

Land Health Evaluation Report
Virginia Creek Allotment
Bureau of Land Management
Butte Field Office

Introduction and Assessment Process

This report documents whether land health standards were achieved for the Virginia Creek Grazing Allotment administered by the Bureau of Land Management's Butte Field Office. Standards for Rangeland Health were evaluated utilizing an interdisciplinary team (ID team) of resource specialists.

Rangeland Health Standards for Western Montana are described in detail in the Record of Decision (ROD) issued for Standards for Rangeland Health and Guidelines for Livestock Grazing Management for Montana, North Dakota and South Dakota (August 1997). The preamble of the Western Montana Standards states: "The purpose of the S&Gs (Standards and Guidelines) are to facilitate the achievement and maintenance of healthy, properly functioning ecosystems within the historic and natural range of variability for long-term sustainable use." Standards are statements of physical and biological condition or degree of function required for healthy sustainable lands. Achieving or making significant progress towards these functions and conditions is required of all uses of public land as stated in 43 CFR 4180.1.

This report contains an evaluation of each of the five standards:

- Standard #1 Upland Health
- Standard #2 Riparian/Wetland Health
- Standard #3 Water Quality
- Standard #4 Air Quality
- Standard #5 Biodiversity

Available monitoring data from both upland and riparian sites, existing inventories, historical photographs and standardized methodology are used by an ID team to assess condition and function. Condition/function declarations regarding are expressed as:

- Proper Functioning Condition (PFC)
- Functioning at Risk (FAR), which is assigned a trend of up, down, static or not apparent
- Nonfunctioning (NF)

Standards are met when conditions are at PFC or FAR with an upward trend. This is dependent on scope and scale. The BLM will consider the information contained in this report, along with public scoping and other sources of information, to make a determination regarding causal factors and courses of action to be analyzed in a National Environmental Policy Act (NEPA) document.

General Allotment Summary

Allotment Name/Number:	07802
Current Management Category:	M (Maintain)
Location:	~ 7 miles NW of Canyon Creek, MT T. 13 N., R. 6 W, Secs. 4, 7-9, 17, and 18
Public Acres:	1,845 acres
Season of Use:	6/1 through 10/15
Public Animal Unit Months:	29 cattle; 131 Animal Unit Months (AUMs)
Assessment Date/Period:	7/16/2009; July/August

General Setting:

Vegetation and soils mapping of the area indicates that the Virginia Creek Allotment is comprised of two main soil complexes: the Tigeron very cobbly loam and the Tolex-Holter-Castner channery loams. The Tigeron complex is found on slopes ranging from 15-35%, and the parent material consists of colluviums derived from argillite. Characteristic vegetation supported by this complex consists of ponderosa pine (*Pinus ponderosa*) and Douglas fir (*Pseudotsuga menziessii*) in the overstory with pinegrass (*Calamagrostis rubescens*), elk sedge (*Carex garberi*), snowberry (*Symphoricarpos albus*), heartleaf arnica (*Arnica cordifolia*), and grouse whortleberry (*Vaccinium scoparium*) in the understory. Many of the ponderosa pine trees have been impacted by the mountain pine beetle and the Douglas fir trees have been impacted by the spruce budworm. A unique population of Scouler's willow (*Salix scouleriana*) was documented during the rangeland health assessment within this soil type.

The Tolex-Holter-Castner channery loam complex that comprises a large portion of the allotment supports predominantly perennial grass and forbs and fewer conifers than the Tigeron very cobbly loam. This soil complex is found on slopes ranging from 8-45%, and characteristic vegetation includes: rough fescue (*Festuca campestris*), Idaho fescue (*Festuca idahoensis*), bluebunch wheatgrass (*Pseudoroegneria spicata*), Columbia needlegrass (*Stipa columbiana*), several perennial forbs including lupine (*Lupinus spp.*) and blanket flower, (*Gaillardia spp.*), and smaller component of shrubs.

The allotment lies within the 15-19" precipitation zone, and average annual precipitation 1907 to 1971 is 10.88", and average annual precipitation from 1971 through 2000 is 12.89" (Western Regional Climate Center, 2009). Current precipitation data for the past 9 years is not available.

Two fish-bearing perennial streams flow through the allotment-Virginia Creek and Trout Creek. Trout Creek contains rainbow trout (*Oncorhynchus mykiss*) and brook trout (*Salvelinus fontinalis*). In addition to rainbow and brook trout, Virginia Creek also contains Westslope cutthroat trout (*Oncorhynchus clarki lewisi*) and brown trout (*Salmo trutta*). Historically, mining and logging occurred in various degrees on both streams. Both streams support a variety of herbaceous and woody riparian vegetation.

Allotment History:

The Virginia Creek Allotment was historically grazed by sheep until 1968, when the grazing permit was converted to yearling cattle. In 1999, the grazing permit was converted to cow/calf pairs, as it remains currently. Historically, natural fires played a role in maintaining an older age class of Douglas fir and ponderosa pine, and a more open tree canopy was maintained with more understory production that observed currently.

Summary of Standards Achieved						
--Yes, No, N/A (Not Applicable)--						
Allotment Name	Allot #	1. Upland	2. Riparian	3. Water Quality	4. Air Quality	5. Biodiversity
Virginia Creek	07802	No	No	No	Yes	No

Rangeland Health Standards Evaluation and Rationale

The issue of scope and scale must be kept in mind when evaluating each standard. It is recognized that isolated sites within a landscape may be Functioning at Risk (FAR) and not meeting the standards; however, considering broader scope and scale, the area may be deemed in Proper Functioning Condition (PFC). Likewise, isolated sites may be in PFC, but, overall, the resource within the allotment or area could be FAR and not meeting standards. Therefore, no single indicator provides sufficient information to determine rangeland health. Indicators are used in combination to provide information necessary to make rangeland health determinations.

Western Montana Standard #1
“Uplands are in Proper Functioning Condition”

Finding **Standard is not met.**

Rationale

In 2002, two daubenmire transects were established to monitor spotted knapweed (*Centaurea maculosa*) and cheatgrass (*Bromus tectorum*). A comparison of two years of data collection at both transects indicates that spotted knapweed is increasing at both sites in percent frequency, canopy cover, and composition. At study number VC-1, frequency of bluebunch wheatgrass and mountain brome has increased, however canopy cover and percent composition of both species have remained relatively similar between years. Rough fescue has also remained similar between years. At the second daubenmire trend study site (VC-2), cheatgrass has remained relatively static, while spotted knapweed and

bluebunch wheatgrass have increased in frequency, canopy cover, and composition.

Table 1: Daubenmire transect data from two transects of the Virginia Creek Allotment. Years highlighted in gray emphasize changes in percent frequency, canopy cover, or composition.

Study #	Year	Species	% Frequency	% Canopy Cover	% Composition
VC-1	2002	Spotted Knapweed	20	3	5
	2009	Spotted Knapweed	50	6	13
	2002	Bluebunch Wheatgrass	75	8	15
	2009	Bluebunch Wheatgrass	90	8	19
	2002	Mountain Brome	20	1	2
	2009	Mountain Brome	50	3	6
	2002	Rough Fescue	35	4	7
	2009	Rough Fescue	35	3	8
VC-2	2002	Cheatgrass	20	5	1
	2009	Cheatgrass	15	0	1
	2002	Spotted Knapweed	55	7.5	17
	2009	Spotted Knapweed	100	17	36
	2002	Bluebunch Wheatgrass	60	4.6	10
	2009	Bluebunch Wheatgrass	80	9	20
	2002	Mountain Brome	50	2.5	6
	2009	Mountain Brome	45	1	2

The area that the detailed rangeland health assessment was completed was rated as properly functioning, however Douglas fir encroachment was noted and a trace of knapweed was present on the site. The soil and site stability indicators suggested that the soils are intact, no waterflow patterns, gullies, pedestals or terracettes were present. Bareground was low due to the amount of surface rock, which helps stabilize the soil surface and prevent soil loss. Hydrologic function was also as expected, even though a slight departure was noted in the order of functional structural groups due to the extent of Douglas fir on the site. Overall, the biotic integrity of the site was also as expected. Annual production, plant mortality and decadence, reproductive capability of perennial plants, and litter amount were acceptable, although a trace of knapweed was noted on the site.

After examining other areas on the allotment, other factors of concern were the decadence of ponderosa pine and the amount and decadence of the Douglas fir that is shading/crowding out the Scouler's willow population, as well as adjacent aspen (*Populus tremuloides*) stands. Although the ponderosa pine trees were not cored for age, it appeared that the ponderosa pine and Scouler's willow evolved at the same time. The Douglas fir appeared to be much younger and evolved under a different disturbance

regime. The Scouler's willow population had only one representative age-class consisting of mature plants. Recruitment of the willow was not evident in any areas of the population. After mapping the extent of the decadent and mature Scouler's willow, the area occupies by the willow population was approximately 17 acres.

Although the area where the rangeland health assessment was completed was rated as properly functioning, other factors indicate that the uplands on the Virginia Creek Allotment are not properly functioning. The prevalence and amount of spotted knapweed detected at two trend monitoring location appears to be increasing, the population of Scouler's willow has been much reduced, and the decadence of the ponderosa pine and Douglas fir as a result of mountain pine beetle, spruce budworm, and altered fire regime indicate that uplands on the Virginia Creek Allotment are not properly functioning.

Western Montana Standard #2
“Riparian and Wetland Areas are in Proper Functioning Condition”

Finding **Standard is not met.**

Rationale

Virginia Creek and Trout Creek are the only perennial streams on the allotment. In 2001, Virginia Creek was rated as proper functioning, and the upper 0.20 miles of Trout Creek was rated functional at risk and the lower 0.30 miles of Trout Creek was rated as non-functioning. A new proper functioning condition assessment of Virginia Creek was not completed, and the ID team verified that the conditions documented in the 2001 rating were still present. Cattle use of the Virginia Creek is also very limited.

The lotic proper functioning stream assessment completed by the ID team in July indicated that the upper portion of Trout Creek is in proper functioning condition and received limited use by cattle. A drift fence that combines this portion of the stream with adjoining Forest Service lands serves as a barrier for the majority of ungulate utilization. The streambanks are stable, and the diversity of woody and herbaceous riparian vegetation is excellent, as well as diverse age-class.

The lower portion of Trout Creek has improved from the 2001 non-functional rating, to functional at risk. However the ID team determined that the trend is downward due to the bank instability and trampling that continues to occur, which is affecting channel morphology. Evidence of bed-load movement and side channels was prevalent throughout this section of Trout Creek, which is not expected for the type of channel. Very little desirable herbaceous or woody riparian vegetation is present along this portion of the reach. The most prominent herbaceous species is Kentucky bluegrass. A few decadent cottonwoods remain, but no regeneration is occurring. Mesic shrubs such as rose and currant are more common than more desirable willow species and other desirable riparian species that are present in the upper portion of the reach. Stubble height along the greenline was also very low in this portion of the reach.

Although only 0.20 miles out of the 0.85 miles of stream on the Virginia Creek Allotment are not in proper functioning condition, the ID team concluded that the riparian and wetland standard was not being met due to the condition of the lower portion of Trout Creek and the presence of hounds tongue and thistle throughout the entire stream length.

Western Montana Standard #3:
“Water Quality Meets State Standards.”

Finding **Standard is not met.**

Rationale

No data was quantitative data was collected for water quality during the assessment, however Virginia Creek is listed on the State Department of Environmental Quality 303d list indicating that the water in the creek is impaired and unable to support the beneficial uses. Water quality in Virginia Creek is impaired due to the amount of lead and zinc in the stream resulting from historic placer mining. The point source has not been identified, because the Total Maximum Daily Load (TMDL) assessment has not been completed for the area. Virginia Creek does not meet state water quality standards, and therefore the allotment does not meet the BLM water quality standard.

Western Montana Standard #4
“Air Quality Meets State Air Quality Standards.”

Finding **Standard is met.**

Rationale

Although no quantitative data was collected, visual parameters were assessed during the rangeland health assessment. Vegetation was not dust covered in any areas of the allotment, nor was any impairment of visibility noticeable; therefore the air quality standard is being met.

Western Montana Standard #5
“Provide habitat as necessary, to maintain a viable and diverse population of native plant and animal species, including special status species.”

Finding **Standard is not met.**

Rationale

The following indicators were used to assess whether existing habitat conditions are at a condition to support viable and diverse populations of native plant and animal species, including special status species.

- Plants and animals are diverse, vigorous, and reproducing satisfactorily
- Noxious weeds are absent or insignificant in the overall plant community.
- Spatial distribution of species is suitable to ensure reproductive capability and recovery.
- A variety of age classes is present.
- Connectivity of habitat or presence of corridors prevents habitat fragmentation.
- Diversity of species (including plants, animals, insects, and microbes) are represented.
- Plant communities in a variety of successional stages are represented across the landscape.

The upland Scouler's willow and aspen stand has been heavily browsed and shading from increased densities of Douglas fir not expected on the site. Only mature and decadent willows remain, and the aspen stand is being suppressed by extensive shading. The fir trees are currently being impacted by spruce budworm, and the ponderosa pine trees are being impacted by the mountain pine beetle. The upland reduced upland willow and aspen provide critical habitat for a variety of wildlife species, including migratory birds and several mammals.

The allotment does provide a diverse habitat, with open meadows on the ridge top, riparian areas, and forested habitats. While the majority of the riparian habitat is in proper functioning condition, the lower portion of Trout Creek is functional at risk with a downward trend. In this area of Trout Creek, the quality of the habitat for wildlife is much lower than expected due to the loss of desirable woody and herbaceous plant species important for forage, nesting, and cover. Trout Creek is a tributary to Virginia Creek, which contains Westslope cutthroat trout. Noxious weeds were present along the entire length of Trout Creek on BLM, and knapweed is increasing on the allotment.

No BLM sensitive plant species were observed during the assessment, nor have any sensitive plant populations been previously identified or documented. Sensitive wildlife species that likely occur in the area include boreal toads (*Bufo boreas*), Westslope cutthroat trout, multiple species of bats, three-toed woodpecker (*Picoides tridactylus*), and northern goshawk (*Accipiter gentiles*).

While the allotment continues to support wildlife and fisheries habitat, the amount and prevalence of spotted knapweed, increased density of Douglas fir, the decline of aspen, the near loss of the upland willow population, and downward trend of the lower portion of Trout Creek, the ID team has concluded that the forested, upland, and riparian habitat is not providing the quality of habitat expected for the allotment.

Preliminary Identification of Causal Factors and Recommendations

Based on the field review and observations, it appears the following factors may be contributing to land health standards not being achieved:

- Increased density of Douglas fir overall and subsequent spruce budworm infestation due to altered disturbance regimes
- Loss of the upland Scouler's willow population and reduction of aspen in the same area, resulting from expansion of Douglas fir and browsing
- Mountain pine beetles impacting the ponderosa pine
- Increasing amounts of knapweed at trend study locations, as well as a trace found in the evaluation area, noxious weeds along the length of Trout Creek transported by wildlife and domestic livestock
- The lower portion of Trout Creek is functional at risk with a downward trend, primarily due to the timing of livestock grazing/trampling along streambanks
- Historic placer mining in and upstream of Virginia Creek that have caused elevated levels of lead and zinc, which are outside the control of current management

Final determinations will be made upon assessment of further information. It should be noted that if changing current management or use will not result in progress toward meeting the standards, then the current management or use should not be considered a significant causal factor.

The following actions may be necessary in order to make significant progress in achieving the Western Montana Standards for Rangeland Health:

- Altering the grazing season or building a drift fence to improve the lower portion of Trout Creek
- More intensely spraying noxious weed infestations along Trout Creek and in the uplands near trend study sites
- At minimum, thin Douglas fir within the boundaries of the Scouler's willow and alter the grazing season to reduce cattle browsing on the willow population after treatments, thinning of Douglas fir in this area would also promote aspen
Thinning Douglas fir in other areas on the allotment would promote the ponderosa pine open parkland that likely existed ~60 years ago
- Continuing to assist the Montana DEQ with future TMDL planning on Virginia Creek and Trout Creek to determine point sources for lead and zinc contamination

How This Information Will Be Used

If the information in this Evaluation Report indicates that the allotment meets the Western Montana Standards for Rangeland Health, BLM will issue grazing decision(s) (subject to protest and appeal) to renew or issue associated grazing authorizations as necessary, with the appropriate level of NEPA documentation and public involvement in

accordance with CEQ guidance and BLM direction. No additional final determinations are necessary.

For allotments not meeting the Western Montana Standards for Rangeland Health, BLM will use the information in this Evaluation Report along with any other relevant data or information, including input from interested parties, to make a final determination whether or not current grazing management or levels of use are a significant causal factor in not meeting rangeland health standards on the allotment. If current grazing management and/or levels of use appear to be a significant causal factor, BLM will use the NEPA process to document the affected environment and develop alternatives to propose changes to grazing management to facilitate achieving rangeland health standards. These changes or actions will be addressed with an appropriate level of NEPA documentation and public involvement in accordance with CEQ guidance and BLM direction. A Final Determination Document will be prepared in concert with the NEPA analysis and associated decision(s). Pursuant to 43 CFR 4180.2(c), the Authorized Officer shall take appropriate action as soon as practicable, but not later than the start of the next grazing year upon determining that existing grazing management practices or levels of grazing use on public lands are significant factors in failing to achieve the standards. Any grazing decisions, however, are subject to protest and appeal.

If current grazing management or levels of use do not appear to be a significant causal factor, changes or activities in other program areas or activities that appear to be significant causal factors may or may not be undertaken through a NEPA process, dependent on program and office priorities. However, a Final Determination Document will be prepared to document and outline the significant causal factors.

Involvement of Permittees, State Agencies and Interested Publics

The following groups/individuals were notified of the Virginia Creek Allotment Assessment:

Chevalier Ranch, grazing permittee

Western Watersheds Project

Helena National Forest
Helena Ranger District

Montana Fish, Wildlife, and Parks
Helena Area Resource Office

MT Department of Natural Resources & Conservation
Conservation & Resource Development Division

BLM Staff Participants

The following BLM staff participated in the preparation of this report:

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