

Standards for Healthy Rangelands and Guidelines for Livestock Grazing Management

for

**Public Lands Administered by the Bureau
of Land Management in the State of
Wyoming**

Lake Ridge Allotment #01511

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BLM

Worldland Field Office, Wind River/Bighorn Basin District, Wyoming



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TABLE OF CONTENTS

1.0 INTRODUCTION	4
1.1 STANDARDS	4
2.0 AFFECTED ENVIRONMENT-ALLOTMENT DESCRIPTION, RESOURCE VALUES, AND USES.....	5
2.1 LOCATION AND LAND OWNERSHIP	5
2.2 HYDROLOGY	5
2.3 AIR QUALITY/CLIMATE	5
2.4 SOILS	6
2.5 VEGETATION.....	6
2.6 INVASIVE SPECIES.....	7
2.7 RANGE	7
2.8 WILDLIFE.....	7
2.9 THREATENED OR ENDANGERED SPECIES	7
2.9.1 <i>Threatened, Endangered, Candidate, and BLM Sensitive -- Plant Species</i>	7
2.9.2 <i>Threatened, Endangered, Candidate, and BLM Sensitive – Wildlife Species</i>	7
3.0 SUMMARY OF MONITORING DATA/ASSESSMENTS	8
3.1 RANGE	8
3.2 HYDROLOGY	9
3.3 SOIL AND SITE STABILITY	9
4.0 CONCLUSIONS.....	11
4.1 STANDARD 1	11
4.2 STANDARD 2	11
4.3 STANDARD 3	11
4.4 STANDARD 4.....	12
4.5 STANDARD 5.....	13
4.6 STANDARD 6.....	14

TABLES, MAPS, FIGURES

TABLE 1: WATERSHED AREA.....	5
TABLE 2. RANGELAND HEALTH SUMMARY	9
MAP 1: ALLOTMENT MAP WITH TRANSECT/ASSESSMENT LOCATION.....	1
MAP 2: SOILS AND ECOLOGICAL SITES	2
MAP 3: WATERSHED MAP	3
MAP 4: WILDLIFE HABITAT	4
ONSITE PHOTOS	5
PHOTO 1. GENERAL VIEW OF COVER TRANSECT	5
PHOTO 2. CLOSE UP AT THE 50’ MARK ON COVER TRANSECT	5
PHOTO 3. SAGE-GROUSE HABITAT ASSESSMENT KEY AREA	6
PHOTO 4. TREND PHOTOPOINT 1990.....	6
PHOTO 5. TREND PHOTOPOINT 2000.....	7
PHOTO 6. TREND PHOTOPOINT 2010.....	7

1.0 INTRODUCTION

The Bureau of Land Management (BLM) grazing regulations at 43 CFR 4130.3-1(c) require that grazing permits issued by the BLM contain terms and conditions that ensure conformance with BLM regulations at 43 CFR 4180, which are the regulations under which the Standards for Healthy Rangelands and Guidelines for Livestock Grazing Management for Public Land Administered by the Bureau of Land Management in the State of Wyoming were developed. Recently, the Worland Field Office completed an assessment of the achievement of these standards on the Lake Ridge Allotment. The results of this assessment are presented in this report. This assessment will serve to inform the BLM's determination as to whether these standards are being met, and, if they are not met, whether existing grazing management practices contribute to their lack of attainment.

1.1 Standards

The approved standards for rangeland health are as follows:

- Standard #1: Within the potential of the ecological site (soil type, landform, climate, and geology), soils are stable and allow for water infiltration to provide for optimal plant growth and minimal surface runoff.
- Standard #2: Riparian and wetland vegetation has structural, age and species diversity characteristic of the state of channel succession and is resilient and capable of recovering from natural and human disturbance in order to provide forage and cover, capture sediment, dissipate energy, and provide ground water recharge.
- Standard #3: Upland vegetation on ecological site consists of plant communities appropriate to the site which are resilient, diverse, and able to recover from natural and human disturbance.
- Standard #4: Rangelands are capable of sustaining viable populations and a diversity of native plant and animal species appropriate to the habitat. Habitats that support or could support threatened species, endangered species, species of special concern, or sensitive species will be maintained or enhanced.
- Standard #5: Water quality meets State standards.
- Standard #6: Air quality meets State standards

2.0 Affected Environment-Allotment Description, Resource Values, and Uses

2.1 Location and Land Ownership

The Lake Ridge Allotment #01511 is located in T53N and R90W and R89W, which is approximately 6.5 miles east of Shell, WY in Big Horn County. The allotment consists of approximately 2,021 acres with 634 public acres and 1,378 acres of private lands. This is a high mountain allotment with elevations ranging from 6,800 to 8,400 above sea level. There is no legal, public access to the allotment.

2.2 Hydrology

The Lake Ridge allotment is located on the west slopes of the Big Horn Mountains. The watersheds in the basin are mapped as USGS Level #6 watersheds that are also identified by name and Hydrologic Units Code or (HUC). The entire allotment (2.99 square miles) is within the White Creek watershed HUC# 100800100105 with several drainages that flow in a southwestern direction through the allotment where they confluence with White Creek that is located south of the allotment (Map #3). The allotment is located in the middle of the watershed and contains 9.6 percent of the total watershed area of White Creek (Table #1). The area has high amounts of Paleozoic limestone outcrops that are considered important groundwater recharge areas due to the high permeability of limestone and dolostone solution cavities. The effective precipitation amount at higher elevations in the basin is greater than evaporation and transpiration and therefore is considered a recharge area. The allotment has thin soils with bedrock underneath that creates slightly higher amounts of runoff during precipitation events.

Table 1: Watershed Area

Watershed (HUC) Level #6	mi ²	mi ² Within Allotment	% of Acres of Watershed in the Allotment
White Creek - 100800080305	31.1	2.99	9.6

According to the US Fish and Wildlife service wetlands geospatial coverage there is a total of 8.53 acres of mapped freshwater emergent wetlands and ponds in the allotment with the majority 7.9 acres on private land and 0.63 acres on public land on a small parcel in the northwest corner of section 30 of Township 53N Range 89W. These primarily occur as spring outcrops at the bases of drainages with riparian vegetation and small ponds that have been developed and are used for livestock water.

2.3 Air Quality/Climate

An air quality monitoring station was recently established in the Bighorn Basin, but no monitoring data is available at this time.

Annual precipitation ranges from 15-19 inches per year. June is generally the wettest month. July, August, and September are somewhat less with daily amounts rarely exceeding one inch.

Because of the varied topography, the wind will vary considerably for different parts of the area. The wind is usually much lighter at the lower elevations and in the valleys as compared with the higher terrain. The average winter wind velocity is 8.5 mph while the summer wind velocity averages 7.5 mph. Winds during storms and on ridges exceed 45 mph.

Growth of native cool-season plants begins about May 1 to May 15 and continues to about October 10.

The following information is from the “Crandall Creek” climate station, at the lower end of this precipitation zone:

	Minimum	Maximum	5 yrs. out of 10 between
Frost-free period (days):	16	80	July 8 – August 20
Freeze-free period (days):	37	120	June 17 – September 5
Mean Annual Precipitation (inches):	10.24	21.23	
Mean annual precipitation:	14.90 inches		
Mean annual air temperature:	38.16°F (21.88°F Avg. Min. to 54.66°F Avg. Max.)		

For detailed information visit the Natural Resources Conservation Service (NRCS) National Water and Climate Center at <http://www.wcc.nrcs.usda.gov/> website. There are no other climate station(s) known to be representative of this precipitation zone. (United States Department of Agriculture (USDA) NRCS Technical Guide Section IIE Rev. 08/12/05).

2.4 Soils

The soils reflect the mountain environment in which they formed. They are highly variable, reflecting differences in parent material (limestone, siltstone and/or mixed alluvium), position on the landscape, slope and aspect. Soil depth ranges from a few inches to 40 inches. These soils typically have a brown surface layer. Surface textures are loams, gravelly loams and cobbly loams. The subsoil commonly reflects an increase in calcium carbonate, being expressed calcic horizons. The deeper soils also reflect an increase in clay content, being expressed as an argillic horizon. Slopes range from 0 to 40 percent.

Based on the soil survey data for Bighorn County, the dominant ecological sites are listed below:

Loamy 15-19 in. pz.	R043BY322WY
Shallow Loamy 15-19 in. pz.	R043BY362WY
Very Shallow 15-19 in. pz.	R043BY376WY
Woodland	Mixed Conifer - No Ecological Site Assigned

One (1) rangeland health assessments was conducted as part of this investigation in Map Unit 806 Starly-Starman Complex. The soils at this location are a similar to the Starly soil series, though they lack a strongly effervescent B horizon. These soils support a Shallow Loamy 15-19 in. pz. Ecological Site.

Refer to the Map 2 - Soil and Ecological Sites that follows this discussion.

2.5 Vegetation

The Lake Ridge Allotment lies in a 15 to 19 inch precipitation zone. There are no BLM rain gauges close to the allotment. The growth of native cool season plants in the allotment begins about May 1 to May 15 and continues to about October 10.

The uplands consist of Loamy, Shallow Loamy, Very Shallow, Woodlands, and Rock Outcrop range sites. Native plant communities within the allotment are dominated by mid cool-season perennial grasses, black (*Artemisia nova*) and big sagebrush (*Artemisia tridentate*), antelope bitterbrush (*Purshia tridentate*), and a variety of forbs. On areas along the west slope of the Big Horn Mountains, mountain mahogany (*Cercocarpus ledifolius*) is the significant shrub.

The 1984 vegetation inventory classified range sites within the allotment as 640.3 acres of Loamy, 185.5 acres of Shallow Loamy, 576 acres of Very Shallow, 407 acres of Woodland, 173 acres of Rock Outcrop, and 38.1 acres of Unclassified range sites. Vegetation observed on shallow loamy range sites in 1984 included Idaho fescue (*Festuca idahoensis*), kingspike fescue (*Leucopoa kingie*), Columbia needlegrass (*Achnatherum nelsonii*), prairie Junegrass (*Koeleria macrantha*), western wheatgrass (*Pascopyrum smithii*), bluebunch wheatgrass (*Pseudoroegneria spicata*), Sandberg bluegrass (*Poa secunda*), phlox (*Phlox multiflora*), oxytropis (*Oxytropis spp*), ragweed (*Ambrosia artemisiifolia*), onion (*Allium textile*), threadleaf sedge (*Carex filifolia*), pussytoes (*Antennaria rosea*), chickweed (*Stellaria media*),

arrowleaf balsamroot (*Balsamorhiza sagittata*), stemless goldenweed (*Stenotus acaulis*), curlycup gumweed (*Grindelia squarrosa*), death camas (*Zigadenus elegans*), groundsel (*Senecio vulgaris*), fleabane (*Erigeron spp*), buckwheat (*Eriogonum spp*), sagebrush, juniper (*Juniperus communis*), potentilla (*Potentilla spp*), western snowberry (*Symphoricarpos occidentalis*), limber pine (*Pinus flexilis*), douglas fir (*Pseudotsuga menziesii*), and mountain mahogany.

2.6 Invasive Species

There are no noxious weeds known to exist in the allotment on BLM-managed lands, but a few Canada thistle plants were observed along the road through a privately-owned portion.

2.7 Range

The Lake Ridge Allotment is authorized for use by cattle. Water sources within the allotment consist of 8.53 acres of mapped freshwater emergent wetlands and ponds in the allotment with the majority 7.9 acres on private land and 0.63 acres on public land on a small parcel in the northwest corner of section 30 of Township 53N Range 89W. The allotment boundary of this allotment does not include White Creek, Dry White Creek, and Bear Gulch drainages, which are fenced keeping cattle out of the drainages. The allotment is categorized as an “I1” (Improve) in the Washakie RMP. The present permittee uses yearling cattle in the allotment instead of cow/calf pairs but a yearling conversion is not applied to this grazing use.

Livestock are authorized on the allotment as follows:

Lake Ridge #01511 275 Cattle 06/15 to 07/31 37% Public Land 157 AUMs

Terms and Conditions:

Permitted Use (AUMs): 157 Active 0 Suspended 157 Total

2.8 Wildlife

This allotment provides habitat for several big game species, as well as many other non-game and special status wildlife species, during all seasons of the year. The allotment is characterized as predominantly rolling mountain sagebrush uplands bounded by significant timbered canyons. These canyons and associated draws are primarily Douglas fir, with some scattered juniper, limber pine, and fir encroaching on the sagebrush communities. Throughout the year smaller numbers of resident elk and mule deer use the allotment, but from late fall through early spring the majority of this allotment provides winter range for larger herds. The entire allotment is mapped as crucial winter range for mule deer, and general winter range for elk. Significant numbers of mule deer will use the area as transition range in the spring and again in late fall during the rut as well. Moose occurrence in the allotment is rare. Some wintering sign has been observed, evidently browsing on young Douglas fir.

2.9 Threatened or Endangered Species

2.9.1 Threatened, Endangered, Candidate, and BLM Sensitive -- Plant Species

No threatened and endangered or sensitive plant species have been found in the Lake Ridge Allotment.

2.9.2 Threatened, Endangered, Candidate, and BLM Sensitive – Wildlife Species

The fairly continuous patches of rolling sagebrush habitat, particularly the larger patches in the western portion of the allotment likely provide some nesting and early brood rearing habitat, as well as possibly some wintering habitat, for sage-grouse, as well as breeding, nesting and foraging habitat for other sagebrush obligate bird species like the sage thrasher, sage, Brewer’s,

Baird's and vesper sparrow and loggerhead shrike. These habitats comprise about 50% of the allotment. No sage-grouse leks have been identified in this Allotment, but a lek has been documented, and monitored for years, on the neighboring allotment to the southwest, (see map).

3.0 Summary of Monitoring Data/Assessments

3.1 Range

There are no established key areas in the allotment.

1990 – Allotment Inspection and Allotment Supervision

An allotment inspection and supervision was performed on August 22, 1990. The allotment inspection documented a variety of grasses, forbs, and woody shrubs within the allotment but did not indicate abundance. Vegetation observed included western wheatgrass, slender wheatgrass, California brome, orchardgrass, Idaho fescue, basin wildrye, foxtail muhly, mountain timothy, canby bluegrass, false dandelion, yarrow, little larkspur, sagebrush, limber pine, lodgepole pine, and douglas fir.

A trend photopoint was established in T53N, R89W, Sec. 30 NW.

1995 –Use Pattern Mapping

A use pattern map was completed on August 3, 1995. West half and around water sources use was determined to be heavy (61-80%) and the on the rest of the allotment use was moderate (41-60%).

2000 – LIM (Low Intensity Monitoring)

On September 14, 1990 photos were retaken at the established photopoint. No other information was collected.

2010 – Allotment Inspection and LIM

On July 23, 2010 an allotment inspection was completed. The trend photopoint was located and plant species observed included Idaho fescue, green needlegrass, California brome, prairie junegrass, Sandberg bluegrass, bluebunch wheatgrass, Basin wildrye, needle-and-thread, phlox, seago lily, Indian paintbrush, and sagebrush. The grasses were still green and were putting up seedheads.

On August 25, 2010 photos were retaken at the established photopoint. Plant species observed in addition to those on July 23rd included bluebells, kingspike fescue, western wheatgrass, and astragalus. Vegetative parts on the grasses were beginning to turn brown.

2010 – Rangeland Health Assessment and Cover Transect

A Rangeland Health Assessment was completed for the public land portion of the allotment on August 25, 2010 using the *“Interpreting Indicators of Rangeland Health”*, Technical Reference 1734-6, Version 4. A transect was conducted on a Shallow Loamy 15 to 19 inch precipitation range site. The site was selected because it is accessible to cattle and it was at the established monitoring photopoint. Individual ratings for each indicator are displayed in the table on the following page.

Table 2. Rangeland Health Summary

Indicator	Departure from Reference
1. Rills	<i>None to Slight</i>
2. Water Flow Patterns	<i>Slight to Moderate*</i>
3. Pedestals and/or Terracettes	<i>Slight to Moderate*</i>
4. Bare Ground <u>12</u> %	<i>None to Slight</i>
5. Gullies	<i>None to Slight</i>
6. Wind- Scoured, Blowouts, and /or Deposition Areas	<i>None to Slight</i>
7. Litter Movement	<i>None to Slight</i>
8. Soil Surface Resistance to Erosion	<i>None to Slight</i>
9. Soil Surface Loss or Degradation	<i>None to Slight</i>
10. Plant Community Composition and Distribution Relative to Infiltration	<i>None to Slight</i>
11. Compaction Layer	<i>None to Slight</i>
12. Functional/Structural Groups	<i>None to Slight</i>
13. Plant Mortality/Decadence	<i>None to Slight</i>
14. Litter Amount	<i>None to Slight</i>
15. Annual Production	<i>None to Slight</i>
16. Invasive Plants	<i>None to Slight</i>
17. Reproductive Capability of Perennial Plants	<i>None to Slight</i>

*Comments: Water flow patterns were observed around rock outcrops and some bunchgrasses. Pedestalling was observed around some bunchgrasses (1”) and sagebrush but this was noted as healing.

A cover transect was completed and litter cover was determined to be 32%, bare ground was 12%, rock and stone cover was 7%, and vegetative cover was 49%.

A canopy cover transect was also completed on a loamy 15-19 inch pz. range site in the same allotment. The canopy cover of sagebrush was determined to be 20% with an average height of 13 inches. Age classes of the sagebrush along the transect was determined to be 64% mature, 17% decadent, 19% dead, and 0% young.

3.2 Hydrology

During the field visit to the assessment site for rangeland health, the hydrologic indicators noted none to slight departure for the presence of rills, bare ground, gullies, and plant community and composition relative to runoff. There was evidence of water flow patterns that were observed around rock outcrops and bunch grasses, this is due to a lack of infiltration and accelerated runoff where rock outcrops naturally occur. The amount of bare ground (12%) is within acceptable limits for healthy rangelands and provides for sufficient vegetative and litter cover to provide for proper infiltration of moisture and minimize surface runoff on the allotment. The riparian areas on private land were not considered for this evaluation, however the 0.63 acres of wetland on public land was not considered for this evaluation due to limited access.

3.3 Soil and Site Stability

As part of this investigation, one (1) rangeland health determination was conducted on August 25, 2010. Standard 1 for Healthy Rangelands was evaluated based on the attribute ratings for *Soil and Site Stability*

and *Hydrologic Function* using rangeland health indicators 1 through 11 and 14. Field observations were compared to the Reference Sheet for the Shallow Loamy 15-19" pz. (R032XY362WY) ecological site dated 5/1/2008 to determine departure from normal.

No rills were observed. Waterflow patterns approximately 6 to 8 feet long were only observed adjacent to rock outcrop areas where water flow is concentrated. The bunch grasses are sitting on low (<1 inch) pedestals. There are no terracettes. Transect data determined bare ground to be 12 percent. Some bare areas are closely associated with rock outcrop where they are 5 to 10 feet in diameter. The amount of bare ground is constant with the reference sheet which ranges bare ground between 0 and 30 percent. Litter cover was determined to be 32 percent; the reference sheet describes litter cover as being between 15 and 20 percent of the total canopy measurement. No gullies were observed. No wind-scour or blow-out areas were observed. Litter movement is present only in waterflow patterns resulting from concentrated flow from rock outcrop; this is not considered to be a departure from normal. The soil stability index (SSI), an indicator of soil surface resistance to erosion is 4.8; this is consistent with the reference sheet which states that SSI should average 3.5. The soil is stable and is able to withstand the forces of rain drop impact and overland flow. The presence of a 10 inch deep mollic epipedon extending to the bedrock indicates that there has been little historic soil loss. The plant composition and distribution is allowing for infiltration with minimal runoff. No soil compaction was observed.

4.0 Conclusions

This section draws conclusions and makes determinations regarding:

- A. Progress towards or attainment of the standards for rangeland health, and
- B. Whether livestock management is in conformance with the guidelines, and
- C. Whether existing grazing management or levels of grazing use are significant factors in failing to achieve the standards or conform to the guidelines.

4.1 Standard 1

Within the potential of the ecological site (soil type, landform, climate, and geology), soils are stable and allow for water infiltration to provide for optimal plant growth and minimal surface runoff. MET

Rationale:

The attribute ratings for *Soil and Site Stability* and *Hydrologic Function* were rated as “Slight to Moderate”. The soil surface is stable and does not readily slake or disperse in water. Vegetative and litter cover are adequate to protect the soil from rain drop impact and the erosive forces of overland flow. The presence of erosion indicators, primarily waterflow patterns and short pedestals represent a slight departure from that described in the Reference Sheet for the Shallow Loamy 15-19 in. pz. ecological site; based on the reference sheet waterflow patterns should be “rare to nonexistent” and pedestals should be “barely observable”. No gullies were observed. A shallow soil pit gives no indication of historic soil loss. This same excavation did not reveal evidence of soil compaction.

4.2 Standard 2

Riparian and wetland vegetation has structural, age and species diversity characteristic of the state of channel succession and is resilient and capable of recovering from natural and human disturbance in order to provide forage and cover, capture sediment, dissipate energy, and provide ground water recharge. MET

Rationale:

There is a total of 8.53 acres of wetlands with 7.9 acres on private land and 0.63 acres that are located on public land in the allotment. These are natural spring areas that are small freshwater ponds with springs that feed the ponds located below the spring outcrops. The majorities of the wetland areas are considered natural emergent wetlands and have the characteristics to function properly. There was no specific monitoring done on the isolated wetland parcel on public land due to time constraints and limited access. The area does however meet the upland hydrologic indicator standards and with proper distribution and prescribed livestock use along and numerous watering sources the allotment. The wetland would likely be providing for the functions as outlined in the definition of standard 2 above. The downstream sections of White Creek outside of the allotment are in proper functioning condition.

4.3 Standard 3

Upland vegetation on ecological site consists of plant communities appropriate to the site which are resilient, diverse, and able to recover from natural and human disturbance. MET

Rationale: The attribute rating for Biotic Integrity was rated as “None to Slight”. This determination was made using rangeland health indicators 8, 9, and 11 through 17.

This allotment is located in the 15 to 19 inch precipitation zone. The expected vegetative composition and diversity expected for this site was present. Vegetation for this allotment is dominated by cool season perennial grasses, such as Idaho fescue, kingspike fescue, bluebunch wheatgrass, green needlegrass, and Columbia needlegrass, perennial forbs such as phlox, bluebells, Indian paintbrush, and seago lily, and perennial shrubs including sagebrush.

According to the ecological site descriptions developed by the Natural Resources Conservation Service, this site has the perennial grasses and forbs expected for the Bluebunch Wheatgrass/Mixed Shrub Plant Community. The site description states when compared to the Historical Climax Plant Community, big and black sagebrushes or mountain mahogany, rhizomatous wheatgrasses, and bluegrasses have increased. Columbia needlegrass and spikefescue have decreased, often occurring only where protected from grazing by the sagebrush canopy. Some weedy species such as cheatgrass may have invaded the site but are in small patches. In this case Idaho fescue was the dominant grass species. Other grass species observed were growing in the interspaces as well as underneath the sagebrush canopy. Other than a few Canada thistle plants observed along the road on the way to this site, no other invasive species were observed.

The site description goes on to state that the dominant grasses include bluebunch wheatgrass, Idaho fescue, rhizomatous wheatgrass, prairie junegrass, and less frequency Columbia needlegrass and spike fescue. Grasses of secondary importance include Lettermans needlegrass, slender wheatgrass, bluegrasses, needle-and-thread, and spike trisetum. Forbs commonly found in this plant community include asters, phlox, buckwheat, pussytoes, lupine, paintbrush, agoseris, and larkspurs. Sagebrush and bitterbrush make up from 15% to 20% of the total annual production. On areas along the west slope of the Big Horn Mountains, mountain mahogany is the dominant shrub on this site. This description fits well with the composition observed at the transect site except that sagebrush was the dominant shrub species. A canopy cover transect on a loamy 15-19 pz range site within the same allotment determined the canopy cover of sagebrush to be 20 percent with an average height of 13 inches. Bitterbrush is not known to be common in this area and mountain mahogany was noted in the 1984 vegetation inventory but not necessarily documented at our transect location.

The site description further states this plant community is resistant to change. The herbaceous species present are well adapted to grazing. The herbaceous component is intact and plant vigor and replacement capabilities are sufficient. Water flow patterns and litter movement may be occurring but only on steeper slopes and around rock outcrops. Incidence of pedestalling is minimal. Soils are mostly stable and the surface shows minimal surface loss. The watershed is functioning and the biotic community is intact.

This community is stable and well adapted to the Central Rocky Mountain climatic conditions. The diversity in plant species allows for a sustainable plant community and high drought tolerance.

4.4 Standard 4

Rangelands are capable of sustaining viable populations and a diversity of native plant and animal species appropriate to the habitat. Habitats that support or could support threatened species, endangered species, species of special concern, or sensitive species will be maintained or enhanced. MET

Rationale: The *Black Mountain Tower* sage-grouse lek is approximately 1.5 miles southwest of the Lake Ridge allotment, across the White Creek canyon. Monitoring data for this Lek shows the average sage-grouse attendance through the 1980s was 29, the 90s was 8, and for the 2000s was 15 sage-grouse. Lek counts can be quite variable, and are not always the best indicator of habitat quality. Weather and/or predators can often affect lek activity and lek monitoring. As stated earlier sagebrush habitats, particularly in the western portion of the allotment are likely providing habitat for some wintering sage-grouse. This wintering use has been documented at a known winter concentration area southwest of this allotment, by both ground and air surveys within the past 5 years, but has not been documented within this allotment. And because of the proximity to the lek to the southwest, sage-grouse nesting and brood rearing are also likely occurring throughout these habitats as well. Other species like the Mountain lion, chukar, and a variety of passerines, raptors, small mammals and predator species inhabit this allotment throughout the year.

Two key area transect locations were chosen in the allotment for monitoring and evaluation purposes. One was primarily for sage-grouse habitat and assessment, and the other to measure soil and vegetative parameters, and to conduct the evaluation of the 17 indicators of rangeland health.

The Sage-grouse habitat key area transect location was in the southwestern portion of the allotment and was intentionally located in what appeared to be some of the best sage-grouse habitat in the allotment, (see transect photo). This location was also within mule deer crucial winter range, elk general winter range, and probable sage-grouse wintering, nesting and brood rearing habitats. The sage-grouse habitat key area is shown on the map below (see map). Sagebrush canopy cover measured at the sage-grouse habitat key area transect was found to be 20%, which for Wyoming is within the range of sagebrush canopy covers anticipated for sage-grouse wintering habitats (10-30%), but also suitable for nesting as well.

The other key area transect location was in the north central part of the allotment and was more representative of the broken topography and shallow soil sites characteristic of those areas closer to the canyon rim. This location was approximately 2.5 miles northeast of the active sage-grouse lek already mentioned. For the Standards and Guides field evaluations, plant community composition and distribution as well as the functional structural groups (indicator #s 10 and 12) were found to be *none to slight* deviation from those anticipated for the north central transect location talked about above.

Habitats within the rangelands evaluated here are providing wildlife forage and cover needs, and are capable of sustaining viable populations and a diversity of native plant and animal species appropriate to these habitats.

4.5 Standard 5

Water quality meets State standards. UNKNOWN

Rationale:

The Wyoming Department of Environmental Quality (WYDEQ) has not listed any of the segments as impaired on the *DEQ 2010 305b Water Quality Assessment Report*. The drainages in the allotment are not rated by the WYDEQ for any specific use classification, due to the small size and limited extent and are therefore unknown.

The downstream tributary of White Creek does receive flow periodically during portions of the year of spring runoff and other storm events. White Creek as determined by the Wyoming Department of Environmental Quality (WYDEQ) in 2001 was classified as a class 2AB stream. These type streams are considered by the WYDEQ as “those known to support game fish populations or spawning and nursery areas at least seasonally and all their perennial tributaries adjacent wetlands and where a game fishery and drinking water use is otherwise attainable.” These can be either cold or warm water fisheries. Other than the ponds in the allotment there are no drainages with perennial flow in the allotment.

Many studies have documented the effects of heavy grazing on riparian vegetation and soil erosion rates, but few studies have directly assessed impacts on water quality. Potential management impacts to water quality from rangelands as outlined in (Binkley, 1993) such as: excessive livestock waste production, resource extraction, stream channel modification, bank erosion from floods, erosion following wildfires, or erosion from overgrazing in uplands.

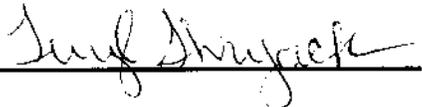
There is no BLM, USGS, or other state agency water quality data for these segments. Therefore compliance with Wyoming State Water Quality Standards is unknown, but nothing within available data indicates Standard Number 5 is not being met.

4.6 Standard 6

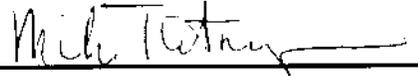
Air quality meets State standards. UNKNOWN

Rationale: No information is currently available to indicate that this standard is or is not being met. An air quality monitoring station was recently established in the Bighorn Basin, but no monitoring data is available at this time. Until specific data becomes available, the determination for this standard is UNKNOWN, per direction from the BLM Wyoming State Office.

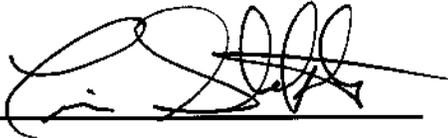
5.0 Resource Specialist Signatures

X 

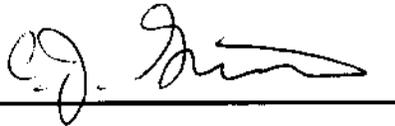
Rangeland Management Specialist

X 

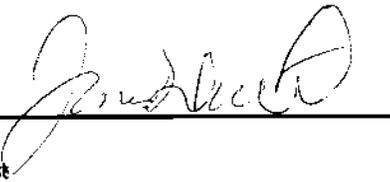
Supervisory Rangeland Management Specialist

X 

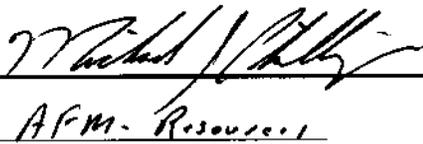
Wildlife Biologist

X 

Natural Resource Specialist, Weed Coordinator

X 

Hydrologist

X 

Other AFM Resources

X 

Natural Resource Specialist, Soils

X _____
Other _____

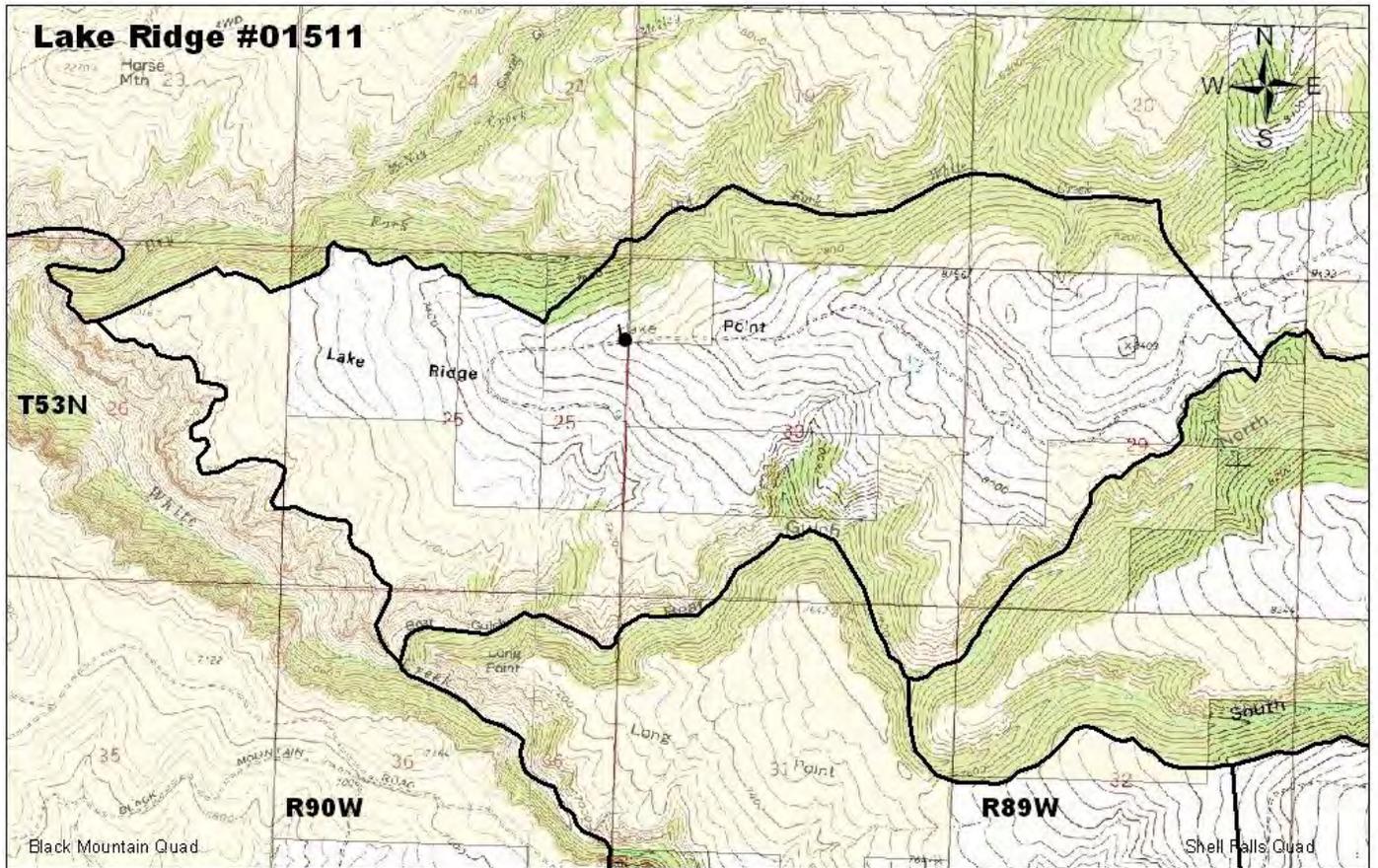
7.0 REFERENCES

DEQ 2008, “Wyoming’s 2008 305(b)Integrated State Water Quality Assessment Report and2008303(d) List of Waters Requiring TMDLs” Wyoming Department of Environmental Quality P.28

Binkley, D., and T. Brown. 1993. Management Impacts on Water Quality of Forests and Rangelands. USDA Forest Service General Technical Report RM-239. pp5-6.

WYDEQ, 2001. Wyoming Surface Water Classification List June 2001. Wyoming Department Environmental Quality. p A.15.

Map 1: Allotment Map with Transect/Assessment Location



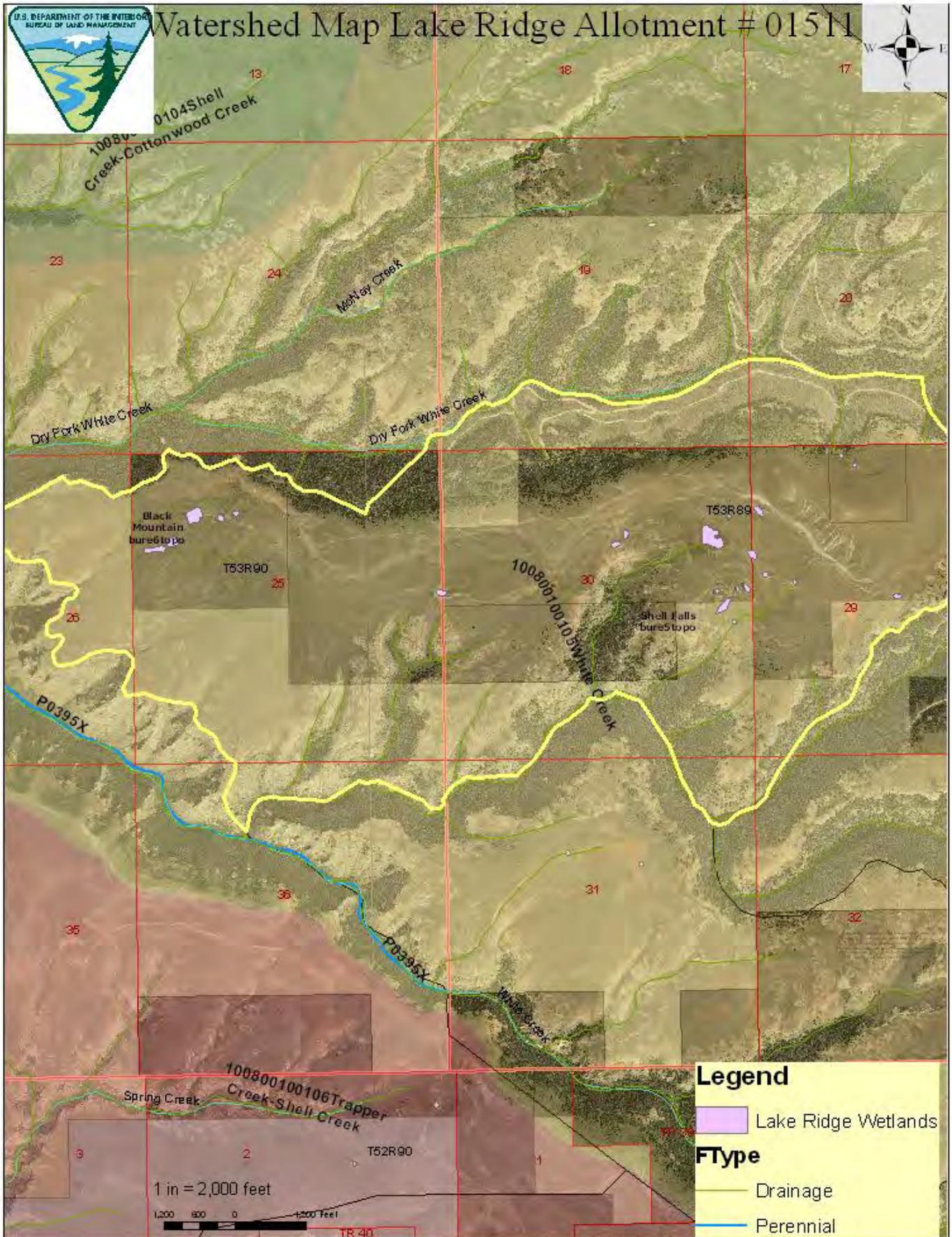
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-  Private
-  Bureau of Land Management
-  Transect Location - August 25, 2010

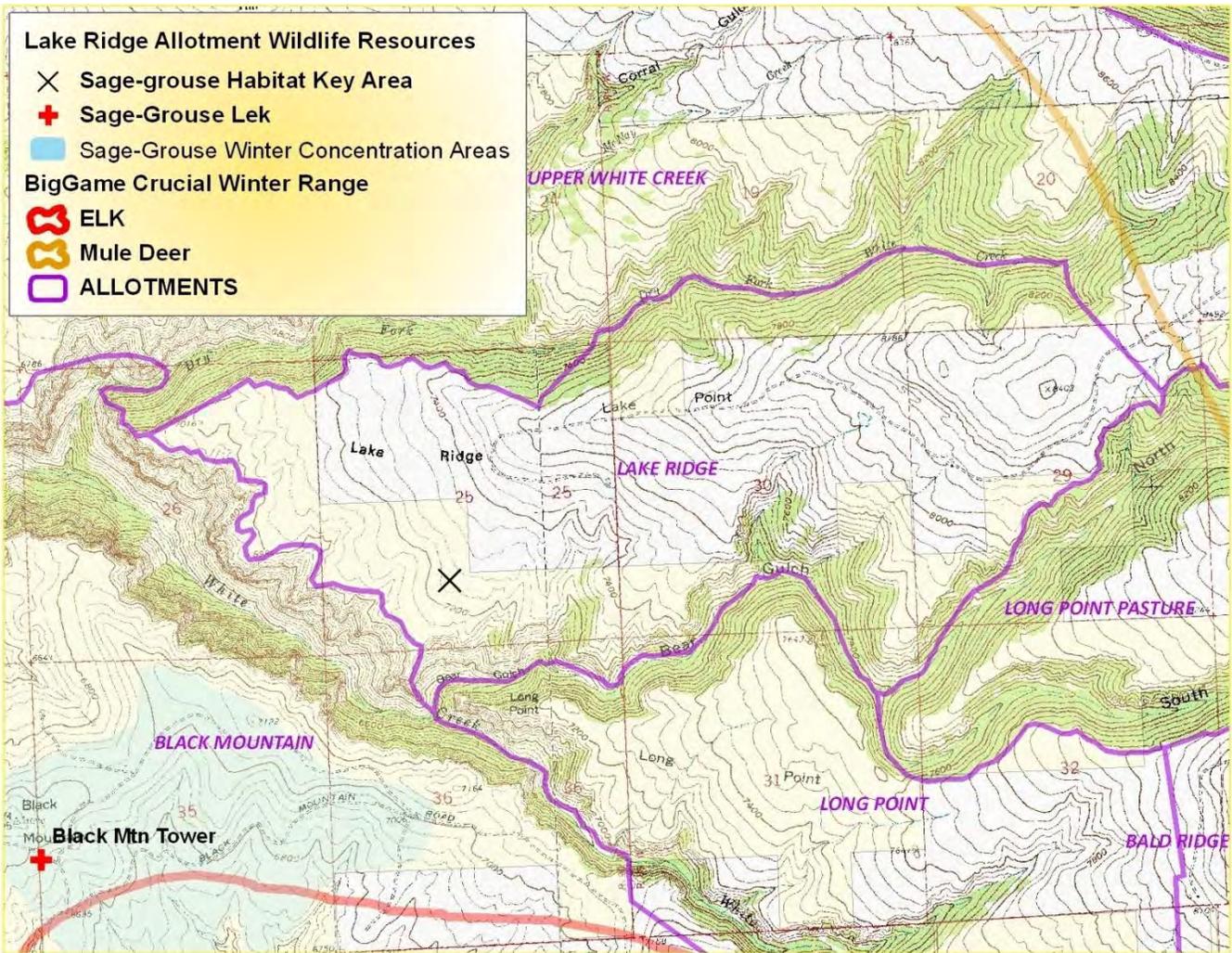
Map 2: Soils and Ecological Sites



Map 3: Watershed Map



Map 4: Wildlife Habitat



ONSITE PHOTOS

Photo 1. General View of Cover Transect



Photo 2. Close Up at the 50' Mark on Cover Transect



Photo 3. Sage-grouse Habitat Assessment Key Area

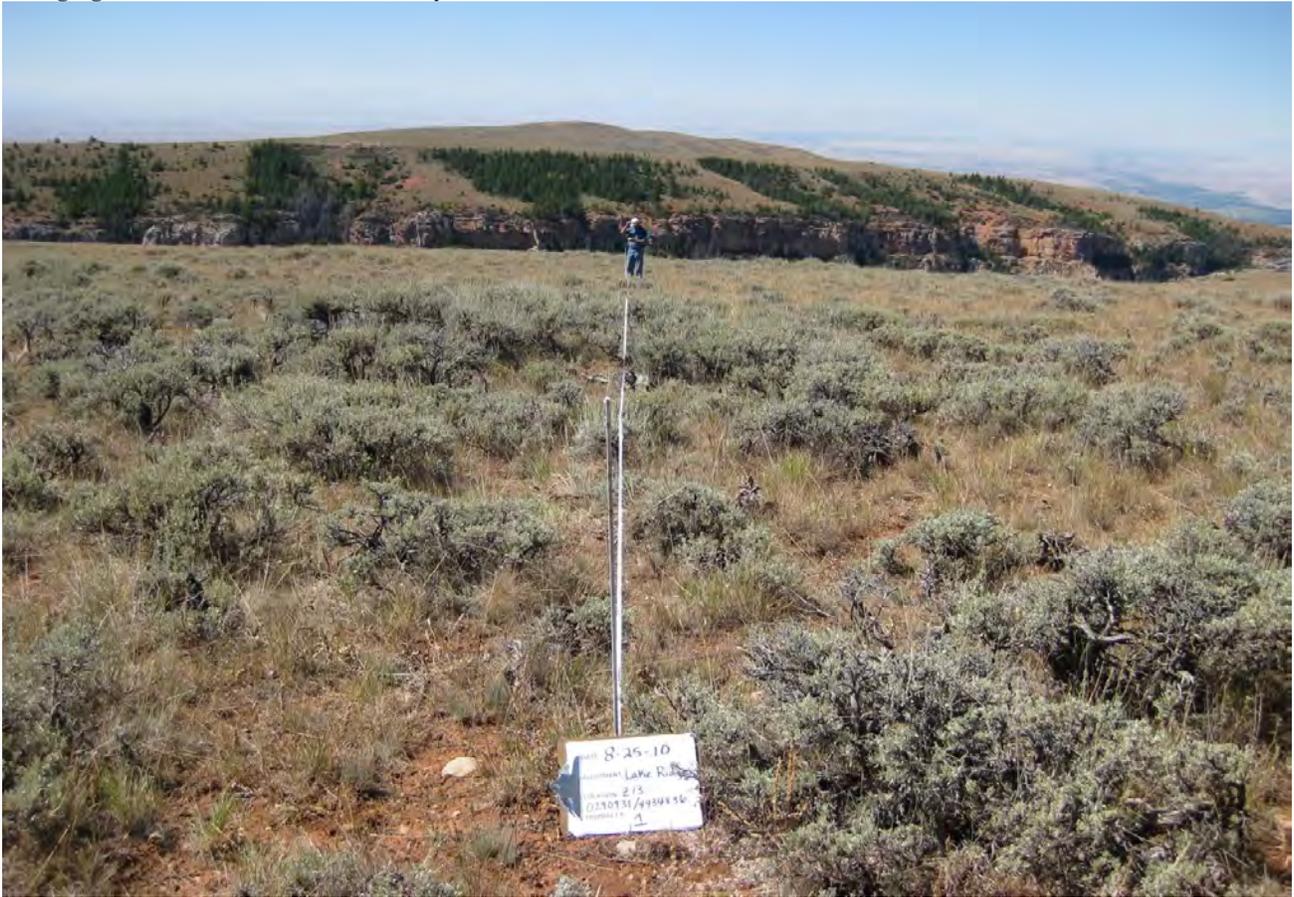


Photo 4. Trend Photopoint 1990



Photo 5. Trend Photopoint 2000



Photo 6. Trend Photopoint 2010

