Appendix A

Rochester Basin and North Tobacco Root Watershed Monitoring Plan

Monitoring Plan for Rochester Basin & North Tobacco Roots 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 Rochester Basin & North Tobacco Roots Watershed (RNTW). This plan has been designed to measure progress towards site specific objectives developed by an ID team where resource concerns were identified during the Rochester Basin & North Tobacco Roots 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 three primary land health issues and three additional resource concerns identified during the Rochester Basin & North Tobacco Roots Watershed Assessment and through public scoping. Cultural Resources, a critical element, was also considered in the RNTW EA. 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 season. The goal is to make measurable (significant) progress towards site specific objectives and Proper Functioning Condition by 2018.

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

Objectives

- Restore deciduous woody habitat types (aspen, willow) in riparian areas that have been invaded by conifer trees.
- 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 to springs, seeps and wet meadows where concerns were documented.
- Reduce sediment loads where uses or conditions on public lands are causing increased sediment (eg. cattle loitering, road maintenance, etc).

- Maintain or enhance habitat for westslope cutthroat trout (WCT) in the following occupied streams within the watershed: Mill Creek and Wickham Creek
- Maintain or enhance habitat for cold water fisheries in occupied streams within the watershed.
- Maintain or improve conditions on riparian/wetland habitat that is in PFC

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.
- 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 with the objective of maintaining/improving hydrologic function and increasing riparian/wetland vegetation.

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

Allotment Name	Stream and Stream Reach	Objectives	Monitoring Methodology
Ironrod	Jefferson Trib. 1023	Increase cover and composition of sedges and willows along the greenline. Reduce noxious weeds.	Greenline and/or Photo point
	Blackman Gulch 1002	Increase sedges, reduce noxious weeds.	Greenline transect and/or Photo point
	Blackman Gulch 1025	Improve streambank stability and channel morphology. Increase sedges along the greenline.	Cumulative width/depth ratio, greenline and/or photo point
Kountz	Dixon Gulch	Increase cover of sedge and recruitment of aspen; decrease bare ground and soil compaction at spring source	Belt transect or coverboard to measure change in aspen and/or Photo points
	Gold Hill Gulch 1037	Improve streambank stability and channel morphology by reducing trailing impacts. Increase deciduous woody riparian vegetation and decrease bare ground and noxious weeds.	Cumulative width/depth ratio transect; Woody browse regeneration; Greenline transect and/or Photo points
Lower Rochester	Rochester Creek 1015	Improve streambank stability and channel morphology by reducing trailing impacts. Increase sedge and reduce noxious weeds.	Greenline and/or Photo points

Allotment Name	Stream and Stream Reach	Objectives	Monitoring Methodology
Mahogany Isolated Unallotted – London Hills	Jefferson River 1028 Jefferson River 1026	Increase riparian vegetation and reduce noxious weeds.	Photo points
Nelson Custodial	Little Camp Crk 1032	Maintain or improve sedge and willow composition and canopy cover.	Greenline and/or coverboard
Rochester Basin AMP	Rochester Creek 1005	Reduce noxious weeds.	Ocular observation
	Rochester Creek 1008	Improve streambank stability and channel morphology by reducing trailing impacts.	Photo points
	Rochester Cr trib 1013	Increase cover and composition of sedge and willow. Improve streambank stability and channel morphology by reducing trampling impacts.	Photo points
	Cottonwood Crk 1017	Increase cover and composition of sedge, willow and cottonwood. Improve streambank stability and channel morphology by reducing trailing impacts. Reduce noxious weeds.	Woody browse regeneration, Greenline, Cumulative width/depth ratio and/or Photo points

Issue #2: Upland Health, Sagebrush Steppe Habitat and Associated Species

Objectives:

- Increase cover and frequency of native perennial cool season herbaceous species where concerns were documented.
- 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 vegetation composition and structure to sustain sage grouse populations and other sagebrush obligate species such as antelope.
- Maintain 15-25% sagebrush canopy cover and herbaceous cover conducive to nest and brood rearing success surrounding leks, as applicable within site potential.
- Restore or maintain grassland and shrubland habitat types affected by conifer expansion.

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

- Continue existing upland trend studies (Daubenmires) within the RNTW and add new upland trend studies as shown below. (Rochester Basin AMP currently has only Photo points, Daubenmire or Quadrant Frequency trend transects will be added at some of these photo point locations)

- Maintain winter use big game utilization studies to continue monitoring the habitat quality and determine if management of these areas is providing the seasonal habitat requirements of existing populations (or population objectives) of big game.
- Coordinate with MTFWP to conduct big game winter use studies in the Allen Individual and northern portion (Hildreth Pasture) of the Lower Rochester Allotment.
- Monitor spruce budworm activity and watch for Douglas-fir bark beetle infestations in the forested habitat within the Third Creek, Nelson and Upper Rochester Allotments.

Table 2. Site Specific Upland Objectives

Allotment Name	Objectives	Monitoring Methodologies
Lower Rochester Rochester Basin AMP Waterloo	Increase frequency and cover of cool season perennial bunchgrasses to protect soil, allow for more efficient precipitation infiltration, provide cover and forage for wildlife species, and forage for authorized livestock.	- Daubenmire; - Quadrat (nested) Frequency - and/or photo points
Iron Rod - Blackman - Clipper - Beaver Springs Jackson Isolated	Maintain or improve frequency and cover of cool season perennial bunchgrasses to protect soil, allow for more efficient precipitation infiltration, provide cover and forage for wildlife species, and forage for authorized livestock.	- Daubenmire; - Quadrat (nested) Frequency - and/or photo points

Table 3. Site Specific Objectives for Sagebrush Habitat

Allotment Name	Objectives	Monitoring Methodologies
Rochester Basin AMP Upper Rochester	Maintain nesting canopy cover of 15–25% sagebrush on the majority of the area within two miles of leks. Maintain adequate herbaceous understory (average of 6 to 7 inches) on the majority of the area within two miles of leks 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 and maintaining available forbs in the wet meadows. Maintain or increase composition of highly nutritious forbs (ie composites and legumes) in nesting/early brood rearing habitat.	Habitat Characterization Monitoring; This methodology may combine telemetry study* (radio collar and tracking of hens to identify nesting and brood-rearing habitats) with Line Intercept and Daubenmire plots to measure canopy cover of sagebrush and herbaceous understory and composition of forbs. Forage utilization and herbaceous understory cover will be measured annually on a prioritized basis.

Issue #3: Noxious Weeds and Invasive Species

Objectives

- Reduce, contain, control and/or eradicate existing infestations of noxious weeds using Integrated Weed Management methods.
- Prevent new infestations of noxious weeds from getting established.
- Obtain and maintain an inventory of weed locations within the area to help develop priority control objectives and methods.
- Prevent or minimize the spread of cheatgrass.

Monitoring Activities to measure progress towards meeting Noxious and Invasive Species objectives are generally included in upland and riparian monitoring. In addition, specific treatment areas will be monitored or evaluated for site specific objectives through photo points, ocular observation, and/or vegetative transects (Daubenmire, nested frequency, quarter corner, line intercept) on the Waterloo, Mahogany Isolated, Lower Rochester Allotments, and at leafy spurge bio-control release sites within the Iron Rod and Kountz Allotments.

Resource Concern #1: Abandoned Mine Lands (AML)

Objectives

- Continue to inventory and assess abandoned mines on BLM lands.
- Conduct the appropriate closures, reclamation, or mitigation at each site as funding and staffing allow.
- Areas to review and address if necessary include, but are not limited to:
    - Rochester District
    - Silver Star District
    - Tidal Wave District
    - Renova District
    - Sand Hill District
    - Melrose District

Monitoring will consist of:

- Keeping a photo log of sites before and after work is conducted, and from each subsequent site inspection.
- Inspecting sites on a 1 to 5 year basis as needed to ensure disturbed areas are well revegetated, there are no weeds on the site, that additional subsidence or vandalism has not occurred, and that there are no issues with any impoundments containing mine wastes.

Resource Concern #2: Recreational Opportunities and Public Access

Objectives

- Implement the Dillon RMP Travel Management Plan. Close new unauthorized roads and trails when they are discovered. Rehabilitate as necessary to discourage future use and prevent weed spread.

- 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.
- Maintain opportunities for recreational 4WD use, big game hunting, fishing, wildlife viewing, horseback riding, and other backcountry recreation.
- 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 and hunting season compliance visits to monitor and enforce the travel management plan.

Resource Concern #3: Socioeconomics

Objective

- Continue to contribute to the local economy by providing an opportunity for sustainable uses on public land (primarily livestock grazing and hunting).

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

Critical Element: Cultural Resources

Objectives

- Preserve and protect significant cultural 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 resource in compliance with Section 106 of the National Historic Preservation Act.

Types of Data Collected

The established permanent vegetative and physical trend transects in the RNTW were read and data was updated during 2007 and 2008. However, in order to adequately measure progress towards site specific objectives and PFC in areas where management changes are implemented as a result of this EA, 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 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 2018 and the RNTW will be re-assessed or evaluated during 2018. If annual monitoring results raise concerns regarding current management practices or levels of use, trend studies may be read sooner and/or further management changes may be proposed prior to 2018. In the re-assessment process, all monitoring data will be summarized, analyzed, interpreted, and evaluated to measure progress toward meeting objectives. Trend data gathered in 2018 will be compared to baseline data (gathered in 2009) 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 2018, 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, in part, 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 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) Satellite Imagery (as applicable)	Range, Wildlife or Fisheries Biologists, Hydrologists, Foresters, Fuels Specialists	By 2010 where additional studies are needed. Trend data will be gathered again in **2018**
	Physical Cross section Rosgens Cumulative width/depth ratio		
Watershed Evaluation	Analysis, Interpretation, Evaluation and Recommendations	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.