Appendix B

Upper Horse Prairie Watershed

Monitoring Plan

Monitoring Plan for Upper Horse Prairie 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 Upper Horse Prairie Watershed (UHPW). This plan has been designed to measure progress towards site specific objectives developed by an ID team where resource concerns were identified during the Upper Horse Prairie Watershed Assessment.

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. 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 any identified new studies.

Site Specific Objectives

Four Key Issues and five additional Resource Concerns were identified during the Upper Horse Prairie Watershed Assessment and through public scoping and were analyzed in the Upper Horse Prairie Environmental Assessment (EA). Site specific objectives have been developed based on each key 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 2013 or 2014 field seasons. The goal is to make measurable progress towards site specific objectives to be able to meet all Rangeland Health Standards by 2022.

Key Issue # 1: Riparian, Wetland, and Aquatic Health

Objectives:

- Increase composition and cover of deep-rooted riparian species along stream channels and spring/wetland areas (reduce bare ground).
- Increase vigor and regeneration of willows.
- Improve streambank stability and width/depth ratio of streams within the natural range of variability based on Rosgen Stream Types.
- Stop head cuts and restore vertical channel stability.
- Reduce sediment inputs into streams generated by human activities.
- Maintain/enhance habitat for cold water fisheries in occupied streams within the watershed

Monitoring activities to measure progress towards meeting Riparian, Wetland and Aquatic Habitat objectives:

- 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.
- Spring developments will be checked at least semi-annually during compliance inspections to verify that maintenance is being completed as agreed to in Cooperative Agreements.
- Dysfunctional spring developments that are removed/cleaned up will be photographed before and after project clean-up.

Table 1. Site Specific Riparian and Wetland and Aquatic Health Monitoring

Allotment Name and #	Stream and Stream Reach	Objective	Monitoring Methodology
Bear Creek #30018	Bear Creek #1301 Bear Creek trib. #2315 Bear Creek trib. #2316 Trapper Creek trib. #1329 Trapper Creek #2321 Trapper Creek trib. #1365	Improve streambank stability and channel morphology. Increase composition of riparian vegetation along the greenline	Cumulative width/ depth transect, Greenline transect and/or Photo point(s)
Coyote Creek #20165	Coyote Creek #1351	Improve streambank stability and channel morphology. Increase recruitment of aspen within the riparian zone	Cumulative width/ depth transect; Belt transect and/or photo point(s)
Coyote Flat #30017	Rawhide Creek #1354	Improve streambank stability and channel morphology	Cumulative width/depth transect and/or photo point(s)
Frenchie Creek Barrett #00756	Frog Creek #1360	Improve channel morphology by mitigating livestock trailing.	Photopoint(s) and Ocular reconnaissance
Horse Prairie Custodial #00753	Black Canyon Creek #1307 Black Canyon trib. #1311 N. Fork Divide Cr. #1316 N. Fork Divide Cr. #1317 Horse Prairie Creek #1332 Horse Prairie Creek #1380 Black Canyon trib. #1376 S. Fork Everson Cr. #1373	Improve streambank stability and channel morphology Increase composition of riparian vegetation along the greenline	Cumulative width/ depth transect; Greenline transect and/or Photo point(s)
Lemhi Pass #10145	Sheser Creek #1346	Improve streambank stability and channel morphology. Increase composition of riparian vegetation along the greenline Mitigate headcuts from moving upstream	Cumulative width/depth transect; Greenline transect; and/or Photo points Mark and GPS top of head cuts.

Allotment Name and #	Stream and Stream Reach	Objective	Monitoring Methodology
North Black Canyon #30020	Black Canyon trib. #1310	Improve streambank stability and channel morphology.	Photo point(s)
Rape Creek #30019	Horse Prairie Cr trib. #1384 Rape Creek #1338	Improve streambank stability and channel morphology by reducing trailing impacts	Photo point(s)
Selway #20004	Bear Gulch #1304 Bear Gulch #1368 Bear Gulch trib. #1367 Spring Creek #1369	Improve streambank stability and channel morphology Increase composition of riparian vegetation along the greenline	Cumulative width/depth transect; Greenline transect; and/or Photo points
Selway Isolated #20111	Bear Creek #2314	Improve streambank stability and channel morphology by reducing trailing impacts.	Cumulative width depth transect and/or Photo point(s)
South Black Canyon #10130	Black Canyon trib. #1312	Improve streambank stability and improve channel morphology	Cumulative width depth transect and/or Photo point(s)

Key Issue #2: Upland Health and Sagebrush Steppe Habitat

Objectives:

- Maintain or increase composition and cover of native perennial cool-season bunchgrasses.
- Restore/maintain open sagebrush communities in habitats that are currently becoming dominated by conifers (Douglas-fir and, to a lesser extent Rocky Mountain juniper.)

Monitoring activities to measure progress towards meeting upland habitat and associated species objectives:

- Continue monitoring existing upland studies to measure progress towards objectives.
- Non-commercial mechanical/prescribed fire treatments:
  - 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 to verify ocular estimates. If prescribed burns are conducted after May 15, complete migratory bird surveys prior to burning activities.
  - 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.

- Directly after prescribed fire treatments, retake photographs at established points and/or retake measurements along each pre-treatment transect to determine if treatment objectives have been attained.
- One to four years after treatment: Re-measure 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.

Table 2. Site Specific Upland Health and Sagebrush Steppe Monitoring

Allotment Name	Objective	Monitoring Methodologies
All allotments	Maintain or increase composition and cover of cool season perennial bunchgrasses	Daubenmire transect Quadrat Frequency transect and/or Photo points
Bloody Dick Horse Prairie Cust.	Increase composition and cover of cool season perennial bunchgrasses	
Bear Creek N. Black Canyon S. Black Canyon Lemhi Pass Selway, Selway Isolated	Reduce 60% or more of conifers less than 30 feet tall that have recently expanded into previously open sagebrush-dominated communities	See paragraph above Table 2.

Key Issue #3: Forest and Woodland Habitat

Objectives:

- Maintain/enhance existing aspen and promote successful regeneration of aspen.
- Mitigate mortality of whitebark and limber pine from insects and disease in priority areas and priority individual trees (PLUS trees) and promote successful regeneration of whitebark and limber pine.
- Increase diversity of seral stages and structures in forested habitats.
- Reduce hazard rating for spruce budworm and Douglas-fir bark beetle activity.

Monitoring activities to measure progress towards meeting forest and woodland habitat objectives:

Pre- Implementation:

- Commercial Harvest Units:
  - 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.
- Whitebark and Limber Pine Treatments:
  - For trees suspected of being blister rust resistant, GPS and tag tree. Measure DBH, height, and crown ratio.
  - 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.

Post Implementation:

- Commercial Harvest Units:
  - 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.
  - Monitor post-harvest stands for new insect and disease activity.
  - Ungulate browse monitoring of aspen regeneration may be implemented if excessive browsing appears to be restricting new aspen suckers from growing taller than browse height.

- Whitebark and Limber Pine Treatments:
  - Complete re-application of pheromones or insecticide. Inspect trees for evidence of mountain pine beetle attack and/or blister rust.
  - Complete stocking surveys in areas planted with whitebark pine.

- 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.
- Monitor post-harvest stands for new insect and disease activity.

Monitoring of prescribed fire treatments to reduce slash post-harvest, and following whitebark pine day-lighting treatments are the same as described for prescribed fire monitoring activities listed under Key Issue #2: Upland Health and Sagebrush Steppe Habitat.

Key Issue #4: Special Status Species Habitat

Objectives:

- Maintain a 6" herbaceous stubble height along greenline and/or three inches on the floodplain by reach, whichever occurs first to provide a sediment buffer on all WCT streams.
- On westslope streams improve streambank stability and width/depth ratio as well as stream structural characteristics (adequate woody debris).
- Coordinate riparian monitoring to ensure all WCT streams have at a min Cumulative width/depth transect, greenline transect and/or photo points
- Conserve, enhance, or restore sage-grouse habitat through improved grazing management systems
- Increase plant diversity in areas that were seeded (primarily to crested wheatgrass) in the past.
- Ensure that fences in the UHPW are built to BLM specifications to minimize impacts to all wildlife.
- Enhance/improve/protect "Priority Habitats" including aspen, whitebark pine and limber pine.
- Maintain existing sagebrush habitat so that 75% or more of big sagebrush communities provide vegetative composition and structure for sagebrush obligate species.
- Maintain sage grouse nesting/early brood rearing canopy cover of 15-25% sagebrush
- Maintain an average of 6 to 7 inches herbaceous understory within site potential in sage grouse nesting/early brood rearing habitat.
- Maintain or increase composition of highly nutritious forbs (e.g. composites and legumes) in sage grouse nesting/early brood rearing habitat.
- Maintain or enhance habitat for sensitive plant species and provide ample opportunity for reproduction and seedling establishment.

Monitoring Activities to measure progress towards meeting Fish, Wildlife and Special Status Species Habitat objectives:

Table 3. Site Specific Monitoring for Sagebrush Obligate Species Habitat

Allotment Name	Objective	Monitoring Methodologies
All Allotments	-Maintain 15 – 25% sagebrush cover in nesting/early brood rearing habitat.	-Line Intercept and Daubenmire plots to measure canopy cover of sagebrush, and herbaceous and forb understory.
	-Maintain an average of 6-7 inch residual understory within site potential on the majority of the area.	-Forage utilization and herbaceous understory cover will be measured annually within time constraints of staff.
Brenner Rape Creek Coyote Flat Exchange Trail Creek Seeding	-Increase composition of native forbs in old seedings in nesting/early brood rearing habitat.	-Existing Daubenmire transects where applicable, Step point transects and/or Macro Plots and Photo points.

Related objectives and monitoring activities to measure progress towards fish, wildlife and special status species habitat are included above under Key Issues for Riparian, Wetland, and Aquatic Health, Upland Health and Sagebrush Steppe Habitat, and Forest and Woodland Habitat.

Additional monitoring activities specific to fish, wildlife and special status species habitat include:

- Document and establish baseline inventory for any new "unmapped" populations of sensitive plants that are found.
- The inventory should include the number of individual plants, a description of the habitat (e.g., associated species, soils, aspect and elevation) and an assessment of any existing and potential threats to the population.
- Coordinate with MTFWP and USFS biologists to continue delineating seasonal habitat for sage grouse.
- Coordinate with MTFWP and Montana Audubon to continue sage grouse lek counts.
- Coordinate with MTFWP and USFS biologists to continue monitoring population trends of WCT in the UHP drainage
- Continue habitat monitoring on WCT Habitat every 5-10 years to include temperature data and habitat surveys.
- Inventory harvest units for northern goshawk and great gray owl to identify any nesting territories and determine nesting activity.

Resource Concern #1: Noxious and Invasive Species

Objectives:

- Reduce the composition of noxious and invasive vegetative species within the watershed.

- Mitigate the spread of noxious and invasive plants into, within, or from the watershed.
- Protect Montana borders from the invasion of noxious weeds found in Idaho but not yet in Montana. Identify key areas of known populations of invasive species in Idaho and make the adjacent area in Montana a priority for early detection and treatment.

Monitoring activities to measure progress towards meeting noxious and invasive species objectives are included in above under Riparian, Wetland, and Aquatic Health and Upland Health.

Aerial weed treatment areas will be monitored or evaluated for site specific objectives through photo points, ocular observation, and/or vegetative transects. Site specific objectives for aerial treatment will be to reduce composition of leafy spurge and spotted knapweed with negligible reduction of non-target species.

Resource Concern #2: Recreation and Travel Management

Objectives:

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

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 big game hunting season.

Resource Concern #3: Socioeconomics

Objectives:

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

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

Resource Concern #4: Cultural and Paleontological Resources

Objectives:

- Preserve and protect significant cultural and paleontological resources and ensure that they are available for appropriate uses by present and future generations.
- Reduce imminent threats from natural or human-caused deterioration, or potential conflict with other resource uses.
- Ensure that all authorizations for land and resource use avoid inadvertent damage to federal and nonfederal cultural and paleontological resources in compliance with Section 106 of the National Historic Preservation Act and the Paleontological Resource Protection Act.
- Preserve and protect Everson Creek Area of Critical or Environmental Concern
    - Preserve and protect cultural resources/archaeological districts that are important to both archaeologists and Native Americans.

Monitoring activities to measure progress towards meeting cultural resource objectives include: Visit a minimum of 10 previously recorded cultural resource properties that are listed on the National Register of Historic Places or determined eligible for listing, on an annual basis, to update the site form to current professional standards and to assess the current condition and trend of significant resource values.

All sites within the Everson Creek ACEC and the following five sites will be monitored in order to determine if adverse impacts are continuing to occur as a result of grazing management practices on public lands (24BE244, 24BE405, 24BE521, 24BE753, and 24BE1180).

Resource Concern #5: Visual Resources

Objectives: Manage activities within the watershed to meet the Visual Resource Management Class III objective -- "The objective of this class is to partially retain the existing character of the landscape. The level of change to the characteristic landscape should be moderate. Management activities may attract attention, but should not dominate the view of the casual observer. Changes caused by management activities may be evident but should not detract from the existing landscape." (BLM Manual Handbook 8431-1, Visual Resource Contrast Rating)

Monitoring activities to measure progress towards meeting visual resource objectives include: Reviewing proposed activities for consistency, and encouraging field staff to look around when they are in the area and report unauthorized activities that may be impacting visual resources.

Types of Data Collected

The established permanent vegetative and physical trend transects in the Upper Horse Prairie Watershed were read and data was updated during 2011. The date when these studies were initially established and read is considered baseline data. However, in order

to adequately measure progress towards site specific objectives, additional studies will be established in key areas during 2013 and baseline data will be gathered on the newly established studies. Baseline data is considered the starting point from which to measure progress towards meeting objectives or effectiveness of management changes implemented beginning in 2014 (on the new studies only). 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 4).

- 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, accurately interpret trend data, and serve as an early indicator on whether implemented changes are effective. If annual monitoring reveals resource degradation or ineffective management changes (as determined by BLM specialists), trend studies may be read at any time prior to the next scheduled assessment (2022), and adjustments in management analyzed in the interim.
- 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 2021 or 2022, unless specified otherwise for specific objectives. The Upper Horse Prairie Watershed will be re-assessed or evaluated during 2022. In this process, all monitoring data will be summarized, analyzed, interpreted, and evaluated to measure progress toward meeting objectives. Trend data gathered in 2021 will be compared to baseline (established in 2013) and existing trend data gathered or updated in 2011 or 2012. 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, 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 2021, 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 4. 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 – Grazed/Ungrazed Method or Key Forage Plant 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
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) LANDFIRE (as applicable)	Range, Wildlife or Fisheries Biologists, Hydrologists, Foresters, Fuels Specialists	Any new trend monitoring studies will be established during 2013. Trend data (new and existing studies) will be gathered again in **2021 or 2022.**
	Physical Cumulative width/depth ratio		
Watershed Evaluation	Analysis, Interpretation, Evaluation and Recommendations	ID team	FY2022

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.