

Appendix B

East Bench Watershed Monitoring Plan

Monitoring Plan for East Bench Watershed

Introduction

The purpose of this resource monitoring plan is to measure the effectiveness of management changes, structural projects and vegetative treatments in meeting the goals and objectives developed for the East Bench Watershed (EBW). This plan has been designed to measure progress towards site specific objectives developed by an ID team where resource concerns were identified during the East Bench Watershed Assessment process.

This plan will identify when, where and how studies will be conducted, as well as the types of data that will be collected, how the data will be evaluated, and who will participate in the process. All monitoring methodologies are approved BLM monitoring methodologies and are described in various BLM or Interagency Handbooks. All this information, including technical references, BLM policy and procedure handbooks, and monitoring guidelines and methodology descriptions are available for review at the Dillon Field Office. Technical references and BLM procedural handbooks are also available on the BLM library website; <http://web.nc.blm.gov/blmlibrary>.

All existing monitoring studies that are needed to measure progress towards objectives or Standards will continue to be read on the same time schedule as new studies.

Site Specific Objectives

There were two primary land health issues and five additional resource concerns identified during the East Bench Watershed Assessment and through public scoping. Site specific objectives have been developed for each issue and resource concern. The amount of change desired for each of the objectives will be determined once additional baseline data is gathered during the 2009 or 2010 field seasons. The goal is to make measurable progress towards site specific objectives by 2018.

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

Objectives for riparian, wetland and aquatic habitat and associated species are:

- Restore stream dimension, pattern and profile to the natural range of variation where concerns were documented.
- Restore deciduous woody and herbaceous riparian habitat types, with emphasis on reducing juniper and disturbance induced species composition.
- Increase deep-rooted riparian vegetation (sedges, willows) where decreased composition was documented.
- Reduce sediment loads into streams where uses on public lands are causing increased sediment.
- Maintain or enhance westslope cutthroat trout (WCT) habitat in Trout Creek, Stone Creek, and the Middle Fork of Stone Creek.
- Maintain and enhance habitat for cold water fisheries in occupied streams within the watershed.
- Restore, maintain or enhance native vegetation and hydrology of springs, seeps

- and wet meadows with emphasis on ecological function and biodiversity.
- Protect developed springs (spring sources) from impacts by ungulates.
 - Prevent spread of noxious and invasive species into and within the watershed, and reduce or eradicate existing infestations.

Monitoring Activities to measure progress towards meeting Riparian, Wetland and Aquatic Habitat and Associated Species objectives:

- Continue monitoring WCT populations and distribution in coordination with Montana Fish, Wildlife and Parks (MFWP).
- Continue monitoring existing riparian studies to measure progress towards objectives.
- Springs that are developed/redeveloped will be photographed before and after development and inspected and photographed periodically after development (every 2-3 years), including prior to the next scheduled assessment.

Table 1. Site specific Riparian and Wetland Habitat and Associated Species Monitoring Objectives

Allotment Name and #	Stream and Reach	Stream #	Objective	Monitoring Methodology
Garden Creek Isolated #30601 Unallotted in WSA	Big Dry Creek	880	Improve streambank stability and channel morphology by reducing trailing impacts	Cumulative width/depth ratio transect OR photo points (both reaches)
	Big Dry Creek	881		
McHessor Creek # 10530	Spring Creek	400	Improve streambank stability and channel morphology Increase deep rooted riparian vegetation along the greenline	Cumulative width/depth ratio; Greenline transect, and/or photo points
	Trout Creek	425	Improve streambank stability and channel morphology Increase woody riparian vegetation along the greenline (All 3 Trout Creek reaches)	
	Trout Creek	426		
	Trout Creek	440		Cumulative width/depth ratio transect; Woody Browse Regeneration Transect, and/or Photo points
Stone Creek # 10498	Spring Cr. trib	401	Increase deep rooted riparian veg; decrease bare ground	Photo points
	LF Stone Cr. trib	412	Improve streambank stability and channel morphology Increase deciduous woody riparian vegetation Decrease bare ground	Cumulative width/depth ratio transect; Woody browse regeneration; Greenline transect and/or Photo points
	LF Stone Cr. trib	448		
	Stone Cr. trib	415		
Unallotted	Stone Creek	421	Restore original channel; increase deep rooted riparian vegetation	Photo points

Allotment Name and #	Stream and Stream Reach	Objective	Monitoring Methodology
Middle Fork # 20525	MF Stone Creek 408	Improve streambank stability and channel morphology Increase sedge along the greenline Increase willows and aspen along the greenline	Cumulative width/depth ratio transect Greenline transects Woody browse regeneration transects And/or photo points

Issue #2: Forest and Woodland Health and Fuels Management

Objectives for forest and woodland health and fuels management are:

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

Monitoring Activities to measure progress towards meeting Forest Health and Fuels Management objectives:

Pre- Implementation:

- Complete Forest Vegetation Information System (FORVIS) walkthrough survey to classify the existing vegetation type within a representative sample of each stand type. Walkthrough survey data includes canopy species composition and density, understory vegetation, fuel loading, and density and size class of snags and down wood.
- Establish GPS photo points within a representative sample of stand types, and document general stand conditions with photos. Documentation will reflect the particular objectives of individual units.
- Establish GPS photo point(s) showing approximate percent cover of habitat type species and any occurrence of insect/disease at the landscape-scale.
- Prescribed Burn Units: Gather fuels and vegetation transect data on up to five representative sites. Photographic documentation should include pre and post-treatment photos from a designated point.

During Prescribed Burn Treatments:

- Fire behavior, fire weather, and smoke dispersion will be observed and documented throughout the ignition portion of each burn to make sure that these elements are within the prescription defined in the burn plan.

Post Implementation:

- Within two years after implementation on a given unit, re-visit each stand to obtain the same data measurements described above and evaluate if the stand objectives were reached.
- Prescribed Burn Units:
 - Right after treatment: Gather photo points and measurements along each pre-treatment transect to determine if treatment objectives have been attained. Place a range cage on site to measure production and use.
 - One to four years after treatment: Remeasure transects and photo points to show vegetative response to the treatment and progress towards meeting objectives. Changes in use by big game, specifically elk, within the treatment areas will be measured by conducting pellet group transects prior to treatment and then, at least annually, for up to five years following treatment.

Resource Concern #1: Sagebrush Steppe Habitat and Associated Species

The objectives for sagebrush steppe habitat and associated species are:

- Maintain residual herbaceous cover for ground nesting birds, specifically sage grouse.
- Manage 70% of the big sagebrush communities in the watershed to provide the vegetation composition and structure to sustain sage grouse populations and other sagebrush obligate species such as antelope and pygmy rabbits.
- Maintain 15-25% of taller sagebrush canopy cover (primarily big sagebrush subspecies), as applicable within site potential.
- Prevent spread of noxious and invasive species into and within the watershed, and reduce or eradicate existing infestations.

Monitoring Activities to measure progress towards meeting Sagebrush Steppe Habitat and Associated Species objectives:

- Specific weed treatment areas will be monitored or evaluated for site specific objectives through photo points, ocular observation, and/or vegetative transects.

Table 2. Site Specific Objectives for Sagebrush Habitat

Allotment Name and #	Objective	Monitoring Methodologies
Stone Creek #10498 Middle Fork #20525 Nyhart #20470 Lark Isolated #30678 Hoffman Isolated # 10511 Big Sheep #10513 Carter Creek #10534	Delineate seasonal habitats of sage grouse. Maintain sagebrush canopy cover on sage grouse winter habitats. Maintain herbaceous understory and increase forb composition in sage grouse breeding and brood-rearing habitat.	Aerial and ground lek inventories. Radio telemetry. Habitat characterization using line intercept plots to measure canopy cover of sagebrush and herbaceous understory.

Resource Concern #2: Travel Management

Objectives for Travel Management are:

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

Monitoring will consist of compliance checks to determine if closed roads show signs of use, as well as the enforcement of the travel management plan, specifically during the hunting season.

Resource Concern #3: Special Status Species

The objective for Special Status Species is:

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

Additional objectives are included above under Issue #1 Riparian, Wetland, and Aquatic Habitat and Associated Species and Resource Concern #1 Sagebrush Steppe Habitat and Associated Species.

Monitoring activities to measure progress towards the Special Status Species objective are included under Issue #1 Riparian, Wetland, and Aquatic Habitat and Associated Species and Resource Concern #1 Sagebrush Steppe Habitat and Associated Species.

Additional monitoring activities will include:

- Coordinating with MTFWP to conduct population surveys for WCT on Trout Creek, Stone Creek, and the Middle Fork of Stone Creek.
- Coordinating with MTFWP and National Wildlife Federation on sage grouse lek locations and annual lek counts to indicate sage grouse population trends.

Resource Concern #4: Socioeconomics

The objective for socioeconomics is:

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

Trends in socioeconomics will not be monitored by the local BLM office.

Resource Concern #5: Wilderness Characteristics

The objectives for Wilderness Characteristics are:

- Maintain or improve the wilderness characteristics that were present at the time of the wilderness inventory (1979-80).

- Reduce occurrence and impacts of unauthorized motor vehicle use.

Planned monitoring will consist of compliance checks and continuation of existing monitoring. WSA monitoring forms will be completed, and photographic documentation will be used where applicable.

Types of Data Collected

The established permanent vegetative and physical trend transects in the East Bench Watershed were read and data was updated during 2007 and 2008. However, in order to adequately measure progress towards site specific objectives, additional studies will be established in key areas during 2009 or 2010 and baseline data will be gathered on the newly established studies. This baseline data will be considered the starting point from which to measure progress towards meeting objectives or effectiveness of management changes implemented beginning in 2009. Data from existing studies will be compared and evaluated from the time they were established and data was initially collected.

Key areas are defined as relatively small areas that reflect or have the capability to reflect the effectiveness of management of the resources of a larger area. Depending on management objectives, a key area may be a representative sample of a large stratum, pasture, allotment, or a particular management area. Key areas or monitoring sites should represent the high variability of riparian, upland and forest habitat types, patterns of use, and conditions of forest, rangeland or riparian health. Over the next several years the following data will be collected (See Table 3).

- Actual livestock and wildlife use. Actual use is the grazing use of an area by all classes of forage consumers. This information is necessary to provide a correlation between utilization and trend data. Considered alone, actual use data are essentially meaningless. However, when considered in conjunction with climate and utilization data, this data is necessary to interpret trend data accurately.
- Annual compliance, including utilization of upland forage, browse levels on willows and aspen, measurement of sedge stubble heights and/or measurement of stream bank alteration. This monitoring will occur primarily at established key areas, but may occur in other areas as well. Annual compliance monitoring will be done on a prioritized basis with I category allotments being the highest priority, followed by M, and then C category allotments. In areas where competition for resources may occur between livestock and big game, pre-livestock data may also be collected. This annual data will be used to help determine pasture moves and accurately interpret trend data.
- Local precipitation and temperature. This data is necessary to interpret trend data accurately.
- Long term trend. Trend data will be used to measure progress towards meeting objectives as described above.

Trend refers to the direction of change and indicates whether the forest, rangeland, riparian area or other resource is being maintained or is moving toward or away from the

desired plant community or other specific management objectives. Trend studies are important in the long term for determining the effectiveness of management actions in meeting or moving towards management objectives.

Trend data will be collected again in 2017 or 2018, unless specified otherwise for specific objectives. The East Bench Watershed will be re-assessed or evaluated during 2018. In this process, all monitoring data will be summarized, analyzed, interpreted, and evaluated to measure progress toward meeting objectives. Trend data gathered in 2017 will be compared to baseline and existing trend data gathered or updated in 2007 or 2008. The measured change in the data will be used to measure progress toward meeting objectives, thereby evaluating management and making informed decisions regarding subsequent management (continuation or change). This is called adaptive management. For example, if monitoring data shows that progress is being made toward established objectives, current management will be continued or modified slightly as warranted or allowed, according to the data. However, if data shows a downward trend (change away from objectives) or does not show any progress toward meeting objectives by 2017, and it is determined that current livestock management is a significant factor in precluding progress toward meeting objectives, then management will be adjusted by implementing an alternate system, changing the season of use and/or reducing authorized AUMs. The level of adjustment will be determined by the degree of divergence from the objectives.

Monitoring methodology descriptions are available for review at the Dillon Field Office. Technical references and BLM procedural handbooks are also available on the BLM library website; <http://web.nc.blm.gov/blmlibrary>.

Table 3. Planned Resource Monitoring Activities

Type	Method	Responsibility	Frequency
Actual Use	Actual Use Reports submitted by permittees Wildlife observations Wildlife population monitoring in cooperation with the MFWP Recreation user days	Range, Wildlife and Recreation Staff	Annually
Compliance/ Utilization	Utilization – Key Forage Plant Method, Grazed/Ungrazed Method, or Height/weight method	Range, Wildlife or Fisheries Biologists, Hydrologist	Annually on a prioritized basis
	Stubble height – Stubble Height Method		
	Bank alteration – Stream bank Alteration Methodology as defined by Idaho State Office BLM, 2000		
	Browse use – Extensive Browse Method		
Climate	Precipitation data available from National Oceanic and Atmospheric Administration and other sources	Available from external sources	Annually
Habitat Characterization	Inventory for leks and seasonal habitats Sagebrush canopy and herbaceous understory measurements along established transects in sage grouse, elk calving and mule deer winter habitats	Wildlife Staff, MFWP, NWF	Annually on a prioritized basis

Type	Method	Responsibility	Frequency
Trend (also see Table 3)	Biotic Quadrat Frequency Daubenmire Line Intercept Cover Board Woody Species Regeneration Greenline Macroplots/Belt Transects Photopoints Fire Regime Condition Class (FRCC) Satellite Imagery (as applicable)	Range, Wildlife or Fisheries Biologists, Hydrologists, Foresters, Fuels Specialists	By 2010 where new baseline data is needed Trend data (new and existing studies) will be gathered again in 2017
Watershed Evaluation	Physical Cross section Rosgens Cumulative width/depth ratio	ID team	FY2018

Budget Requirements

This monitoring plan was prepared with the assumption that funding will remain at or near existing levels for the foreseeable future. In this light, it is anticipated that the bulk of the monitoring load will have to be borne by the existing range, wildlife, fisheries, forestry, fuels, hydrology, recreation, wilderness and cultural resource specialists along with a minimum of six seasonal employees each field season for the duration of this plan. Litigation workload associated with Watershed Assessments also directly effects how much monitoring the existing staff is able to complete.