3.5 Description of Alternative C

This alternative includes adjustments to grazing management, the construction or modification of structural range improvement projects, and/or the implementation of vegetative treatments on the following six allotments within the EPW:

1. Burk SGC
2. Cherry Creek
3. Childs Individual SGC
4. Seven Springs
5. Smith Individual SGC
6. South Seven Springs

Burk SGC #20657 (Map 3)

Livestock Management:

- Active permitted use would be 8 AUMs, with 0 AUMs suspended.

Livestock Number and Kind	Begin & End Dates	%PL	Active AUMs
4 Cattle	9/15 – 11/15	100	8

Structural Projects:

- Regrade the area around Greasewood Spring to reestablish natural contours and restore the wetlands to preconstruction conditions. Construct an enclosure (up to five acres) around the spring source and redevelop the spring to provide water to both Burk SGC and the Rieber Pasture of the South Seven Springs Allotment.

Cherry Creek #20321 (Map 5)

Livestock Management:

- Active permitted use would be 62 AUMs, with 0 AUMs suspended.

Year	Livestock Number and Kind	Begin & End Dates	%PL	Active AUMs
1 & 2	100 Cattle	5/28 – 6/15	100	62
3	63 Cattle	10/1 – 10/30	100	62

- More frequent fall use (10/1 to 10/30) would be permitted, in lieu of spring grazing.

Childs Individual SGC #20310 (Map 4)

Livestock Management:

- Active permitted use would be 59 AUMs, with 0 AUMs suspended.

Pasture	Livestock Number and Kind	Begin & End Dates	%PL	Active AUMs
South	5 Cattle	6/1 – 6/30	100	5
North	11 Cattle	8/1 – 12/31	100	55

- The South Pasture would be used for a two-week period, within the authorized season, every **third** spring.

Vegetative Treatments:

- Restore the Childs Reseeding #476537 project by seeding with a mix of predominately native cool-season grasses and forbs. At least two growing seasons of rest would be required to allow for establishment.

Seven Springs #20337 (Map 5)

Livestock Management:

- Active permitted use would be 104 AUMs, with 126 AUMs suspended.

Livestock Number and Kind	Begin & End Dates	%PL	Active AUMs
53 Cattle	10/1 – 12/31	65	104

- This allotment may be grazed not more than one spring (5/28 – 6/15) in any three-year period

Structural Projects:

- Remove the troughs and clean up Louis Spring.

Smith Individual SGC #10346 (Map 6)

Structural Projects:

- Clean up and abandon Loose Nut Spring and remove unnecessary fences. Develop one of the two undeveloped springs that are located a few hundred yards south and build an enclosure (up to two acres) to protect the source.

South Seven Springs #20362 (Map 3)

Livestock Management:

- Active permitted use would be as follows:

Herd #	Authorization #	Livestock Number and Kind	Begin & End Dates	%PL	Active AUMs	Suspended AUMs	Grazing Preference
1	2505590	62 Cattle	6/6 – 6/15	90	18	61	79
	2505631	63 Cattle	6/6 – 6/15	90	19	63	82
2	2505600	59 Cattle	6/6 – 6/15	90	18	68	86
	2505625	80 Cattle	6/6 – 6/15	90	24	26	50
3	2500983	85 Cattle	6/6 – 6/15	90	25	98	123

- The grazing rotation would be as follows:

Year	Pasture				
	Burk	Rieber	Middle	Grose	Bradley
1	Spring	REST	Spring	REST	Spring
2	REST	Spring	REST	Spring	Spring
3	Spring	REST	Spring	REST	REST

- Herd #1 would alternate use in the Rieber and Burk pastures.
- Herd #2 would alternate use in the Middle and Grose pastures.
- Herd #3 would use the Bradley pasture for two years and rest the third year.

2.4 Summary Comparison of Alternative Actions

Table 2.2: Comparison of Livestock Management, Projects & Vegetation Treatments Summarized by Grazing Allotments

Birch Creek #30365	Alternative A	Alternative B	Alternative C
Livestock Number & Kind	40 C 146 C	Same as Alternative A	No Alternative C
Grazing Period	5/15 – 10/15 5/22 – 8/1		
Active BLM AUMs	38 114		
Grazing Management	Custodial Rest Rotation		
Projects	None	Extend a ¼-mile pipeline into the Barbour Gulch pasture and install a trough. Install a wildlife guzzler.	

Burk SGC #20657	Alternative A	Alternative B	Alternative C
Livestock Number & Kind	1 C	Same as Alternative A	Same as Alternative A
Grazing Period	5/1 – 11/30		
Active BLM AUMs	7		
Grazing Management	Custodial		
Projects	None	Construct a livestock enclosure and redevelop Greasewood Spring.	Same as Alternative B, plus re-grade the site to re-establish natural contours and restore the wetland.
Cherry Creek #20321	Alternative A	Alternative B	Alternative C
Livestock Number & Kind	100 C	100 C 49 C	100 C 63 C
Grazing Period	5/28 – 6/15	5/28 – 6/15 (YR 1 & 2) 4/1 – 4/30 (YR 3)	5/28 – 6/15 (YR 1 & 2) 10/1 – 10/30 (YR 3)
Active BLM AUMs	62	62	62
Grazing Management	Annual Use	Deferred Rotation	Deferred Rotation
Projects	None	Remove old fence and construct ½-mile of new fence around 40 acres of unleased Public Land.	None
Childs Individual SGC #20310	Alternative A	Alternative B	Alternative C
Livestock Number & Kind	10 C	5 C 11 C	Same as Alternative B
Grazing Period	5/15 – 11/14	6/1 – 6/30 8/1 – 12/31	
Active BLM AUMs	60	60	
Grazing Management	Custodial	Alternating Rest Deferred Use	2-Year Rest Deferred Use
Vegetative Treatments	None	Maintain the Childs Reseeding (up to 50 acres) with introduced species.	Restore the Childs Reseeding (up to 50 acres) with a mix of predominantly native and some introduced species.
Lost-Willow #30364	Alternative A	Alternative B	Alternative C
Livestock Number & Kind	299	Same as Alternative A	No Alternative C
Grazing Period	5/15 – 6/15		
Active BLM AUMs	325		
Grazing Management	Rest Rotation		
Projects	None	Remove structures from McGinnis and McVee Springs. Redevelop Kambich Spring and construct a larger livestock enclosure.	
Seven Springs #20337	Alternative A	Alternative B	Alternative C
Livestock Number & Kind	255 C	Same as Alternative A, except that 394 yearlings may be grazed within the authorized dates.	53 C
Grazing Period	5/28 – 6/15		10/1 – 12/31
Active BLM AUMs	104		104
Grazing Management	Annual Use		Dormant Season Use
Projects	None	Redevelop Louis Spring.	Remove infrastructure at Louis Spring.

Skeeters #10332	Alternative A	Alternative B	Alternative C
Livestock Number & Kind	57 C	120 C (YR 1) 24 C (YR 2)	No Alternative C
Grazing Period	5/15 – 6/15	6/1 – 6/30 (YR 1) 10/1 – 12/15 (YR 2) REST (YR 3)	
Active BLM AUMs	52	52	
Grazing Management	Rest Rotation	Rest Rotation	
Smith Individual SGC # 10346	Alternative A	Alternative B	Alternative C
Livestock Number & Kind	1 C	5 C	Same as Alternative C
Grazing Period	3/1 – 2/28	11/1 – 3/31	
Active BLM AUMs	12	15	
Grazing Management	Custodial	Dormant Season Use	
Projects	None	Reconstruct or maintain Loose Nut Spring and remove unnecessary fences.	Remove structures at Loose Nut Spring and unnecessary fences. Develop one of the springs to the South.
South Seven Springs #20362	Alternative A	Alternative B	Alternative C
Livestock Number & Kind	269 C 80 C	Same as Alternative A	349 C
Grazing Period	6/1 – 6/15 6/6 – 6/15		6/6 – 6/15
Active BLM AUMs	144		104
Grazing Management	Alternating Rest		Alternating Rest
Projects	None	Remove structures from Cherry Hill Spring. Redevelop Alkali Spring. Expand enclosures and repair or replace troughs at Cherry Hill Spring No.2, Seven Springs Source, Seven Springs East Springs	
Vegetative Treatments	None	Treat up to 89 acres of aspen at Seven Springs with mechanical treatment and/or prescribed fire. Treat juniper encroachment along 1 mile of Browne’s Creek (540).	None
Twin Adams #20347	Alternative A	Alternative B	Alternative C
Livestock Number & Kind	317 C (YR 1) 88 C (YR 2)	234 C (YR 1 & 2)	No Alternative C
Grazing Period	4/10 – 5/15 (YR 1) 8/15 – 11/3 (YR 2) REST (YR 3)	3/15 – 4/30 (YR 1 & 2) REST (YR 3)	
Active BLM AUMs	244 (YR 1) 152 (YR 2)	244 (YR 1 & 2)	
Grazing Management	Rest Rotation	Dormant Season Use & Rest	

Projects	None	Construct a ½-mile pipeline extension and install a trough. Install a wildlife guzzler.	
Vipond-Glendale #30358	Alternative A	Alternative B	Alternative C
Livestock Number & Kind	669 C 174 C	670 C 143 C	No Alternative C
Grazing Period	6/1 – 6/15 10/15 – 12/14	6/1 – 6/30 (2-wk period) 10/1 – 12/15	
Active BLM AUMs	238 251	238 257	
Grazing Management	Rest Rotation	Rest Rotation	
Projects	None	Construct 1.25 miles of pipeline and install 2 troughs. Develop a spring with a ¼-mile pipeline with one trough and construct a 2-acre enclosure, Clean up & abandon Butcher Spring.	
Vegetative Treatments	None	Treat up to 936 acres of conifer encroachment with prescribed fire in Louie Lowe Basin.	
Willow Creek Individual #20304	Alternative A	Alternative B	Alternative C
Livestock Number & Kind	17 C	4 C	No Alternative C
Grazing Period	3/1 – 2/28	9/1 – 12/31	
Active BLM AUMs	17	16	
Grazing Management	Custodial	Dormant Season Use	
Projects	None	Coordinate the placement of a well on adjacent State Lands.	
Unallotted Parcel	Alternative A	Alternative B	Alternative C
Projects	None	Construct a livestock enclosure and remove juniper.	No Alternative C

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. This chapter provides a summary of the baseline environment. A more detailed discussion of relevant affected resources can be found in the EPW Assessment Report, which is incorporated into this document by reference. Copies of the assessment report are available from the BLM Dillon Field Office or may be accessed online at http://www.blm.gov/mt/st/en/fo/dillon_field_office.html.

3.1 General Setting

Within the watershed boundary, elevations range from about 4,950 feet, near the Big Hole River, to above 11,100 feet on Torrey and Tweedy Mountains. The highest elevation on BLM-administered lands is about 7,200 feet, near the USFS Boundary above Trapper Creek. Lands administered by BLM within the EPW receive about eight to 20 inches of average annual precipitation. Soils in the EPW are primarily affected by climate (temperature and precipitation), topography (slope and aspect), and parent material (geology and geomorphology). The soils in this watershed fall into the Aridic and Ustic soil moisture regimes and are in the Frigid (generally below 6,400 feet elevation) and Cryic (generally above 6,400 feet elevation) soil temperature regimes.

The soils within the watershed formed in alluvium, colluvium, and residuum mainly from quartzite, limestone, sandstone, andisite, rhyolite, and granitic rock sources. Major landforms include flood plains, stream terraces, alluvial fans, escarpments, hills, and mountain slopes. Slopes range from nearly level and undulating (1 to 8 percent), rolling and hilly (8 to 30 percent), to steep and very steep (25 to 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). The relative amount of lime, or calcium carbonate, within the rooting zone, as measured by observable effervescence with hydrochloric acid, ranges from none to more than 50 percent. Salinity and sodicity (alkalinity) occur within the assessment area to a minor extent and rock fragments, both on the soil surface and within the soil profile, range from none to more than 65 percent.

Vegetation in the watershed 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 (direction the slopes are facing). A wide variety of vegetation is found, 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 occur at higher elevations, primarily on lands managed by the Forest Service. This diverse landscape provides habitat and structural niches for a wide variety and abundance of wildlife.

Fire scarred trees and charred pieces of wood are found throughout the Pioneer Mountains, primarily on Forest Service managed land. The sagebrush/grassland communities that dominate the lower elevation BLM administered land typically retain evidence of past wildfires for a relatively short amount of time, making long-term fire history difficult to confirm. Local agencies have records of several recent wildfires in the EPW, most of which burned relatively

small areas. The BLM conducted a several hundred acre prescribed burn in the Louie Lowe Basin area in 1988.

Crested wheatgrass has been seeded to increase forage production in a few localized areas. More information on fire history and past vegetative treatment can be found in the EPW Assessment Report.

3.2 Description of Affected Resources/Issues

3.2.1 Issue #1: Upland Health, Sagebrush Steppe Habitat and Associated Species

Most of the watershed's public land uplands are dominated by either grasslands (21%) or sagebrush and mountain shrubs (72%), including mountain big sagebrush, Wyoming big sagebrush, and basin big sagebrush. Some of the prominent herbaceous species included in the grasslands are bluebunch wheatgrass, western wheatgrass, Sandberg's bluegrass, needle and thread, prairie junegrass, and Idaho fescue. These same cool season grasses are prominent understory vegetation in the sagebrush habitat types.

Mountain big sagebrush is the dominant habitat type, providing crucial winter habitat for wildlife species such as mule deer, pronghorn antelope, and sage grouse, and localized yearlong habitat by sagebrush-obligate species such as pygmy rabbit and sage grouse. Although no pygmy rabbit sign was found during the field assessments, the EPW has potential pygmy rabbit habitat. Sage grouse nesting usually occurs within two miles of the lek, where suitable habitat is available. Intermingled occurrences of basin big sagebrush, three-tip sagebrush, and Wyoming big sagebrush add to the diversity of vegetation and habitat structure. Existing wildlife uses are described further in the EPW Assessment Report beginning on page 35. Table 8 of the EPW Assessment Report lists primary game species and associated habitats within the EPW.

The vast majority of the uplands in the watershed are functioning properly and meeting the Standard for Upland Health. Fifteen grazing allotments, as well as the unleased and unallotted parcels, comprising 98% of the public uplands in the EPW assessment area, are functioning properly under existing management. The Childs Individual SGC and Willow Creek Individual allotments, comprising approximately two percent of the public uplands in the EPW, are FAR with a static or downward trend. On the sites rated PFC or FAR with an upward trend, the quantitative monitoring data supports the findings of the IDT. The ecological condition at these upland sites is stable or improving.

Concerns documented by the IDT include a decline in the composition and vigor of cool-season bunchgrasses on the Childs Individual SGC and Willow Creek Individual Allotments, noxious weed and cheatgrass infestations occurring in various locations throughout the EPW, and conifer expansion into sagebrush/grasslands on the Vipond-Glendale Allotment.

Forest and Woodland Habitat

Forest habitats comprise approximately 46% of all ownerships, and approximately two percent of BLM-administered lands within the EPW. Low elevation forest/woodlands contain Douglas-fir, limber pine, mountain mahogany, and Rocky Mountain juniper. Douglas-fir and juniper are the most common tree species found on BLM administered land within the EPW due to elevation

and precipitation zone. Other tree species that require more moisture are primarily found higher in the large expanse of forest habitat on adjacent Forest Service land in the Pioneer Mountains. This habitat provides important thermal and hiding cover for wildlife including dusky grouse, ruffed grouse, northern goshawk, black bear, bobcat, and wolverine. Forest-dwelling bird species require suitable nesting and foraging habitat.

Western spruce budworm activity is present in the EPW, and defoliation caused by budworm is most evident on Douglas-fir trees. While budworm does not usually cause direct tree mortality, it will predispose trees to attacks by other insects or diseases. Limber pine is being affected and killed by mountain pine beetle and/or white pine blister rust. Mountain pine beetle is affecting and killing large areas of lodgepole pine in the west part of the EPW, on Forest Service managed land, but this tree species is generally not present on BLM-administered lands within this assessment area.

Fire exclusion, caused primarily by fire suppression and the removal of fine fuels by livestock grazing in the area since the 1860's, has changed the structure, density, and plant species composition within the lower grassland and the upland communities. Conifer expansion into openings and sagebrush/grasslands is evident across much of the east face of the Pioneer Mountains. Douglas-fir colonization in Louie Lowe Basin has been identified in recent years as a resource concern on BLM, Forest Service and State managed land. The existing seed source and growing conditions will allow much of the sagebrush habitat in this area to convert to Douglas-fir forest without treatment or a wildfire.

Noxious Weeds and Invasive Species

Leafy spurge, an aggressive noxious weed, is found in three allotments (Lost-Willow, Vipond-Glendale and Birch Creek) within the EPW. All three of these small leafy spurge infestations have been aggressively treated by both Beaverhead County and the BLM and, currently, only a few scattered plants remain.

Spotted knapweed, one of the more aggressive noxious weeds, is found in small infestations scattered throughout the watershed. These infestations are located primarily along roads, trails and washes.

Other noxious or invasive weeds present primarily as small patches and/or widely scattered infestations in the watershed include cheatgrass, common tansy, common mullein, black henbane, and Canada thistle. Cheatgrass is found in small patches throughout the watershed primarily on south and west facing slopes where there has been some past disturbance.

3.2.2 Issue #2: Riparian, Wetland, and Aquatic Habitat and Associated Species

The majority of the streams in the assessment area originate on the east facing slopes of the Pioneer Mountains and drain to the Big Hole River. The main streams/creeks from north to south are Canyon, Trapper, Cherry, Browns, Lost, Willow, and Birch Creeks. There are approximately 20 miles of streams (lotic) and 57 acres of wetland (lentic) habitat on public lands administered by BLM in the EPW.

The IDT observed various riparian health concerns on specific EPW reaches including: alteration of stream morphology (channel shape and gradient) with resultant over-widening, reduced access to floodplains, and bank down cutting. 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 streams in the EPW assessment area. Reach specific findings are more fully described in the East Pioneers Watershed Assessment Report.

The IDT concluded that riparian conditions along 18 of 26 assessed stream reaches in the EPW, flowing 15.4 miles, are in PFC. One stream reach, flowing 0.5 miles, is FAR with an upward trend. The riparian condition on seven reaches, flowing 4.4 miles, is FAR with a downward or static trend. Table 5 in the East Pioneers Watershed Assessment Report summarizes the functional status of all the assessed stream reaches in the EPW.

In the process of developing alternatives, members of the ID team met with permittees and for co-managed allotments, staff from the Forest Service. Information gained from these meetings indicates that in addition to authorized use, small numbers of unauthorized livestock during the summer months have contributed to deterioration in resource conditions in the South Seven Springs Allotment and the Louie Lowe Basin portion of the Vipond-Glendale Allotment.

Springs

Most of the springs within the assessment area have been developed for livestock and are discussed separately. Reach 515, originally shown in GIS as a tributary of Trapper Creek, is a spring with a short spring brook. It was found to be functioning properly.

There is a 57-acre spring province (506), which includes the five western springs, shown as Seven Springs, on the Earls Gulch Quadrangle. The province is dominated by quaking aspen, much of which is dead or dying due to recent poplar borer activity. Spring sources are very noticeable due to the presence of water birch. Condition within this province varied depending on proximity of the springs to the watering trough. Livestock are impacting the springs and spring brooks both physically (soil compaction and channel alteration) and vegetatively (reduced sedge composition). The province was rated FAR static.

Developed Springs

According to the Range Improvement Project database there are 14 developed springs in the watershed: six in the South Seven Springs allotment, four in the Lost-Willow allotment, three in the Vipond-Glendale allotment, and one in the Seven Springs allotment. In the EPW Assessment Report, the locations of two springs were incorrectly described. Greasewood Spring and Loose Nut Spring are located in the Burke SGC and Smith Individual SGC Allotments, respectively.

Historically, the sole purpose for spring developments was to provide water for livestock. In many instances the spring source was not fenced or protected from degradation by ungulates, resulting in altered hydrological function and diminished resource values. In other cases, livestock exclosures around spring sources were minimal. Construction techniques typically altered hydrology and diminished resource values. Some spring structures have fallen into

disrepair and fences have become dysfunctional. Enclosures frequently were found to be of insufficient size to adequately protect wetland resources. As with streams, specific information can be found in the watershed assessment report.

Developments at Butcher, McGinnis, Kambich and McVee Springs were evaluated in April 2009, after the EPW Assessment Report was completed, and are no longer functioning. The sources for Butcher, McGinnis and McVee Springs have dried up. There are no recorded flows for Butcher Spring, but recorded flows for McVee and McGinnis Springs were less than 1/3 GPM. The spring source for Kambich Spring is flowing and resource conditions were good. As was typical for construction in the past (prior to 1985), the enclosures are inadequately sized to protect the resources.

Louis Spring is located in the lower section of a rocky, confined draw. The spring brook continues downstream where the draw opens up and adjacent benches with mature basin big sagebrush and basin wildrye. The original Louis Spring, developed in 1957, was likely developed with hand tools, since drain tiles were used. An evaluation in 1982 by BLM engineers questioned the feasibility of redevelopment.

Wildlife resources associated with this riparian wetland habitat seasonally or year-round include, but are not limited to elk, mule deer, sage grouse, bald eagles, hawks and migratory birds. Many species of migratory birds use riparian habitat for nesting and sage grouse rely on this habitat for brood rearing during the summer. Generally, fish habitat was in good condition on streams within the EPW.

Noxious Weeds and Invasive Species

Houndstongue and Canada thistle is found scattered throughout the watershed, primarily along riparian bottoms, roads and trails. Due to the difficulty in treating infestations found in riparian areas, the ability of Canada thistle to reproduce by seeds, creeping roots and plant fragments, and the nature of houndstongue seeds to cling to hair and clothing, the potential is high for spread into disturbed areas within the watershed

An infestation of Russian knapweed was found on private land along Trapper Creek during the local community spray day. Russian knapweed is a rhizomatous perennial plant that can reproduce by seed, root shoots or root fragments (of less than 1 inch in length). This noxious weed causes “chewing disease”, is toxic to horses, and also shows allelopathic properties by accumulating high levels of zinc in the soil surrounding the plant thus impeding the growth of more desirable species. Due to these characteristics, this invader’s potential to invade surrounding public lands is very high.

3.2.3 Resource Concern #1: Special Status Species

Red sage, also known as green molly, is known from only five locations in Montana, but it is locally common at lower elevations in the South Seven Springs allotment. Red sage may be vulnerable to impacts associated with cattle grazing, but the current rest-rotation grazing management on this allotment appears to be compatible with maintaining the population within the EPW.

Lemhi beardtongue is only known from Forest Service lands within the EPW but suitable habitat is present on BLM lands within the analysis area. Lemhi beardtongue may be vulnerable to impacts associated with cattle grazing, road maintenance and fire suppression.

Beautiful bladderpod, low northern–rockcress, sapphire rockcress, and Wind River draba are also found on Forest Service lands within the EPW. These species typically occupy habitats at higher elevation or on steep slopes that aren't subject to any immediate anthropogenic threats. Noxious weed encroachment, herbicide application or mining activities could pose future threats.

There are eighteen special status wildlife species listed in Table 7 in the EPW Assessment Report. The gray wolf was recently removed from protection under the ESA. No resident packs have been documented in the EPW, but wolves moving through the area have been sighted. Bald eagles were recently delisted from the ESA and are currently managed as a BLM sensitive species and are still protected under the Bald and Golden Eagle Protection Act. Ferruginous hawks, golden eagles, and Swainson's hawks are common throughout the EPW.

The BLM-administered lands in the EPW provide year-round sage grouse habitat. Although no active sage grouse leks have been found in the EPW, it is important to maintain the integrity of mid- to late-seral sagebrush habitats on public lands, not only for sage grouse but for all sagebrush obligate species. Overall, throughout the watershed, sagebrush habitat requirements are being met.

At present, there are no known special status plant species found in riparian habitats on BLM-administered lands within the EPW. Succulent forbs, largely found in riparian areas, are a key component of sage grouse brood diets. For at least some portion of their annual life cycle, about 75% of all wildlife species in this area utilize riparian habitat. The U.S. Fish and Wildlife Service has a list of 28 "Birds of Conservation Concern" for the Rocky Mountain Region, many of which depend on riparian habitat for all or part of their lifecycle. The EPW potentially has 14 of the 28 species on this list.

Cherry Creek is the only known WCT stream on BLM-administered land in the EPW. This population was genetically tested at 100% in 2004. Currently the greatest threat to the persistence of the WCT population in Cherry Creek is coming from two sources. The first is from competition and predation from an abundant population of non-native eastern brook trout in the lower half of the drainage. The second equal or greater threat comes from a continuous downstream infusion of hybridized cutthroat trout that originate in two head water lakes and filter downstream into Cherry Creek.

Fluvial Arctic grayling historically were found throughout the Big Hole River Drainage as well as downstream throughout the Missouri River Drainage upstream of Great Falls, Montana. Today as a result of habitat loss, irrigation withdrawals, changes in climatic regimes and non native interactions, the current distribution has fluvial grayling restricted to the upper reaches of the Big Hole River well above the EPW. Recent surveys have failed to document the presence of grayling downstream of Divide, Montana.

3.2.4 Resource Concern #2: Socioeconomics

There are 13 individual permittees currently authorized to graze livestock for a total of 1,948 active AUMs on the allotments included in this EA. Meetings with these permittees indicate that these ranch operations have tightly woven public land grazing preferences together with private land management. In most cases, private land owned by the permittees is adjacent to and/or intermingled with these public land allotments. Changes in numbers of livestock, seasons of use, and/or increased labor inputs may have considerable economic impacts on individual operations.

One commercial outfitter is authorized under Special Recreation Use Permit to conduct big game hunting in all or part of this area. Total commercial use days associated with this permit is less than 100 client days. Non-commercial hunting and fishing opportunities on BLM lands in the EPW provide an important economic contribution to the local economies of Dillon and other nearby communities.

For a full analysis of social and economic conditions for Beaverhead and Madison counties refer Proposed Dillon RMP and EIS Vol. 1 beginning on page 250.

3.2.5 Resource Concern #3: AML

The Vipond/Quartz Hill and Lost Creek Mining Districts are located within the EPW. Neither district has any known environmental issues; however, the Vipond/Quartz Hill District contains mine openings in the Maiden Rock area (Sections 30, 31, and 32, T1S, R9W; Sections 6 and 7, T2S, R9W) that represent a public safety hazard. In 1990, the company who had been mining phosphate at Maiden Rock closed all accessible open mine features, as part of their reclamation, and relinquished their phosphate leases. This closure was approved by the BLM and Forest Service, and the bond was released. However, due to the steep terrain, the steep dipping geometry of the ore body, and the mining methods used, numerous open mine features remain open or have opened up in the last twenty years.

3.2.6 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 Pioneers Planning Area were lower than that observed in other planning areas, with the average site density of one site for just under every 1.5 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 EPW analysis area. Within the study area, approximately 1,450 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-way, timber sales, and land exchanges. The inventory projects vary from as little as one acre, to as much as 650 acres in extent, and public lands within at least ten grazing allotments have had no Class III cultural resources inventory at all.

As a result of past Class II and Class III cultural resource inventory, there are a total of 26 recorded cultural properties within the EPW study area. Of that number 60% are historic, 35% are of prehistoric origin and 5% is a multi-component, containing both a prehistoric component and an historic component. One paleontological site is located within the watershed.

The majority of the sites associated within the study area are prehistoric in general, more specifically temporary campsites. Recorded prehistoric site types include: lithic scatters; stone circle/lithic scatter. Site types associated with historic sites include: homestead; dump; earth filled check dam; railroad or associated with. The multi-component site is comprised of a prehistoric lithic scatter and historic trash scatter. Of the 26 sites identified, two have been recommended eligible for the National Register of Historic Places. None of the sites have been formally evaluated for significance and eligibility to the National Register of Historic Places.

An examination of individual site forms also indicated that potential adverse impacts had occurred at 13 (50%) of the recorded sites. These impacts were primarily the results of natural erosion, natural weathering, and cattle disturbance.

To date, traditional cultural properties or traditional life-way values of special concern to American Indian groups have not been specifically identified within the EPW. 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 24BE264 and 24BE932 are expected to hold importance to American Indians and will be afforded special considerations.

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 driving issues and resource concerns. The environmental consequences are analyzed and disclosed by alternative. This chapter also discloses the cumulative, or combined, impacts of alternative actions with past, present and reasonably foreseeable actions within the watershed.

4.2 Predicted Effects of Alternatives

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

Term Grazing Permits will be renewed with the current terms and conditions on the six allotments that were determined to be meeting Land Health Standards and had no identified site specific concerns related to current livestock grazing management. These allotments include: Birch Creek, Lost Creek, Lost-Willow, North Willow Creek, Peck SGC, and Sisterson. Current management is facilitating/allowing healthy conditions on BLM-administered public lands within these allotments.

Human activities, such as road maintenance activities, recreation, gravel mining, and other disturbances, as well as livestock, wildlife, wind, water and fire have the potential to spread weeds into and within the watershed.

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

Issue #1: Upland Health, Sagebrush Steppe Habitat and Associated Species

On those grazing allotments where Standards for Land Health are being met and/or monitoring indicates an upward trend, reissuing term grazing permits and leases is expected to continue meeting or making progress toward meeting the Standards and improving resource conditions.

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

Installing wildlife escape ramps enhances the ability of birds, bats, and other small mammals to get out of water developments and avoid drowning. Since greater than 80 percent of sage grouse nests occur within two miles of a lek in southwestern Montana (MFWP 2005), locating leks in the EPW will facilitate monitoring of nesting and brood-rearing habitat in the watershed.

Forest and Woodland Habitat

Forested habitats comprise approximately two percent of BLM-administered lands in the EPW. Continuation of the spruce budworm outbreak in Douglas-fir will 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).

Mountain pine beetle and white pine blister rust will continue to infect and kill mature limber pine. In some limber pine habitats, a species conversion to Douglas-fir and juniper, or complete loss of limber pine, may occur with lack of disturbance. This could reduce vegetative diversity across the landscape and may lower vegetative cover, water yields, wildlife, and aesthetic values (Arno, 2000). Hiding and thermal cover may be greatly reduced for wildlife. Foliage-gleaning and bark-gleaning birds may decrease in number with more beetle-killed trees, however woodpeckers increase with the number of dead trees and increase in insects under the bark of dead trees (Amman and Schmitz, 1988). Limber pine seeds provide critical food for rodents and birds, including squirrels and Clark's nutcrackers, which also cache the seeds for later use. Other birds, small mammals, and bears benefit from these caches. This food source will be reduced as limber pine dies.

Issue #2: Riparian, Wetland, and Aquatic Habitat and Associated Species

Riding and herding are encouraged under all alternatives including the no action. Ensuring the riders know what is expected and the reasons behind such actions is critical to success (Ehrhart and Hansen 1997). Low stress livestock management may increase the success of riding and in turn improve vegetative recovery. It is stated in TR 1737-20 Grazing Management Processes and Strategies for Riparian-Wetland Areas (2006) that "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." Livestock can be moved away from critical habitat at critical times to minimize social displacement of wildlife (e.g. elk and deer winter range, fawning sites)" (Mosley 1999).

Regulating livestock use around live water sources and wet meadows in sage grouse brood-rearing areas by fencing, grazing or herding management to restrict overuse protects vulnerable forbs and grasses. However, livestock grazing could periodically be used inside meadow enclosures to reduce old vegetation, thereby exposing and rejuvenating succulent forbs (Evans 1986).

Increasing compliance inspections on the South Seven Springs and Vipond-Glendale Allotments will enable BLM to better detect unauthorized livestock use, which was determined to be the primary reason for FAR ratings along several stream reaches (500, 502, 517, 519, 525, and 540) and springs (506 and 535) and take appropriate action to deter future offenses. By reducing or eliminating unauthorized livestock grazing in these areas, riparian function and vegetation should improve along these reaches and springs.

Resource Concern #1: Special Status Species

A summary table and a detailed discussion of predicted effects and potential impacts to special status plant species and their habitat is provided in the Biological Evaluation (BE) for Special Status Plants on BLM Lands in the EPW. 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. Both BEs are included as Appendix C. Potential site-specific impacts to special status species are included in the allotment discussions below where appropriate. Amending grazing permits to state that livestock losses may occur from wolves, will create awareness and minimize conflicts between permittees and agencies responsible for managing the wolf population. Predicted effects under all alternatives are not expected to affect any T&E species.

Resource Concern #3: Abandoned Mine Lands

The ongoing inventory and assessment of abandoned mines on BLM-administered lands within the EPW will help identify and prioritize mine sites that are hazardous to human health, to the environment, or those which present physical safety hazards to the public, and recommend actions to remediate or mitigate identified concerns. Site-specific actions will be analyzed in a separate EA.

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

Under the No Action Alternative, 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).

Issue #1: Upland Health, Sagebrush Steppe Habitat and Associated Species

Under Alternative A, uplands that were rated as PFC under current management would be expected to maintain or improve their existing condition. On the two allotments not meeting the Upland Standard (Childs Individual SGC and Willow Creek Individual), the decreasing trend of cool-season bunchgrasses would continue and progress would not be made towards achieving PFC. Additionally, site-specific resource concerns would not improve on the Cherry Creek, Seven Springs, and Smith Individual allotments.

Repeated annual defoliation during the early and mid growing season, particularly during early flower development, usually has the most negative impact on cool-season herbaceous plants growing in the intermountain sagebrush steppe (Daubenmire 1940, Stoddart 1946, Blaisdell and Pechanec 1949, Heady 1950, Wilson et al. 1966, Mueggler 1967, Trlica and Cook 1971, Harris and Goebel 1976). Because of dietary preference, spring grazing by cattle gives unpalatable shrubs or low production grasses a competitive advantage over cool-season perennial bunchgrasses. The sensitivity of these grasses to grazing may be as much or more due to the competitive interaction with ungrazed or warm-season species such as sagebrush or blue grama, respectively. The effect of selective grazing on interspecific competition may override a plant species tolerance to grazing (Archer and Teizen 1986). Grazing avoidance-type plants often gain the competitive advantage over grazed plant species (Archer and Smeins 1991).

Continuation of current grazing practices on allotments listed above where concerns were identified would result in a reduction of forbs and grasses and may continue to limit cover and forage for nesting sage grouse, other ground nesting birds, wintering big game, and small mammals. Allotments not meeting standards would also fail to meet the goal to “manage grazing to maintain the soil conditions and ecological processes necessary for a properly functioning sagebrush community that addresses the long-term needs of sage grouse and other sagebrush associated species” (MFWP 2005). However, throughout the watershed, sagebrush habitat requirements are being met.

Throughout the watershed, conifers would continue to expand into sagebrush/grassland habitats. As stated by Hyerdahl and others (2006), “in the continued absence of fire, mountain big sagebrush and grasslands in southwest Montana are likely to become more homogenous as Douglas-fir trees continue to encroach.” Conifer encroachment into sagebrush communities would continue to reduce sagebrush obligate species’ habitat.

Noxious and invasive species infestations currently occurring within the EPW would be prevented from spreading under Alternative A. However, due to resource constraints, density and/or size of current infestations may not be reduced. Noxious and invasive species would continue to affect vegetative composition and cover in localized areas affecting biodiversity and upland and riparian health in portions of the watershed.

Issue #2: Riparian, Wetland, and Aquatic Habitat and Associated Species

The No Action would continue to maintain or improve existing resource conditions along streams and at springs that were rated PFC under existing management. Along stream reaches or at springs where resource concerns were identified, this alternative would not accomplish riparian, wetland, or aquatic objectives. Alteration of stream morphology (channel shape and gradient), vegetative composition, cover, and structure; conifer encroachment, vigor of streamside vegetation (specifically aspen, willows and sedges) 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 these areas. In the case of dysfunctional spring developments and/or spring exclosures in disrepair, provisions exist to address these conditions even in the No Action Alternative. Since most existing exclosures were minimal, repair of these exclosures would do little to address resource concerns.

Succulent forbs, largely found in riparian areas, are a key component of sage grouse brood diets and would continue to be impacted by current grazing practices on FAR and NF riparian areas.

Along Brownes Creek (540), where Rocky Mountain juniper encroachment was determined to be a cause of FAR conditions, riparian vegetation would continue to decline under this alternative.

The U.S. Fish and Wildlife Service has a list of 28 “Birds of Conservation Concern” for the Rocky Mountain Region, many of which depend on riparian habitat for all or part of their lifecycle. A reduction in riparian vegetation could alter bird species composition in riparian habitats. Riparian habitat is utilized by about 75% of all wildlife species for at least some portion of their annual life cycle. If juniper encroachment continues in the riparian area, wildlife

use of these areas would be impacted by loss of browse, cover, and forage. Juniper encroachment would continue to provide hiding and thermal cover for big game species.

Poplar borer activity would continue in aspen stands in South Seven Springs, resulting in additional aspen weakening, breakage, and mortality from secondary decay agents. Aspen generally sprout profusely following disturbance (Shepperd et al. 2006). As mature aspen die and fall over, root suckering would be stimulated and new aspen sprouts would emerge. Poplar borer larvae in adjacent standing aspen would likely bore into the stems, roots, and branches of new sprouts three years old and older (Ostry et al. 1989), perpetuating poplar borer activity in South Seven Springs. New sprouts would also be susceptible to browse from ungulates, and excessive browsing may eliminate aspen stands. If aspen stands are lost to poplar borer and regeneration is inhibited by ungulate browsing, in the long-term, hiding and thermal cover for wildlife species and nesting and foraging habitat for birds would also be lost.

Resource Concern #1: Special Status Species

Special status fish and wildlife species are discussed under Section 4.2.1 “Predicted Effects Common to All Alternatives, Including the No Action.” Overall, sagebrush habitat requirements are being met throughout the watershed. In areas where conifer encroachment is an issue, sagebrush habitat loss could impact special status sagebrush obligate species including sage grouse, pygmy rabbit, and sage thrasher. However, there are only limited areas in the EPW where this is an issue. Sage grouse brood-rearing habitat would continue to be impacted by heavy livestock utilization in FAR and NF riparian areas. Under the *Management Plan and Conservation Strategies for Sage Grouse in Montana* (MFWP 2005), the conservation action to protect natural wet meadows and springs from over-use would not be implemented under Alternative A. The Childs Individual SGC and Willow Creek Individual allotments, which aren’t meeting Upland Standards, are more grassland than sagebrush habitat, but the loss of cool-season bunchgrasses and shrubs limits wildlife cover and forage.

Resource Concern #2: Socioeconomics

Under Alternative A, forage availability and the number of authorized AUMs is expected to continue at current levels and economic contributions attributed to livestock use of BLM-administered lands would continue at current levels. Livestock grazing on 25,004 acres of public lands would provide 1,948 AUM’s of forage on 17 grazing allotments in Beaverhead County. The dependency of livestock operators on BLM forage would remain unchanged. Forage on BLM administered land often provides a critical element of the livestock producer’s matched complement of grazing, forage, and hay production. Since there would be no change in the authorized level of grazing use, this would not contribute to changing the real estate value of base properties.

Socioeconomics was analyzed in further detail for the Field Office under Alternative A in Chapter 4 (p 316) of the Proposed Dillon RMP and Final EIS.

4.2.3 Predicted Effects Common to All Action Alternatives

Issue #1: Upland Health, Sagebrush Steppe Habitat and Associated Species

Under current management, utilization of forage plants was generally found to be less than 50% on BLM-administered upland sites within the EPW. For those uplands where site-specific concerns were identified, implementing an annual utilization guideline of 50% utilization on cool-season bunchgrasses, to help determine pasture moves, would enhance herbaceous plant community cover and composition. Earlier grazing treatments may allow sufficient time for plant re-growth while later deferred treatments may enhance seedling establishment and species composition. Utilization patterns within a pasture are not uniform and livestock-preferred areas would generally sustain higher levels of use while other areas may receive less utilization. Livestock distribution is influenced by distance from water, topography and season of use. Improvements in cover would improve infiltration, and reduce soil erosion, overland sediment transport, and sediment delivery to streams. Deferring livestock use until after the growing season mitigates grazing impacts to cool-season bunchgrasses and reduces trampling of forbs.

With the exception of the range improvement projects that would be removed, existing improvements would remain permanent features within the watershed. Construction of new fences may impede wildlife movement. Following BLM Handbook H-1741-1 specifications for constructing wildlife friendly fences and livestock exclosures would reduce entanglement hazards for birds, elk, mule deer, antelope, and moose. Modifying and building fences around springs or tanks that prevent avian predators from using posts as hunting perches will provide safer sage grouse brood-rearing habitat when the birds are foraging on forbs in these areas.

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

Targeting new noxious weed infestations for eradication would keep new populations or new plant species from becoming established. Using biological control and/or aerial application on larger established infestations would reduce the size and density to more manageable levels.

Issue #2: Riparian, Wetland, and Aquatic Habitat and Associated Species

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

Revised grazing systems included in the action alternatives were generally developed in cooperation with the grazing permittees in order to increase support in implementation and

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

Case studies, controlled experiments, and common experience all confirm that, unless discouraged from doing so, cattle tend to spend a disproportionate amount of time in the riparian portion of any pasture. Midsummer (hot season) grazing, second only to season-long grazing, is generally considered most injurious to riparian zones. Spring use normally results in better livestock distribution between riparian and upland areas (Prichard et al 2006). Spring use provides more opportunity for regrowth and plant recovery. In a ten year study on Stanley Creek in central Idaho with light to medium late spring use, improvements were found in stream channel configuration and riparian plant communities (Clary 1999).

Revised livestock management is predicted to improve riparian vegetation, stream channel morphology and sediment transport at varying degrees and timeframes in relation to the No Action alternative. While different opinions exist within the scientific community 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 that area. According to Marlow and his colleagues (1991), “The most critical aspect in any grazing plan for the protection of riparian areas is the length of time cattle have access to a particular stream reach.” After reviewing 34 allotments in southwestern Montana, Myers (1989) concluded, “duration in grazing treatments becomes a key factor in determining the severity of damage.” Duration of treatments less than 30 days, 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 should also improve in most areas, albeit at a slower rate because physical changes require more time than vegetative changes.

Utilizing use guidelines as tools to indicate livestock movements should help improve overall watershed conditions along with the proposed management changes. This analysis is based on the assumption that these allowable use levels and associated livestock rotations are employed in a timely manner. Limiting use of upland forage to 50% during spring and summer treatments should benefit water infiltration, plant vigor, reduce soil loss through overland erosion and leave adequate residual cover and forage for wildlife. A four 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 inches 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. Improvements in stream channel morphology and reduced impacts to streamside wetlands would reduce sediment input associated with channel erosion.

Spring development design features include maintaining adequate flows for wetland hydrology. Fencing spring sources and associated wet meadows when developing water for livestock would benefit the spring's ecological functions and processes, conserve habitat for rare plants in the vicinity of developed springs, and improve existing habitat for wildlife. Design features for spring developments listed in Section 2.3.3 would mitigate the potential of spring developments drying up or decreasing wetland areas associated with spring sources.

Water development in upland areas that lack water is often a key factor in reducing livestock watering in riparian areas. Alternative water provides cleaner water for livestock, reduces waste inputs to streams and may also reduce grazing pressure on streams and wetlands. Fencing the spring 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. The proposed water developments would improve site conditions at spring sources by fencing the source and developing offsite water sources. Clawson, 1993, evaluated the effectiveness of an off stream water source where livestock also had access to a stream and a bottomland spring. The author notes that the water development reduced the time livestock spent watering from the stream and spring. Soil compaction, streambank impacts, and grazing on riparian vegetation would be reduced by off-site water developments.

Augmenting the water developments with shade, such as placing the watering trough near existing juniper trees, may also help to reduce the time livestock spend in riparian areas. A common effect within riparian or spring exclosures in southwestern Montana is an increase in Canada thistle. New exclosures would need to be monitored for noxious weeds and treated where necessary.

An upward trend in riparian vegetation vigor and streambank stability is expected on streams that were FAR or NF where off-site water developments, additional rest or deferment, and/or reduced duration of use is proposed.

Resource Concern #1: Special Status Species

Special status fish and wildlife species are discussed under Section 4.2.1 "Predicted Effects Common to All Alternatives, Including the No Action." Potential site-specific impacts to special status species are included in the allotment discussions below where appropriate, oftentimes under *Upland Health, Sagebrush Steppe Habitat and Associated Species* or *Riparian, Wetland, and Aquatic Habitat and Associated Species* headings, and not necessarily under the *Special Status Species* heading. Special status plants are discussed in the Biological Evaluations (Appendix C).

Resource Concern #2: Socioeconomics

The economy in Beaverhead County is highly dependent on agriculture, primarily the livestock industry. The jobs and tax revenue generated by livestock associated activities plays a major role in fueling the economy of southwest Montana. The inter-mixed lands including private, BLM

administered and State of Montana creates a woven ownership pattern on which many livestock producers have been dependant for decades to effectively run a livestock operation. Alternatives that the BLM Authorized Officer selects, including management changes, changes to grazing permit authorizations and structural projects to improve a resource concern often have a financial impact on the BLM grazing permittee and cumulatively on Beaverhead County’s economy. These impacts are considered and balanced with the alternative’s ability to effectively mitigate resource concerns and make progress towards meeting resource objectives.

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. Alternative B proposes projects on nine different grazing allotments and one unallotted tract, while Alternative C proposes projects on four allotments. The actual costs associated with implementing these projects are not presented, due to fluctuating prices of materials and labor and the contribution of materials and labor provided by the permittee/lessee, which can vary from one project to another. For grazing-related projects, the BLM generally provides the materials and the permittee/lessee would construct (i.e., provide labor) the project to BLM specifications. Some water developments are constructed by the BLM, for which BLM receives a monetary contribution from the permittee/lessee. The permittee/lessee would also incur long-terms costs associated with maintenance of the grazing-related projects.

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

Proposed Project	Alternative B	Alternative C
New fence construction (miles)	0.5	0
Fence removal (miles)*	0.5	0
Riparian exclosure fences (linear miles)	2	0.6
New spring developments (# of developments)	1	0
New 1,000g troughs (# of troughs)	4	0
New wildlife guzzlers (# of guzzlers)	2	0
New stockwater pipelines (miles)	2.3	0
Springs reclaimed (# of springs)	0	1
Seeding projects maintained (acres)	Up to 50	0
Seeding projects reclaimed (acres)	0	Up to 50
Conifer encroachment treatment (acres)	Up to 936	0
Aspen treatment (acres)	Up to 89	0
Treat riparian conifers (miles)	0.9	0

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

4.2.4 Predicted Effects of Each Action Alternative (B and C) by Grazing Allotment

For each grazing allotment or unallotted parcel presented below, the predicted effects of each action alternative are presented for the issues in the following order and are arranged accordingly:

- Issue #1: Upland Health, Sagebrush Steppe Habitat and Associated Species
- Issue #2: Riparian, Wetland, and Aquatic Habitat and Associated Species

Resource Concern #1: Special Status Species
Resource Concern #2: Socioeconomics

Headings are omitted under those allotments within which certain issues are not present, or are present, but not affected.

Birch Creek #30365

Alternative B

Upland Health, Sagebrush Steppe Habitat and Associated Species:

The livestock management in Alternative B would be the same as the No Action Alternative, but clarifies that one permittee only uses one pasture. The proposed pipeline extension would provide a dependable water source and improve livestock distribution in the Barbour Gulch Pasture. This allotment is expected to continue meeting the Upland Standard under this management regime. Constructing a wildlife guzzler in this allotment would provide dependable season-long water for wildlife.

Socioeconomics:

The proposed AUMs in this alternative are the same as in Alternative A. There would be some expense associated with extending the stockwater pipeline about a ¼-mile and installing a water trough in the Barbour Gulch Pasture.

Burk SGC #20657

Alternative B

Upland Health, Sagebrush Steppe Habitat and Associated Species:

The livestock management would be the same as in Alternative A and is expected to continue meeting the Upland Standard under this management regime.

Riparian, Wetland, and Aquatic Habitat and Associated Species:

The ecological functions and processes associated with hydrophytic wetland vegetation, hydric soils and hydrology would benefit from an enclosure around Greasewood Spring. The spring and associated wetland would make progress toward PFC.

Special Status Species:

Constructing an enclosure around the spring source at Greasewood Spring would protect the wet meadow vegetation from livestock grazing and trampling. Regulating livestock use around water sources and wet meadows in sage grouse brood-rearing areas by fencing to restrict overuse protects vulnerable forbs and grasses.

Socioeconomics:

There would be minor costs associated with the constructing a livestock enclosure around the wetland and installing a new water trough.

Alternative C

Upland Health, Sagebrush Steppe Habitat and Associated Species:

Deferring the grazing season until after 9/15 would benefit the composition, vigor, and canopy cover of cool-season bunchgrasses. Fall grazing may reduce herbaceous residual cover that would intercept winter-spring moisture and provide forage and cover for wildlife species during winter and spring months.

Riparian, Wetland, and Aquatic Habitat and Associated Species:

The ecological functions and processes associated with Greasewood spring and the associated wetland, e.g. groundwater recharge and sediment filtering would be expected to improve. Regrading could improve the hydrology and support the maintenance of hydric soils and hydrophytic vegetation in the long term. Using heavy equipment to regrade the spring would cause some soil compaction and disturbance. This disturbance would be vulnerable to infestation by noxious weeds such as Canada thistle and houndstongue and to soil erosion in the short term.

Special Status Species:

Regrading the area around Greasewood Spring and constructing an enclosure to restore the wetlands to preconstruction conditions and constructing an enclosure around the spring source would protect the associated vegetation important to wildlife, including sage grouse broods.

Socioeconomics:

This alternative may provide an economic benefit to the permittee if it delays the need to feed harvested forage. Any economic benefit may be offset by the need to feed harvested forage later into the spring or find alternate pasture. Regrading the area adjacent to the spring and wetland and constructing a livestock enclosure would be more expensive and labor intensive than constructing only the livestock enclosure around the wetland.

Cherry Creek #20321

Alternative B

Upland Health, Sagebrush Steppe Habitat and Associated Species:

Adjusting the grazing season from 5/28-6/15 to 4/1-4/30, one year in three, would provide an opportunity for grazed plants to produce new vegetation following defoliation, because two months of the active growing season would remain. During the remaining two years, the grazing would be the same as under Alternative A. This slight adjustment may provide the relief necessary to heal the areas where concerns regarding a shift in dominance toward needle and thread were noted by providing relief to cool-season bunchgrasses, which would also increase vegetative canopy cover and reduce soil erosion. Livestock grazing from 4/1 to 4/30 may affect mule deer winter range use. The opportunity for cool-season bunchgrasses to produce new vegetation after livestock grazing in April would provide forage and cover for birds and big game after the cattle are removed from the area.

Riparian, Wetland, and Aquatic Habitat and Associated Species:

Cherry Creek is expected to remain in PFC under this alternative. Livestock use of the stream during the early spring treatment would be less than during the later season of use. The pruning of overhanging willows and clearing of brush and obstacles to facilitate access would have only temporary impacts to canopy cover and would not affect streambank stability.

Special Status Species:

Coordinating the installation of a fish barrier on the lower reaches of Cherry Creek and removing non-native eastern brook trout would mitigate the threat of extirpation to the WCT population from the expanding eastern brook trout population.

Socioeconomics:

This alternative would provide early-season grazing one year in three that may reduce the permittee's need to feed harvested forage, but would require that they find alternate pasture during the normal grazing season from 5/28 to 6/30.

Alternative C

Upland Health, Sagebrush Steppe Habitat and Associated Species:

Adjusting the grazing season from 5/28- 6/15 to 10/1-10/30, one year in three, would defer grazing until after seed set for the cool-season bunchgrasses. During the remaining two years, the grazing would be the same as under Alternative A. This adjustment may provide the relief necessary to heal the areas where concerns regarding a shift in dominance toward needle and thread were noted by providing relief to cool-season bunchgrasses, which would also increase vegetative canopy cover and reduce soil erosion. In years when the allotment is grazed during the fall, reducing the herbaceous canopy cover could increase runoff and erosion during precipitation events early the following spring.

Changing the cattle grazing from 5/28- 6/15 to 10/1- 10/30 one out of three years would provide growing season rest for cool-season grasses and forbs, thereby enhancing wildlife cover and forage. The option for more frequent fall grazing in lieu of spring grazing would further enhance wildlife cover and forage in the spring and summer. While an active sage grouse lek has not been identified in the EPW, sage grouse nesting and brood-rearing is known to occur in this allotment. Cool-season grasses provide nesting cover and forbs are important for sage grouse brood diets. This allotment is important winter range for mule deer and browse, particularly big sagebrush, dominates mule deer winter diets, so fall livestock grazing would not greatly affect competition for forage with this species. Fall grazing may reduce herbaceous cover in the early spring for some species of small mammals and birds.

Riparian, Wetland, and Aquatic Habitat and Associated Species:

Shifting grazing from spring to fall would be expected to decrease use on riparian herbaceous species, but may increase use of browse species as livestock shift their preference from grasses to shrubs. However, because of topography, willow cover, and downfall along the stream, access to Cherry Creek by livestock is limited. Cherry Creek is expected to remain in PFC under this alternative.

Socioeconomics:

This alternative may provide an economic benefit to the permittee if it delays the need to feed harvested forage. Any economic benefit may be offset by the need to feed harvested forage later into the spring or find alternate pasture.

Childs Individual #20310

Alternative B

Upland Health, Sagebrush Steppe Habitat and Associated Species:

Grazing the North Pasture from 8/1 to 12/30 would defer grazing until after the active growing season. The upland portion of this pasture would frequently be used in conjunction with deeded property after 10/1, which would allow for seed set of cool-season bunchgrasses and over time, should improve their productivity, vigor, and canopy cover and reduce runoff and erosion.

Maintaining the seeding in the South Pasture with a non-native seed mix including crested wheatgrass, intermediate wheatgrass and dryland alfalfa would have a greater chance of successfully becoming established on this site than a native mix. The species proposed in the seed mix have wide germination requirements and are good establishers. This is a harsh site, (silty-limey soil and less than 10 inches of average annual precipitation), so there is the possibility of seeding failure. Blue grama would remain on this site until it is disturbed by the seeding effort. If the area is disturbed and the seeding fails, the disturbed area would be inhabited by the seed source(s) available on site, which would likely include annual species and may include undesirable noxious or invasive species. Soil erosion would increase in the short term, following seeding, but would decrease as vegetative canopy cover increases, infiltration rates are improved, runoff decreases. The introduced species proposed in the seeding would also fill the same functional niches as the native species that would be found under natural conditions.

Once the seeding has become established, grazing the South Pasture every other spring rather than every spring would maintain the seeding which would enhance forage and cover available for wildlife. Though seeding with these introduced species would not enhance native herbaceous biodiversity, these species are palatable to wildlife. Hydrologic conditions would be expected to improve as the area is converted from blue grama to cool season species. The runoff/recharge equation would be expected to favor more recharge and less runoff as blue grama is replaced by cool-season grasses and forbs. Modification of the woven-wire fence would allow wildlife to move more freely through the area.

Riparian, Wetland, and Aquatic Habitat and Associated Species:

The portion of the North Pasture along the Big Hole River would typically be used in conjunction with deeded property between 8/1 and 9/1. This reflects current management and the two reaches in this allotment are expected to remain in PFC.

Socioeconomics:

Using a mix of native and introduced grasses and forbs would be more cost-effective because introduced seed is less expensive and often has a higher probability of successful establishment than would a mix of only native grasses and forbs.

Alternative C

Upland Health, Sagebrush Steppe Habitat and Associated Species:

Livestock management in the North Pasture and the predicted effects would be the same as under Alternative B. Authorizing livestock grazing in the South Pasture every third year, following successful seeding and establishment of the native species, would facilitate the recruitment and establishment of these species and restore the functional and structural components that would be expected under natural conditions.

Since native seed generally has narrow germination and establishment requirements, the chance of a successful seeding would be less than with a non-native seed mix. If the seeding is successful, upland conditions, including cover and composition of cool-season bunchgrasses and infiltration, would improve. If the seeding effort failed, undesirable annuals or noxious and invasive species would likely inhabit the disturbed area. Soil erosion would be accelerated during the first year following seeding or longer if the seeding is not successful.

Grazing the South Pasture every third spring, rather than every spring would maintain or enhance the seeding, which would enhance forage and cover available for wildlife. If successful, seeding with a mix of native cool-season grasses and forbs would enhance native herbaceous biodiversity and improve hydrologic conditions. The runoff/recharge equation would be expected to favor more recharge and less runoff as blue grama is replaced by cool-season grasses and forbs. Modifying or replacing the woven-wire fence would allow wildlife to move more freely through the area.

Riparian, Wetland, and Aquatic Habitat and Associated Species:

Livestock management in the North Pasture and the predicted effects would be the same as under Alternative B.

Socioeconomics:

While restoring the site with native grasses and forbs is desirable, native seed is substantially more expensive than introduced seed and would likely not have as high a probability of successful establishment, which may require subsequent treatments.

Lost-Willow #30364

Alternative B

Upland Health, Sagebrush Steppe Habitat and Associated Species:

Livestock grazing management under this alternative is the same as Alternative A and is expected to continue meeting the Upland Standard. Loose Nut Spring, in the Smith Individual SGC Allotment, is also a source of livestock water for the Lower Willow Pasture, so redeveloping or maintaining this spring would help maintain livestock distribution by providing dependable water.

Riparian, Wetland, and Aquatic Habitat and Associated Species:

Cleaning up McGinnis and McVee Springs would not improve or degrade the function of these springs, but would remove the infrastructure, which is no longer necessary. Redeveloping

Kambich Spring, removing the deteriorated enclosure, and constructing an enclosure of sufficient size to protect the wetland resource would benefit the hydrology, hydric soils, and hydrophytic vegetation associated with the wetland.

Socioeconomics:

There would be some expense associated with removing the infrastructure from McGinnis and McVee Springs, redeveloping Kambich Spring, and constructing a new livestock enclosure.

Seven Springs #20337

Alternative B

Upland Health, Sagebrush Steppe Habitat and Associated Species

The authorized season of use would be the same as under Alternative A, but up to 364 yearlings would be authorized. Redeveloping Louis Spring and grazing yearling cattle would help improve livestock distribution. Improving livestock distribution would improve the species composition, vigor, and canopy cover of cool-season bunchgrasses and reduce soil erosion where localized concerns were observed. Improving cool-season bunchgrasses would benefit forage and cover for grassland birds and other wildlife in the area.

Riparian, Wetland, and Aquatic Habitat and Associated Species:

Using heavy equipment to redevelop Louis Spring would likely result in loss of some basin big sagebrush. The location of the spring source in a confined channel seems likely to constrain construction. The unique characteristics of this site may be impacted if heavy equipment is used to redevelop the spring. Spring re-development with hand tools would mitigate these impacts. Louis Spring is expected to remain in PFC under this alternative.

Special Status Species:

Livestock grazing between 5/28 and 6/15 may reduce bunchgrasses that are important cover for sage grouse broods that may use the area. Important forbs may also be trampled with livestock in the area. However, if livestock distribution is improved and results in more canopy cover of cool-season bunchgrasses, this would benefit sage grouse brood hiding cover.

Socioeconomics:

Redeveloping Louis Spring would be labor intensive if heavy equipment were not used and might involve greater expense than a conventional spring development.

Alternative C

Upland Health, Sagebrush Steppe Habitat and Associated Species

Changing the grazing season to dormant season use, with the flexibility to graze during the growing season one year in three, would be very beneficial to cool-season bunchgrasses. Vigor, cover and composition of cool-season bunchgrasses would increase which would reduce bare ground, soil rills, and erosion. Hydrologic conditions would be expected to improve in those areas where blue grama, needle and thread, and prickly pear are replaced by a higher composition of cool-season bunchgrasses. The runoff/recharge equation would be expected to favor more recharge and less runoff as blue grama is replaced by cool-season grasses and forbs.

Wildlife would benefit from the improved cool-season bunchgrass condition in the summer and fall. However, dormant season use may reduce forage and cover in the winter and spring for birds and wildlife.

Riparian, Wetland, and Aquatic Habitat and Associated Species:

Cleaning up Louis Spring would not improve or degrade the function of this spring, but would remove the infrastructure, which is no longer necessary. Louis Spring is currently PFC and changing the season of use to dormant season for at least two in three years would reduce livestock impacts to this spring.

Special Status Species:

Dormant season livestock use would benefit nesting and brood-rearing habitat for sage grouse. Cool-season bunchgrasses are important hiding cover for broods and the forbs are a key component of their diet.

Socioeconomics:

Grazing livestock during the proposed grazing season may enable the permittee to delay feeding harvested forage and help reduce winter feeding costs, but any benefit realized may be offset by the need to feed harvested forage or find alternate pasture during the currently permitted grazing season from 5/28 to 6/15. There would be only minor costs associated with removing the infrastructure from Louis Spring.

Skeeters #10332

Alternative B

Upland Health, Sagebrush Steppe Habitat and Associated Species

Limiting livestock grazing to 15 days between 6/1 and 6/30 in the first year, deferring grazing until after 10/1 in the second year, and providing complete rest the third year is expected to improve the vigor, productivity, and canopy cover of cool-season bunchgrasses, reduce plant interspaces, and reduce soil erosion where it was observed.

Livestock grazing for 15 days, one out of three springs, would benefit cool-season grasses and forbs, enhancing wildlife cover and forage. This allotment is mule deer winter range and browse, especially big sagebrush, dominates mule deer winter diets, so fall livestock grazing would not greatly affect competition for forage with this species. Fall grazing may reduce herbaceous cover in the early spring for some species of small mammals and birds.

Smith Individual SGC #10346

Alternative B

Upland Health, Sagebrush Steppe Habitat and Associated Species

Shortening the grazing season, so that use occurs between 11/1 and 3/31 is expected to promote cool-season bunchgrasses (cover, vigor and composition) where the localized concerns were observed. This allotment is mule deer winter range and browse, especially big sagebrush, dominates mule deer winter diets, so fall livestock grazing would not greatly affect competition for forage with this species. Fall grazing may reduce herbaceous cover in the early spring for

some species of small mammals and birds. Removing unnecessary fences around Loose Nut Spring would reduce wildlife entanglement hazards and enhance wildlife movement through the area. Hydrologic conditions would be expected to improve in those areas where blue grama, needle and thread, and prickly pear currently dominate the vegetative composition. The runoff/recharge equation would be expected to favor more recharge and less runoff as blue grama is replaced by cool-season grasses and forbs.

Riparian, Wetland, and Aquatic Habitat and Associated Species:

Redeveloping Loose Nut Spring, removing the deteriorated enclosure, and constructing an enclosure of sufficient size to protect the wetland resource would benefit the hydrology, hydric soils, and hydrophytic vegetation associated with the wetland.

Socioeconomics:

There would be some expense associated with redeveloping or maintaining Loose Nut Spring, removing the old enclosure, and constructing a new enclosure.

Alternative C

Upland Health, Sagebrush Steppe Habitat and Associated Species

The effects of livestock grazing management would be as described for Alternative B. Developing an alternate spring to the south would have no effect on livestock distribution, but would create new disturbance that would provide an opportunity for undesirable species to establish. Removing unnecessary fences around Loose Nut Spring would reduce wildlife entanglement hazards and enhance wildlife movement through the area.

Riparian, Wetland, and Aquatic Habitat and Associated Species

Cleanup and abandonment of Loose Nut Spring would benefit the spring source and associated wetland. Concentrated livestock use would still likely occur in the immediate area because the other two springs are located only about 200 yards south of Loose Nut Spring. An enclosure around the spring source would protect the area from livestock impacts, leaving the riparian vegetation intact for bird species and wildlife, including forbs for sage grouse broods that might be in the area (a lek hasn't been identified in the EPW and therefore definite nesting and brood-rearing habitat also hasn't been identified). The newly constructed enclosure could impede wildlife movement to the spring source, where wildlife previously had unrestricted access.

Socioeconomics:

This alternative would be more expensive than Alternative B, because a new spring development would be constructed in addition to removing the existing development as Loose Nut Spring.

South Seven Springs #20362

Alternative B

Upland Health, Sagebrush Steppe Habitat and Associated Species:

The livestock management would be the same as in Alternative A and is expected to continue meeting the Upland Standard under this management regime.

Riparian, Wetland, and Aquatic Habitat and Associated Species:

Fifteen days of use alternated with complete rest is expected to improve riparian conditions. Noted concerns, including streambank impacts and lack of woody regeneration, would be mitigated under this grazing treatment. Increased compliance and monitoring to detect and prevent unauthorized livestock use is important to the success of this plan and is expected to result in improvements to riparian vegetation in the short term and stream channel morphology over the long term. Redeveloping Greasewood Spring, on the Burk SGC Allotment, and Alkali Spring, and installing functional troughs at Seven Springs and Seven Springs East Spring would provide reliable water sources that would improve livestock distribution and would help mitigate riparian impacts.

Removing juniper from riparian areas is expected to benefit sedges, willows, aspen, cottonwood and associated riparian species. 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 (Lancaster, pers. comm. 2007). Over the long term, as sedges and woody species increase, channel morphology is also expected to improve. Orienting the felled juniper to prevent livestock access to the streambanks would mitigate streambank impacts along the treated areas. Seeding treated areas would reduce soil erosion and sediment input to the stream.

Removing the juniper along Brownes Creek would initially reduce hiding and thermal cover for big game and other wildlife. In the long term, as deciduous riparian species are recruited into the treated areas, cover and forage would be enhanced in these areas. Felled juniper would inhibit big game access to treated stream reaches. Riparian woodlands support the highest diversity of landbird species of all habitats, and as removing juniper enhances other riparian species, bird species diversity is expected to increase. For at least some portion of their annual life cycle, about 75% of all wildlife species in this area utilize riparian habitat. Enhancing riparian vegetation and increasing deciduous riparian woodlands would benefit these wildlife species.

Expanding the exclosures around the various spring sources would protect the riparian vegetation from livestock impacts. Willows and other riparian woody species found around springs are important for nesting birds, and browse and hiding cover for big game. Riparian forbs are important for sage grouse broods that may be using the area, as well as mule deer and antelope forage.

Cutting all mature aspen trees within aspen stands at South Seven Springs would stimulate aspen roots to produce new suckers by completely removing all parent trees, and would also provide an optimal growth environment by allowing full sunlight to reach the ground (Shepperd et al., 2006). Following up mechanical treatment with prescribed burning would additionally release nutrients for growth of aspen sprouts.

Regenerating the existing aspen stands at South Seven Springs would reduce the existing poplar borer population and reduce the likelihood of poplar borer infecting young aspen stems. Fencing would protect aspen sprouts from browsing by ungulates and allow the stands to successfully regenerate and get above browse height. This treatment would maintain/enhance existing aspen stands in the long term.

The aspen stands at South Seven Springs provide habitat for many wildlife species, including sage grouse and mule deer winter range. In the immediate years following mechanical treatment and prescribed burns in the aspen stands there would be a loss of nesting and foraging habitat, as well as hiding and thermal cover for wildlife. Big game would also be excluded from the regenerating aspen until they are tall enough to avoid browsing damage. While this is a loss of habitat for big game during this time (maybe 8 to 10 years), in the long run wildlife habitat would be enhanced with a healthier aspen stand once again providing forage and cover for various species.

Socioeconomics:

There would likely be considerable labor expense associated with implementing the juniper removal and aspen treatment. The aspen treatment would also require construction of a wildlife resistant fence, which would probably be constructed by a contractor. Redeveloping Alkali spring, installing new troughs at two other springs, and removing the infrastructure from Cherry Hill Spring No. 2, while taken individually would not involve significant costs, might impact the permittees if all of the projects were implemented in a single year.

Alternative C

Upland Health, Sagebrush Steppe Habitat and Associated Species:

This alternative maintains the same grazing management (alternating rest) as under Alternative A, but shortens the grazing season by 5 days. Despite the shorter grazing period, its benefit to Upland Health is expected to be the same as Alternative A.

Riparian, Wetland, and Aquatic Habitat and Associated Species:

Shortening the grazing season by five days would reduce the length of time that cattle have access to the riparian areas and reduce livestock impacts. There would be no juniper reduction under this alternative and the resulting impacts would be the same as Alternative A.

Effects to aspen at South Seven Springs would be the same as described under Alternative A. Foraging, nesting, and hiding cover for wildlife would be lost in the long-term if the aspen stand is not treated and poplar borer continues to kill the trees and resulting regeneration is browsed by ungulates.

Special Status Species:

If juniper continues to encroach on the riparian area, leading to a loss of forbs, sage grouse brood forage would be reduced or eliminated. Shortening the amount of time cattle are in the allotment would reduce grazing impacts to nesting sage grouse, such as nest trampling.

Socioeconomics:

Delaying livestock grazing by 5 days would require the permittees to feed harvested forage or find alternate pasture during that time.

Twin Adams #20347
Alternative B

Upland Health, Sagebrush Steppe Habitat and Associated Species:

By changing the grazing season to 3/15-4/30, the majority of the grazing would occur during the dormant season, with some occurring at the beginning of the growing season. This grazing strategy would provide grazed plants the opportunity to produce new foliage during the growing season and produce seed each year. Additionally, the allotment would receive complete rest (non-use) every third year. Extending the pipeline from deeded property onto BLM-administered lands would improve livestock distribution in the southern portion of the allotment. The uplands of this allotment should maintain or improve under this grazing strategy.

This allotment provides elk, antelope, and mule deer winter range. Changing livestock grazing to 3/15-4/30 may disturb these species on their winter range. The allotment also provides sage grouse habitat. Although there aren't any known sage grouse leks within the EPW, nesting and/or brood-rearing are known to occur in this area. Cool-season grasses and forbs would still have the opportunity to grow with May and early June precipitation, providing nesting cover and brood forage, as well as forage for big game and other wildlife species. Installing a wildlife guzzler in this allotment would provide dependable season-long water for wildlife.

Riparian, Wetland, and Aquatic Habitat and Associated Species:

This alternative employs early spring, dormant-season grazing. Because of the cooler temperatures, and less need for water, less livestock use of the riparian area would be expected during the early spring than either late spring or late summer as currently authorized. Soil compaction and bank trampling would be minimal if soils remain frozen. Use on browse species may increase prior to upland grasses greening up. Extending the pipeline further south should further reduce livestock any livestock impact to Lost Creek by providing a water source at an upland location, away from the creek.

Socioeconomics:

There would be some expense involved with constructing the ½-mile pipeline extension and installing a new trough.

Vipond-Glendale #30358
Alternative B

Upland Health, Sagebrush Steppe Habitat and Associated Species:

The minor adjustments in grazing management in this alternative are expected to have the same effects as under Alternative A and would maintain or improve the existing conditions. Constructing the proposed water developments would help improve livestock distribution. This allotment includes sage grouse habitat, and elk and mule deer winter range. One pasture is completely rested each year and would provide residual vegetation for wildlife forage and cover. Spring livestock grazing one out of three years would allow the cool-season grasses and forbs to go to seed two years in a row, and would benefit sage grouse nesting cover, brood forage, and big game forage during these years. Fall livestock grazing would have the potential to disturb

wintering big game one out of three years. Fall grazing may reduce herbaceous cover in the early spring for some species of small mammals and birds in one pasture each year.

The prescribed burn treatment in Louie Lowe Basin that spans across BLM, Forest Service and State of Montana managed lands would slow or reverse the conversion of affected sagebrush/grasslands into forested habitat. The treatment could affect up to 936 acres of BLM-managed land. The early to mid stages of woodland conversion would initially be replaced by an Idaho fescue/bluebunch wheatgrass plant association post-burn. Mountain sagebrush habitat would transition from early seral to mid-late seral within about 20 years and is expected to reestablish across most of the treated acreage. The most common plant community would be mountain big sagebrush/ Idaho fescue. This would provide seral and structural diversity in sagebrush habitat on a landscape level for about the next 20 years.

Burning Louie Lowe Basin would, in the short-term, reduce sagebrush cover in the treated area. However, adjacent sagebrush cover is available and in the long-term, sagebrush habitat would be enhanced with the removal of conifer encroachment.

Riparian, Wetland, and Aquatic Habitat and Associated Species:

The proposed spring development and enclosure would improve livestock distribution and reduce grazing impacts along reach 525. Increased monitoring and enforcement would reduce and/or prevent the number and duration of unauthorized livestock. Improvements in riparian vegetation would be expected over the short term. Over the long term stream channel morphology (sinuosity, width/depth ratio) would approach reference conditions.

Socioeconomics:

There would be some expense associated with developing the spring in Louie Lowe Basin, constructing the pipelines in the Ponderosa Pasture.

Willow Creek Individual #20304

Alternative B

Upland Health, Sagebrush Steppe Habitat and Associated Species:

Two years of fall (dormant season) use in three would slowly convert this area from primarily blue grama (a warm season grass) to cool-season bunchgrasses. Dormant season use promotes cool-season grasses, but hoof action would need to break up the mats of blue grama, so bunchgrasses could become established and this may take several years. Developing a water source on adjacent State land would improve livestock distribution and reduce impacts to the BLM-administered parcel. Increasing cool-season bunchgrasses and forbs would enhance biodiversity, cover, and forage for wildlife.

Socioeconomics:

The cost of developing a well on State land would be greatly influenced by the depth of the well and be the responsibility of the permittee.

Unallotted Parcel

Alternative B

Riparian, Wetland, and Aquatic Habitat and Associated Species:

Constructing an enclosure around the wetland area (515), in the unallotted parcel southwest of Glendale (Section 25, T2S, R10W), would reduce compaction and loss of soil, as well as protect vulnerable riparian forbs and grasses from livestock impacts. Removing the juniper from within the wetland would help reduce water loss and improve habitat for riparian-obligate plant and wildlife species.

Socioeconomics:

There would be minor costs associated with constructing the enclosure and removing the juniper from the wetland.

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 Impact Area for this EA is defined as the area encompassed by Townships 1-6 South and Ranges 8-12 West. The temporal boundary when analyzing cumulative impacts is 10 years.

4.3.1 Past and Present Actions

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

- Severe over-trapping of beavers and unregulated livestock use during the late 1800s and early 1900s changed the character (hydrologically and vegetatively) of most mountain streams in the Intermountain West (Elmore and Beschta 1987; Elmore and Kaufman 1994; Naiman 1988). Although there are still active beaver colonies in the EPW, beaver activity is substantially reduced from historical levels.
- In the late 1890s and early 1900s, wolves and other large predators in the western United States were hunted, trapped and poisoned. The removal of large predators has increased the level of impact that elk and moose historically had on riparian areas (Ripple and Beschta 2004a, 2004b, 2005a, 2005b). Recent increases in wolf numbers in SW Montana may have a small effect on reversing this. However, wolf numbers are not likely to achieve the required density to greatly affect moose and elk distribution in the EPW.
- 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.
- 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 2004a, 2004b).

- There has been timber harvest, pole cutting, Christmas tree cutting, and firewood collecting in the past throughout the watershed.
- 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. Currently in the EPW elk numbers are within objectives, but had been under objectives the past five years. Moose numbers have been relatively low in recent years. Antelope numbers have greatly increased within the last five years in the EPW.
- Livestock and wildlife 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 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.
- About 1.5 miles of road that paralleled and crossed Lost Creek was recently rerouted away from the bottom of the drainage.
- Increased recreation has adversely impacted isolated areas within the watershed (camp sites, new trails and roads, spreading of weed seed, etc.).
- Existing and new stock water developments on all ownerships within the EPW will influence livestock distribution. In some cases secondary range will be converted to primary range which could increase grazing pressure on palatable sensitive plant species such as Lemhi beardtongue, Bitterroot milkvetch and railhead milkvetch. In areas where grazing management provides periodic deferment and/or rest that allow for seed production and seedling establishment the potential for increased herbivory may not be an issue. However populations of these species may be reduced in areas that are grazed season-long or where these plants may be grazed repeatedly while flowering.
- 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 trampling of individual plants or populations across all ownerships.
- The use of insecticides on private lands within the EPW to control grasshoppers or other insects may affect pollinators that visit sensitive plant species on BLM lands.
- The economic situation of the grazing permittees/lessees is affected by changes in livestock 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 permittees could add pressure to permittees to subdivide private land to maintain a cash flow.

4.3.2 Reasonably Foreseeable Future Actions

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

- The risk of wildfire on all ownerships will continue. Fire suppression efforts, utilizing Appropriate Management Response criteria, will continue on federally-administered lands in the watershed.
- Restoration efforts and projects in the Upper Big Hole to restore and enhance habitat for the fluvial arctic grayling by MT FWP, the Big Hole Watershed committee, federal agencies, and private landowners is expected to decrease water temperatures and improve water quality downstream, including Big Hole River reaches within the EPW. The BLM is a partner and has been contributing funding in this effort.
- 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 EPW 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.
- Sub-dividing of private land within the watershed is currently occurring on a very small scale. Although not expected to be extensive, subdivision may expand in the foreseeable future. Sub-dividing and development cause's habitat fragmentation, increases traffic, soil and vegetation disturbance, spread of noxious and invasive species, and other human uses in the area, and may increase the demand for water.
- 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.
- A Notice of Intent was filed by NorthWestern Energy with the BLM in 2007 for a 500 Kilovolt transmission line. There were numerous options suggested for the location of the transmission line that would begin in the vicinity of Townsend, Montana and travel into Idaho. Montana DEQ's Major Facility Siting Program is reviewing the Northwestern Energy application and maintains a website dedicated to the project (<http://www.deq.state.mt.us/MFS/MSTI/MSTIindex.asp>). Disturbances associated with this project will include the erection of towers, creation of pads, and road construction. The potential location for the transmission line has been narrowed to two options:
 - Two proposed routes lie just west of Interstate 15 and pass between Melrose and Dillon, Montana. These routes would pass through portions of 9 allotments. These routes travel through areas with low populations of sage grouse. Assuming a standard 3-mile buffer around sage grouse leks, the western-most route would impact the area around at least 1 active lek, outside but adjacent to the EPW. This

route would probably dissect a small portion of pygmy rabbit habitat, as well. The primary negative influence from the transmission line to sage grouse and pygmy rabbits would result from an increase in the number of perches for predators in the area.

- The other proposed route would cross the Big Hole River, just east of the Block Mountain ACEC, and cross Interstate 15 about 10 miles north of Dillon, Montana. This route would pass through portions of four allotments. Assuming a standard three mile buffer around sage grouse leks, this route would not impact any active leks.
- The AML program will continue to inventory and assess the impacts of abandoned mines on BLM lands. Once the mines have been evaluated the appropriate closures, reclamation, or mitigation will be conducted as funding and staffing allow. Work will generally be prioritized on a mining district basis, beginning with the Maiden Rock mines, in the Vipond/Quartz Hill District. Closure methods, determined through evaluating the mine safety, accessibility, animal and or plant species present, and cultural significance, will be permitted on an individual basis through separate EAs as work progresses.

4.3.3 Cumulative Effects of 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 EPW Assessment Report would not be addressed and objectives for improving riparian health would not be accomplished. Downward trends would continue on stream reaches in two grazing allotments which could affect riparian health, fisheries habitat and/or water quality downstream from BLM administered lands.

4.3.4 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.

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 areas in which resource concerns were identified 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 authorize 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.

Many of the surrounding watersheds have already been assessed and management changes have been implemented, where concerns were identified, to improve resource conditions. Improving upland and riparian health on these two additional allotments would improve natural processes and better support the multiple uses for which they are managed.

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 County tax revenues may result.

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. Although wildlife habitat needs are generally met within the watershed, this grazing may influence suitability and availability of that habitat on a localized basis or during a specific time frame.

4.3.5 Cumulative Effects of Alternative B

This alternative includes administrative actions, structural projects, vegetation treatments, and management changes on 12 grazing allotments and one un-allotted parcel. Since the allotments within the EPW 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, harvesting of forest products, vegetative treatments (e.g. prescribed fire) and/or recreation on private and State lands, which are not subject to BLM Standards, would continue. This could impact wildlife migration and dispersal within the watershed. 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.

Socioeconomic impacts to livestock operators, in addition to those discussed above are not expected.

4.3.6 Cumulative Effects of Alternative C

This alternative includes administrative actions, structural projects, vegetation treatments, and management changes on six grazing allotments. Since the allotments within the EPW are intermingled with state and private lands, improvements to resource conditions resulting from management changes and projects would produce benefit across all ownerships.

The cumulative effects of Alternative C would be similar to those described above under Alternative B.

5.0 List of Preparers - Consultation/Coordination

5.1 List of Preparers

5.1.1 Core IDT members:

Brian Thrift	Rangeland Management Specialist – IDT Leader
Aly Piwowar	Forester
Kipper Blotkamp	Fuels Specialist
Katie Benzel	Wildlife Biologist
Stephen Armiger	Hydrologist – Riparian Coordinator
Pat Fosse	Supervisory Natural Resource Specialist

5.1.2 Support IDT members include:

Paul Hutchinson	Fisheries Biologist
Michael Mooney	Weeds Specialist
Emily Guiberson	Forester
Kelly Bockting	Wildlife Biologist
Jason Strahl	Archaeologist
George Johnson	Fuels Specialist
Laurie Blinn	GIS Specialist
Rick Waldrup	Outdoor Recreation Planner
Brian Hockett	Rangeland Management Specialist – Special Status Plants
Bob Gunderson	Geologist
Joan Gabelman	Geologist – AML
Corey Meier	Soil Scientist

5.2 Consultation/Coordination

5.2.1 Persons and Agencies Consulted

Reyer Rens	Rangeland Management Specialist, US Forest Service
Kevin Greenwood	Rangeland Management Specialist, US Forest Service
Eric Wyatt	Rangeland Management Specialist, US Forest Service
Diane Hutton	Fire Management Officer, US Forest Service
Gary Berger	Soil Scientist, Natural Resources Conservation Service
Dick Oswald	Fisheries Biologist, Montana Department of Fish, Wildlife and Parks
Craig Fager	Game Biologist, Montana Department of Fish, Wildlife and Parks
Vana Boccadori	Game Biologist, Montana Department of Fish, Wildlife and Parks
Chuck Barrone	Forester, Montana Department of Natural Resources and Conservation
Chuck Maddox	Land Use Specialist, Montana Department of Natural Resources and Conservation
John Murray	THPO, Blackfeet Tribe
Arlene Caye	Confederated Salish and Kootenai Tribes

Francis Auld	Confederated Salish and Kootenai Tribes
Carolyn Boyer Smith	Cultural Resource Coordinator, Shoshone-Bannock Tribes
Yvette Tuell	Environmental Program Manager, Shoshone-Bannock Tribes
John Peck	Trapper Creek Ranch
John & Chris Rieber	Rieber Ranch
Jerry & Charlotte Burk	Burk Ranches
Owen Speirs	Shoestring Ranch
Maynard Smith	Smith 6 Bar S Livestock
Lyle Stewart	Bar 7 S Ranch
Tom Kambich	Lazy A U Ranch
Jim Hagenbarth	Hagenbarth Livestock
Myles Carpenter	Rancher
Frank Bryan	Rancher

5.2.2 Notifications

Media Release in Southwest Montana – May 2008

Internet NEPA Log – Dillon Field Office – October 2008

Mailing List for EPW Assessment – January 2009

Media Release in Southwest Montana – 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 or 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).

atmospheric maintenance: wetlands store carbon within their live and preserved (peat) plant biomass instead of releasing it to the atmosphere as carbon dioxide, a greenhouse gas affecting global climates.

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.

biogeochemical cycling: biologic, physical, and chemical transformations of various nutrients within the biota, soils, water, and air. Wetlands are very important in this regard, particularly relating to nitrogen, sulfur, and phosphorous

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

browse plant or browse species: a shrub, half shrub, woody vine, or tree capable of producing shoot, twig, and leaf growth suitable for animal consumption.

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.

ecological functions: atmospheric maintenance, biogeochemical cycling, floodwater retention, groundwater recharge, sediment trapping

ecological processes: processes which play an essential role in maintaining ecosystem integrity. four fundamental ecological processes are the cycling of water, the cycling of nutrients, the flow of energy and biological diversity (as an expression of evolution).

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.

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.

hydric soil: soil that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part.

hydrologic heaving: The lifting of a surface by the internal action of frost or hydrostatic pressure. The process is exacerbated when there is compaction between plant tussocks, (e.g. hoof action) or excessive removal of vegetation. The result is the hummocked appearance of plants being elevated above the normal ground surface, rootshearing between plants, and exposure of interspaces to increased erosional forces.

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.

interpretation: explaining or telling the meaning of something and presenting it in understandable terms.

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.

key area: “Key areas are indicator areas that are able to reflect what is happening on a larger area as a result of on-the-ground management actions. A key area should be a representative sample of a larger stratum, such as a pasture, grazing allotment, wildlife habitat area, herd management area, etc., depending on the management objectives being addressed by the study....”

lentic: standing or still water such as lakes and ponds.

lotic: flowing or actively moving water such as rivers and streams.

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, and the outputs or achievements that are measurable and quantifiable, are specified. (See goal)

palustrine: inland, nontidal wetlands characterized by the presence of trees, shrubs, and emergent vegetation (vegetation that is rooted below water but grows above the surface). Palustrine wetlands range from permanently saturated or flooded land (as in marshes, swamps, and lake shores) to land that is wet only seasonally (as in vernal pools).

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

primary range: areas which animals prefer to use when management is limited. Primary range will be overused before secondary range is fully used. See also “secondary range.”

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

- Dissipate stream energy associated with high 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)

resource reserve allotment: a unit of public land that will not have term grazing permits issued. Such an allotment would only be grazed on a temporary nonrenewable basis. The use of these allotments would be to provide temporary grazing to rest other areas following wildfire, habitat treatments, or to allow for more rapid attainment of rangeland health. The allotment must be of sufficient size to be managed as a discrete unit.

riparian zone: the banks and adjacent areas of water bodies, water coursed, seeps, and springs whose waters provide soil moisture sufficiently in excess of that otherwise available locally so as to provide a moister habitat than that of contiguous flood plains and uplands.

secondary range: – areas which is lightly used or unused by livestock under minimal management and which will ordinarily not be fully used until the primary range has been overused. See also “primary range.”

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.

spring brook: a channel that carries water from a spring. Where there is sufficient flow, the channel forms a perennial stream. Frequently in arid environments, the flow is insufficient to create a perennial stream. Groundwater emerges at the springhead, flows a short distance within the spring brook, and then submerges.

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.

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