

Monitoring Plan for the Upper Big Hole 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 Big Hole Watershed (UBHW). 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 Big Hole 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. The aforementioned 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 providing a description of BLM monitoring methodologies are also available on the BLM library website; <http://www.blm.gov/nstc/library/library.html>.

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 four additional resource concerns identified during the Upper Big Hole 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 2010 or 2011 field season. The goal is to make measurable (significant) progress towards site specific objectives and Proper Functioning Condition by 2019.

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

Objectives

- Restore stream dimension, pattern and profile to the natural range of variation, as measured by the width/depth ratio of stream channels appropriate to stream type.
- Maintain or increase deep-rooted riparian vegetation (sedges, willows) along the greenline.
- Reduce sediment loads where uses on public lands are causing increased sediment (e.g. cattle loitering, road maintenance, etc).
- Increase wetland and facultative vegetation within wetlands, seeps and springs.
- Enhance habitat for cold water fisheries in occupied streams within the watershed. Seek opportunities to work cooperatively with adjacent landowners to divert water back into natural channels.

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

- Continue monitoring westslope cutthroat trout population and distribution in coordination with Montana Fish, Wildlife and Parks (MFWP).
- Continue monitoring existing riparian studies to measure progress towards site specific objectives and PFC.

Table 1. Site Specific Riparian, Wetland, and Aquatic Habitat Objectives

Allotment Name	Stream and Reach Number	Objective	Monitoring Methodology
Big Swamp	Big Swamp Creek (1903) Big Swamp Creek Trib. (1997) Big Swamp Wetland (1967)	1. Improve streambank stability and channel morphology by reducing trailing impacts. 2. Improve cover/composition of willows. 3. Reduce hummocking in wetland 1967.	1. Cumulative width/depth ratio transects, bank alteration transects, and/or photo points. 2. Cover boards and/or photo points. 3. Photo points
Big Swamp Creek	South Branch Big Swamp Creek (1902, 1966, 1965) Big Swamp Creek Trib. (1997) Swamp Creek Wetland (1968)	1. Improve streambank stability and channel morphology by reducing trailing impacts. 2. Increase cover/composition of willows. 3. Reduce hummocking in wetland 1968.	1. Cumulative width/depth ratio transects, bank alteration transects, and photo points. 2. Cover Boards and/or photo points (both reaches). 3. Photo points
Mussigbrod	Bender Creek Trib. (1921)	1. Improve streambank stability and channel morphology by reducing trailing impacts. 2. Increase cover/composition of willows.	1. Cumulative width/depth ratio transects, bank alteration transects, and/or photopoints. 2. Cover boards and/or photo points.
North Fork Big Hole	North Fork Big Hole River (1923, 1909) North Fork Wet Meadow (1915) North Fork Wetland (1924)	1. Improve streambank stability and channel morphology.	1. Cumulative width/depth ratio transects and photo points,
Steel Creek	Steel Creek Trib. (1976)	1. Improve streambank stability and channel morphology. 2. Improve species composition along the greenline	1. Cumulative width/depth ratio transects and/or photopoints. 2. Greenline transect

Allotment Name	Stream and Reach Number	Objective	Monitoring Methodology
Warm Springs	Warm Springs Creek (1900) Woody Creek (1901) Warm Springs Wetland (1970)	1. Improve streambank stability and channel morphology of reaches 1900 and 1901.	1. Cumulative width/depth ratio transects, photo points, and bank alteration transects.
Swamp Creek Unavailable	North Swamp Wetland (1925)	1. Reduce hummocking in wetland 1925. 2. Improve cover/composition of willows.	1. Coverboard and/or Photo point(s)

Key Issue #2: Forest and Woodland Habitat

Objectives

- Improve and/or maintain the distribution of forested habitat in each seral stage (short term and long term) and Fire Regime Condition Class (FRCC) rating.
- Increase the diversity of aspen found in the Bartos and Campbell (1998) 3-class condition rating system.
- Reduce the Mountain Pine Beetle hazard rating in lodgepole pine stands.
- Protect existing ponderosa pine.
- Maintain security cover in big game fall and winter range along existing travel corridors.

Monitoring Activities to measure progress towards meeting Forest and Woodland Habitat 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 habitat type plants and any occurrence of insect/disease at the landscape-scale
- Inventory harvest units for northern goshawk and great gray owl to identify any nesting territories and determine nesting activity
- Prescribed Burn Units: Gather fuels data and establish vegetation transects and/or photo point(s) on representative sites. Photographic documentation should include pre and post-treatment photos from a designated point.
- If prescribed burns are conducted after May 15, migratory bird surveys will be completed prior to burning activities.
- Establish permanent plots for pre and post monitoring of aspen browse using the Browsed Plant Method for Young Quaking Aspen (USDA, 2004).

- Establish permanent plots for pre and post monitoring of aspen stands and responses to treatment using methods described in the Forest Health Protection Numbered Report 10-03, titled, “Damage Agents and Condition of Mature Aspen Stands in Montana and Northern Idaho,” April 2010.

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 stand to obtain the same data measurements described above and evaluate if the stand objectives were reached.
- Prescribed Burn Units:
 - Directly after treatment: Photo points and/or measurements along each pre-treatment transect to determine if treatment objectives have been attained.

Resource Concern #1: Sagebrush Steppe Habitat

Objectives

- Increase the ratio of sagebrush canopy to conifer canopy and FRCC acreages to more historic distribution.
- Maintain existing sagebrush habitat so that 75% or more of potential big sagebrush communities provide vegetative composition and structure for sagebrush obligate species.

Monitoring Activities to meet the objectives for Sagebrush Steppe Habitat:

- Continue existing upland trend studies (Daubenmires) within the UBHW, as applicable.
- Continue early detection, monitoring, and evaluation of noxious weeds treatments in cooperation Beaverhead County and other partners.

Table 2. Site Specific Objectives for Sagebrush Steppe Habitat

Allotment Name	Objective	Monitoring Methodologies
Foxtail Steel Creek Warm Springs	Maintain sagebrush canopy cover of 15–25% and adequate herbaceous understory average of 6 to 7 inches within site potential, on the majority of the area during nesting /early brood rearing (typically April through mid-June). Maintain brood rearing canopy cover of 15–25% sagebrush near riparian areas or wet meadows while maintaining or increasing composition available forbs (i.e. composites and legumes) in the wet meadows.	Line Intercept and Daubenmire plots to measure canopy cover of sagebrush and herbaceous understory.

Resource Concern #2: Special Status Species

Objectives

- Improve the functioning condition of Woody Creek, reach 1901, to PFC
- Restore Woody Creek to allapathic WCT stream
- Secure Woody Creek from non native salmonids
- Improve the functioning condition of North Fork Big Hole River, reaches 1909 and 1923, to PFC
- Maintain 15-25% sagebrush canopy and residual herbaceous cover for sage grouse nesting and brood rearing success.
- Maintain or increase the population trend of Lemhi beardtongue
- Maintain nesting territories for northern goshawk and great gray owls in timber harvest units

Monitoring will consist of:

- See riparian monitoring activities for Woody Creek, reach 1901 and North Fork Big Hole River, reaches 1909 and 1923.
- Inventory harvest units for northern goshawk and great gray owl to identify any nesting territories and determine nesting activity
- Inventory and mapping of the Lemhi beardtongue, Primrose monkeyflower, and Hikers gentian populations discovered on BLM in 2009. Inventory will consist of number of individual plants, description of the habitat, and an assessment of any existing and potential threats to the population.

Table 3. Site Specific Sensitive Plant Species Objectives

Allotment Name	Objective	Monitoring Methodologies
Steel Creek	Maintain or increase density, frequency, and cover of Lemhi beardtongue.	Baseline inventory and mapping Belt transect and/or Macro-plots Photo point(s)
Dry Creek	Maintain or increase density, frequency, and cover of Hikers gentian and Primrose monkeyflower.	Baseline inventory and mapping

Resource Concern #3: Resource Concern #3: Socioeconomics

Objective

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

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

Resource Concern #4: Travel Management

Objectives

- Implement the Dillon RMP Travel Management Plan.
- Maintain motorized wheeled vehicle access to those areas where it already exists, and pursue opportunities to improve access across private lands on a willing landowner basis where opportunities are currently limited.
- Reduce unauthorized (non-designated route travel) motor vehicle use and close new unauthorized roads and trails when they are discovered.
- Make minor adjustments to open roads to account for mapping errors that occurred during travel management planning and/or mitigate resource concerns.

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.

Types of Data Collected

The established permanent vegetative and physical trend transects in the UBHW were read and data was updated during 2009. However, in order to adequately measure progress towards site specific objectives and PFC, additional studies will be established in key areas during 2010 or 2011 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 2010. 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 and upland habitat types, patterns of use, and conditions of 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 made on 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 rangeland or 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 2019. If annual monitoring raises concerns about management changes, trend studies may be read sooner. The Upper Big Hole Watershed will be re-assessed or evaluated during 2019. In this process, all monitoring data will be summarized, analyzed, interpreted, and evaluated to measure progress toward meeting objectives. Trend data gathered in 2019 will be compared to baseline data (gathered in 2010) and existing trend data. 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 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 2019, 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://www.blm.gov/nstc/library/library.html>.

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 – Key Forage Plant Method, Grazed/Ungrazed Method, or Height/weight method.	Range, Wildlife, Fisheries, Forestry, 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		

Type	Method	Responsibility	Frequency
Compliance/ Utilization	Browse use – Extensive Browse Method, Browsed Plant Method for Young Aspen	Range, Wildlife and Forestry Staff	Annually, on a prioritized basis.
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.
Inventory	Inventory for BLM sensitive plants Lemhi beardtongue, Hikers gentian and Primrose monkeyflower.	Range Staff	Initial inventory to be completed by 2011, then at least every 5 years.
Trend (also see Table 3)	<p>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)</p> <p>Physical Cross section Rosgens Cumulative width/depth ratio</p>	Range, Wildlife or Fisheries Biologists, Hydrologists, Foresters, Fuels Specialists	By 2011 where additional studies are needed. Trend data (new and existing studies) will be gathered again in 2019. Under Alternative B Steel Creek tributary (1976) will be monitored after three seasons (2013) to determine if optional fence is needed.
Watershed Evaluation	Analysis, Interpretation, Evaluation and Recommendations	ID team	FY2019

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 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.