

## **Allotment Assessment Cedar Creek**

### **I. Name and Number of Allotment**

Cedar Creek Allotment #1131

Permittees: Cedar Creek Cattle Company  
Guerry Inc.

### **II. Livestock Use**

1. Permitted Use: 4233 AUMs  
Cedar Creek Cattle - 4212 cattle AUMs  
Guerry, Inc. – 21 AUMS
2. Historic Use Range: 2538 to 4966 cattle AUMs; 0 to 30 sheep AUMs
3. Suspended Preference: 0 AUMs
4. Season of Use: 6/01 to 11/30 cattle; 06/01 to 06/02  
Season of use varies on a year-to-year basis within the parameters of the Allotment Management Plan. Guerry Inc.'s permit is for only 23 percent Public Land so they are allowed flexibility in the use of their State Land Lease. (TNR authorizations included grazing use through February 28)
5. Kind and Class of Livestock: 700 cattle, 1575 sheep
6. Percent Public Land: 100% (Cedar Creek Cattle), 23% (Guerry, Inc.)

### **III. Allotment Profile**

1. The Cedar Creek Allotment is located in the southeast part of the Jarbidge Field Office Area. This allotment is located in MUA-15. There are four pastures in this allotment; Roseworth reservoir, Highway Field, Burn Field and Monument Springs Pastures. The current permit was issued in 1999 authorizing 4212 AUMs for cattle and 21 for sheep. Both permits are valid until February 28, 2005.
2. Federal Acreage: 24,945
3. MUA Objectives (Jarbidge RMP, 1987):
  - o Issue 26,466 AUMs forage for livestock in MUA-15 by the year 2005 (II-56). The Cedar Creek Allotment is 12% of MUA-15. Twenty-year use in Cedar Creek was to go from a proposed reduction of 2261 to 4085 AUMs. This increased use would result from the availability of additional forage from water developments, brush control and seeding projects and improvement in native range condition (II-3).
  - o Maintain 24,159 acres of existing vegetative improvements (II-56).
  - o Improve 36,207 acres of lands in poor ecological condition (II-56); Cedar Creek was noted as having 6,493 acres in poor condition.
  - o Manage big game habitat in MUA-15 to support 2400 mule deer in winter (100% increase), 1285 mule deer the rest of the year (29% increase), 1170 antelope (30% increase), and 56 bighorn sheep (up from 2); and protect crucial winter big game habitat (II-56). Existing populations are 1,200 mule deer in winter, 995 rest of year; 900 antelope and 2 bighorn (II-56). Note: The objective for bighorn sheep applies to the Jarbidge River Canyon which is over 30 miles from this allotment.
  - o Improve 4900 acres of big game habitat by 2005 in MUA-15 (II-56).
  - o Improve 4.7 miles of fisheries habitat and 9.6 miles of riparian habitat in MUA 15 by 2005 (II-56).

4. Key Forage Species:
  - Crested wheatgrass
  - Thurber's needlegrass
  - Bottlebrush squirreltail
  - Bluebunch wheatgrass
  - Idaho Fescue
5. Grazing System: The grazing use in this Allotment is outlined in the Livestock Management Plan, Tews Land and Livestock. The Allotment is used by cattle in the late spring, summer and fall (May through December) in conjunction with other allotments in which the permittees have permitted use. Sheep use in the Allotment is primarily trailing use to and from other Allotments. The lower pastures (Roseworth, Highway Field and the Burn Field) are grazed in a deferred rotation system. This system alternates use between late spring use, early summer and fall use. The Monument Springs Pasture is deferred each year until late summer, after flowering of key grass species.

#### IV. Management Evaluation

The purpose of this evaluation is to determine the allotment's status in meeting the Standards for Rangeland Health and Guidelines for Livestock Management and to renew the grazing permit, with management guidelines, to meet these Standards.

##### A. Summary of Studies Data

##### 1. Actual Use

Table 1 shows the actual use since from 1990 to 2002.

**Table 1 - Actual Use**

Grazing Season	Cattle AUMs	Sheep AUMs
1990	7,544	0
1991	3,758	0
1992	4,526	0
1993	4,755	30
1994	5,148	24
1995	4,055	22
1996	5,837	17
1997	6,343	14
1998	5,340	0
1999	4,130	0
2000	4,966	7
2001	4,168	15
2002	3,269	12

## 2. Climate

Long term water year precipitation (September through June) for the Three Creek NOAA Weather Station is 11.45 inches. The 47 (calendar) year average for the **Three Creek** station is 12.9 inches. For the BLM **Heil Reservoir** rain gauge, the 11 year annual average is 16.8 inches and the 10 year annual average is 26.6 inches at the **Monument Springs** rain gauge. Table 2 shows the yearly moisture totals at the Heil Reservoir (5,510 feet) and Monument Springs (7,150 feet) stations which are representative of this allotment at the lower and higher elevations, respectively. Also shown is the Yield Index for the Three Creek Weather Station. The Yield Index is a precipitation-yield relation which provides reliable and effective information for use in comparing annual production yields to what is expected in a normal year. The Yield Index is used in forecasting and adjusting range forage estimates.

**Table 2 - Water Year Precipitation**

Year	Heil Reservoir (in inches)	Monument Springs (in inches)	Three Creek Yield Index
1993	29.5*	6.1^	NA
1994	13.7	22.5	.72
1995	23.0*	33.2*	2.02
1996	18.1*	21.7	.74
1997	23.9*	27.7*	1.45
1998	19.1*	34.3*	1.62
1999	17.2*	24.7	1.27
2000	10.2	25.8	.82
2001	9.4	25.8	.96
2002	9.5	25.3	.99
2003	11.6	24.5	1.02

^ Incomplete. Only 3<sup>rd</sup> and 4<sup>th</sup> quarter total.

\*Above Average Precipitation.

## 3. Utilization

Table 3 shows actual data from sampling at transects in the Allotment.

**Table 3 - Utilization Data**

Year	Veg. Community	Utilization
2001	Native	44%
2001	Crested	44-55%
2002	Native	9-31%
2002	Crested	27-42%

## 4. Production

Appendix 1 displays the production data that has been collected in the Cedar Creek Allotment. It shows that 11,500,091 pounds of forage vegetation is produced during a near normal production

year. Forage vegetation refers to grasses, and in seeded areas may include alfalfa and sainfoin. The production of forbs and shrubs is not included in this poundage. Considering precipitation data and its relationship to drought, as well as the needs of the watershed and wildlife, it is estimated that 4,443 AUMs of forage vegetation is available for livestock.

## **5. Condition and Trend**

In July 1987, five long-term vegetation/soil cover monitoring study sites were established in the Cedar Creek allotment in cooperation with the permittee. In accordance with the Minimum Monitoring Standards for BLM Rangelands in Idaho, the study methods initiated included nested plot frequency, percent ground cover, shrub density, 3X3 plot data and site photographs. Of the four pastures in this allotment, two of the study sites were located in the large southern pasture containing native plant communities, the other three sites were established in the other three pastures containing seedings. The five sites are situated in the following locations (site number), range sites, and elevations:

14S13E32; Artrv/Agsp, Loamy 13-16", now a seeding @ 5,750 feet,  
14S14E19; Artrw/Agsp, Loamy 10-13", now a seeding @ 5,350 feet,  
14S14E20; Artrw/Agsp, Loamy 10-12", now a seeding @ 5,430 feet,  
15S13E13; Artrv/Feid, Loamy 16+", native site @ 6,730 feet, and  
15S13E13A; Arar8/Feid, Shallow Claypan 12-16", native site @ 6,680 feet.

Since 1987, all five study sites have been revisited and data collected twice, in 1992 and 1997/98. Trend is determined by comparing the frequency of key species and cover of the first year to subsequent years. The analysis and evaluation of these long-term studies are summarized in Table 4a and 4b. In addition, condition ratings were made in the 1981-82 range inventories. In 2002 production studies were done which provided composition data that was also used to rate condition.

**Table 4a - Condition and Trend Evaluation of Native Vegetation Study Sites**

1981-83 Inventory Site	Inventory Site Location	Trend Site	Vegetation Type 1981-83 (2002-03)**	1981-83 Ecological Rating*	Trend	2002-03 Production Studies Name/Rating
TH-73	14S13E25		Ararn/Posa3	Early		
RA-71	14S13E29		Brte/Deso2 (Agsp)	Early		CDC-8/Late
RA-72	14S13E31		Artrv/Feid	PNC		
TH-69	14S14E17		Artrw/Agsm	Early		
TH-78	14S14E19		Sial/Brte	Early		
TH-84	14S14E19		Artrt/Brte	Early		
TH-75	14S14E20		Artrw/Agsp	Mid		
TH-76	14S14E29		Artrw-Putr/Brte	Early		
TH-77	14S14E30		Artrw/Posa3 (Artrw/Stth2-Sihy)	Early		CDC-5/Late
TH-80	15S13E02		Artrv-Putr/Stco4	PNC		
TH-81	15S13E02		Artrv-Putr/Brte	Mid		
RA-64	15S13E05		Arar8/Agsp/Feid	Mid		
LH-102	15S13E23	15S13E13	Artrv/Feid	Late	Static	
LH-111	15S13E10	15S13E13A	Arar8/Feid	Mid	Up	CDC-10/PNC
LH-110	15S13E11		Artrv/Putr5/Symph /Feid	Mid		
TH-79	15S14E08		Arar8/Posa3 (Arar8/Stth2) (Arar8/Agsp)	Early		CDC-6/Late CDC-9/PNC
TH-86	15S14E08		Arar8/Feid	Late		
TH-85	15S14E09		Artrv/Feid	Late		
LH-119	15S14E16		Cele3/Feid/Agsp	Late		
LH-114	15S14E18		Artrv/Popr/Feid	Mid		

**Table 4b - Condition and Trend Evaluation of Seeding Study Sites**

1981-83 Inventory Site	Inventory Site Location	Trend Site	Vegetation Type	1981-83 Condition Rating*	Trend
RA-53	14S13E32	14S13E32	Agin seeding	Excellent	Static
TH-74	14S14E16	14S14E19	Agcr seeding	Poor***	Up
TH-77	14S14E30	14S14E20	Agcr seeding	Poor***	Up

\* Condition was determined from vegetation inventories in 1982 or best estimate for seedings based on relative frequencies of seeded species. Jarbidge RMP referred to Range Condition as: Excellent, Good, Fair, and Poor. Since that time these terms have been related to; Potential Natural Community, Late Seral, Mid-Seral and Early Seral, respectively. Value terms of excellent, good, fair, poor are only used as a value rating for areas rehabilitated with *Agropyron cristatum* and *Agropyron intermedium*.

\*\* “()” indicate the current vegetation if different from 1981-83 Inventory.

\*\*\*Original Inventory Sites, established in 1982, were an Artrw/Posa3(for TH-77) and an Artrw/Brte(for TH-74) vegetation type. Ratings were poor before seeding. After burn and seeding, the seeding condition rating is good.

Trend site summaries have been completed for all of the study sites evaluated. These analyses are in the Allotment Study files of the Jarbidge Field Office and can be reviewed upon request.

In conclusion, and as indicated by the table above, all the study sites monitored in the Cedar Creek allotment are meeting RMP objectives for either maintaining native plant communities in late seral condition or improving “upward trend” mid seral conditions, and sustaining vegetative improvements.

In addition, production data collected in 2002 at four random plots within the allotment rated the status of low sagebrush/Idaho fescue plant communities as early to mid seral, Wyoming big sagebrush/bluebunch areas as late seral, and Mountain big sagebrush/Idaho fescue sites as mid seral.

## **B. Rangeland Health Assessment**

In 2002, rangeland health data was gathered on the Allotment at six ecological sites within native range, and four ranges site with seedings. Rangeland health data was collected per Technical Reference 1734-6, *Interpreting Indicators of Rangeland Health*. The rangeland health data was collected by an interdisciplinary team for the purposes of making a quantitative assessment of the soil/site stability, hydrologic function, and the integrity of the biotic community for the various ecological sites.

Ten transects were read at various ecological sites and are identified as CC-1 to CC-10. The “Preponderance of Evidence” based on the ten transects, is shown in Table 5. The degree of departure or deviation from the potential ecological site description (None to Slight, Slight to Moderate, Moderate, Moderate to Extreme, or Extreme) is made based on an evaluation of the data. Transect CC-9R, was taken in a reference site.

**Table 6 - Preponderance of Evidence**

Attribute (The sites are considered meeting attributes if not mentioned)		Deviation From Potential				
		Extreme	Moderate to Extreme	Moderate	Slight to Moderate	None to Slight
Soil Site Stability Rationale: Bareground is higher than expected (CC-5, 6, 7, 10). Soil surface pedon dissolves easily in water readily (CC-2, 3, 6, 7) or it dissolved partly (CC-1). Pedestals taller than expected on Sandberg's bluegrass, bluebunch wheatgrass and Thurber's needlegrass (CC-6, 5). Soil deposition areas around plants (CC-6, 5). Some soil loss in the interspaces (CC-6, 1). Wind scouring present (CC-5).	Native				CC-5, CC-6	CC-7, CC-8, CC-9R, CC-10
	Seedlings					CC-1, CC-2, CC-3, CC-4
Biotic Integrity Rationale: Cheatgrass and bur buttercup present but sparse (CC-1, 6, 7, 10). Cheatgrass common in plant communities (CC-5). Perennial grasses, especially bluebunch wheatgrass, are low in composition (CC-5). Shrubs in low composition from wildfire (CC-2, 3, 7). Forbs and N fixing legumes low in composition (CC-1, 2, 3, 5, 7). Big sagebrush appears to be overly decadent (CC-5, 6). There are an abundant amount of big sagebrush seedlings (CC-5).	Native				CC-5, CC-6	CC-7, CC-8, CC-9R, CC-10
	Seedlings					CC-1, CC-2, CC-3, CC-4
Hydrologic Function Rationale: The high amount of bare ground allows for moisture loss from runoff and evaporation (CC-5, 6). Litter on ground is low in cover (CC-6). Low production because of low composition of bluebunch wheatgrass (CC-5, 6).	Native				CC-5, CC-6	CC-7, CC-8, CC-9R*, CC-10
	Seedlings					CC-1, CC-2, CC-3, CC-4

\*R – indicates this site is a reference area.

**1. Standard 1 - Watershed**

Most sites were stable with no ongoing erosion. Bare ground was slightly higher in some native vegetation areas, ranging from 5 to 20 percent in the native vegetation communities and 22 to 29 percent in the seeded vegetation communities. Generally, based on reference areas, bare ground should be less than 10 percent. The soil surface resistance to erosion was good at 6 of the 10 sites. Two of the remaining sites have adequate amounts of vegetation and litter cover to protect the soil. Erosion was most evident at CC-5 and CC-6 in the Highway Field Pasture.

**2. Standard 2 - Riparian Zones and Wetlands and Standard 3 - Stream Channel/Floodplain**

Table 7 summarizes inventory information gathered on riparian areas in the Cedar Creek Allotment.

**Table 7 - Riparian Area Inventory**

Stream(year inventoried /monitored)	Inventory Reach #	Miles	Dominant Vegetation	Function Rating*	Comments
Cedar Creek 1997, 2002, 2003	24.2 – 24.9	0.7	Willow/Poa	PFC	stream hydrology & vegetation heavily influenced by livestock
Cedar Creek 1997, 2002, 2003	24.9 – 25.6	0.7	Rose/Willow/ ArtrW/Poa/ Douglas sedge	FAR	stream function heavily influenced by livestock
Cedar Creek 1997, 2000, 2002	25.6 – 26.1	0.5	Willow/ Red-osier/ Poa	FAR	opening in between woody veg is well-used by livestock
Cedar Creek 1997, 2000	26.1 – 26.7	0.6	Willow/Rose/ Poa	FAR	openings along the stream banks are well-used
Cedar Creek 1997	26.7 – 27.4	0.7	Willow/ Red-osier	PFC	receives minimal livestock use; riparian w/rugged topography
Cedar Creek 1997	27.4 – 27.9	0.5	<i>Poa</i> /Hairgrass Rush/Sedge Willow	FAR	minimal use by livestock
Cedar Creek 1997	28.2 – 28.4	0.2	<i>Poa</i> /Hairgrass Rush/Sedge Willow	FAR	minimal use by livestock
Cedar Creek 1996 & 2003	28.4 -29.6	1.2	<i>Poa</i> /Rush Willow	FAR	heavy livestock use from 28.6 & on upstream
Cedar Creek 1996 & 2003	29.6 – 30.7	1.1	<i>Poa</i> /Rush Willow/ ArtrW	FAR	heavy livestock use along entire segment
Cedar Creek 1996 & 2003	30.7 – 31.1	0.4	<i>Poa</i> /Hairgrass Rush/Sedge Willow	PFC	riparian enclosure fence

\* PFC – Proper Functioning Condition  
 FAR -Functioning at Risk  
 NF – Non-functioning

Cedar Creek segment 24.2 to 24.9 is supposed to be fenced off from cattle use. However, the fence at the downstream portion of this segment, where it adjoins private land, is not in working condition and is on the ground. The upstream portion of the fence across Cedar Creek at the water gap in T14S, R13E, SWSW section 33 is up for the most part, but cattle have also been

accessing the creek from this end where strands of barbed wire are far enough above the ground for cattle to trail through.

Much like the rest of Cedar Creek, this segment is narrow and is confined by box-like canyon walls. There is enough floodplain available for cattle to trail on. Once cattle are in the bottom, they can only trail out from one end or the other (at mile 24.2 or 24.9), where there are breaks in the canyon rim to the uplands. Livestock use has been made along this entire reach. Stream banks have been trampled and sheared, and are bare soil in some places. This stretch of Cedar Creek is very shallow and wide, and lacks sinuosity. Mid-channel bars are present and there is increased silt in the system. Young willows have been rubbed and previous years' canes are largely damaged or broken. Very few young willows or dogwoods are present; the system is primarily occupied by mature and decadent willows and dogwoods. The southern 1/3 of section 33 has much increased *Carex* species than the remainder of the downstream portion, otherwise, herbaceous riparian wetland species are disproportionately low. Where present, wetland sedges have been grazed one to two inches. Stream banks occupied by sedges are pockmarked with hoof imprints. Present circumstances have invalidated the proper functioning condition assessed in 1997.

On the west-facing slope (T14S, R13E, section 33, and T15S, R13E, section 4) leading into the water gap, there is an intermingled network of trails. On the east-facing slope, the trails converge at the water gap and this area is bare of any vegetation. During 2003, a particularly dry year, the upper two to three surface inches of the trails were pulverized to a flour consistency. These trails are a likely source of sediment into Cedar Creek, both during precipitation events and when the soil is airborne during trailing.

Cedar Creek segment 24.9 to 25.6 is supposed to be fenced off from cattle use. There is a water gap at mile point 24.9; this water gap is not in working order, nor is the section of fence at 25.6. On the eastern side of the water gap, all strands of barbed wire are down on the ground. Cattle in the pasture east of Cedar Creek have full access to this stretch of Cedar Creek, the pasture west of the creek, or can access the downstream stretch (24.2 – 24.9). Likewise when cattle are in the pasture west of the creek, they can cross the creek through broken fences at the water gap and get into the pasture on the east side. This portion of Cedar Creek is also rimmed and cattle are essentially confined to the stream bottom and can only trail out through the water gap. Active cattle trails are present along the entire length of this reach.

This stretch has much more woody vegetation along the stream banks than the downstream segment, but it is primarily rose. Stream banks in this reach are in poor condition as evidenced by trampling/shearing in openings, bare soils, lack of herbaceous riparian vegetation, and an increase in rose over other woody riparian species. Herbaceous vegetation, where present, is primarily Kentucky bluegrass. The stream in this segment is shallow, wide and lacks sinuosity.

Cedar Creek segment 25.6 to 26.1 and 26.1 to 26.7 also receives livestock use by cattle coming up from downstream. Stream banks in this segment are primarily dominated by woody vegetation, however, any openings along the stream bank and floodplain receive concentrated livestock use. Herbaceous vegetation is predominantly Kentucky bluegrass. Young willows and aspens are starting to establish but are subsequently damaged by livestock by rubbing and browsing. Stream banks that are not protected by woody vegetation have been mechanically damaged by livestock use, causing the stream channel to widen and straighten.

Cedar Creek segment 26.7 to 27.4 is fairly inaccessible to most cattle use because it is steep, narrowly confined, contains huge boulders, and has very little floodplain. Vegetation is predominantly willows and dogwood with swordleaf rush and beaked sedge.

Segments 27.4 to 27.9 and 28.2 to 28.6 are fairly narrow and well-armored with boulders and willows. There is evidence of livestock use in these segments but it is considerably less in comparison to other downstream and upstream reaches. Stream banks are considerably more covered and stable, relative to other downstream and upstream reaches. Livestock trails are present but use on the stream banks is not as extensive as that observed along most of Cedar Creek.

Riparian exclosure fencing of Cedar Creek segments 27.4 to 30.7 was completed in 2002 with the intent of closing the area to livestock grazing until recovery of the riparian resource occurs. However, livestock extensively grazed the Cedar Creek exclosure during the summer of 2003, in particular, just below the Dove Springs exclosure from 30.7 to 28.6. It appears that cattle trailed into Cedar Creek through a gate on a gap fence located in T15S, R13E, NWNW section 23. There is a heavily used livestock trail through this gate that runs between a trough in T15S, R13E, SW section 14 to the bottom of Cedar Creek. Although the gate at this gap fence was closed during monitoring activities in October 2003, heavy cattle trailing was noted on both sides of the gate from the trough to the creek. Evidence of heavy cattle trailing was also observed from a livestock trough to the creek through a draw in T15S, R13E, SENE section 15. There is a gated gap fence in this draw. Although the gate was closed during riparian monitoring of the creek in October 2003, livestock tracks were observed on both sides of the gate.

On Cedar Creek from 28.6 to 30.7, stream banks have incurred trampling damage from livestock use. Livestock use of Kentucky bluegrass and Nebraska sedge along the stream banks and floodplain was from two to four inches. Livestock trails present along the length of the system and up Malat Draw and other unnamed drainages are a source of sediment to the creek. A large opening along the creek at 28.7 is predominantly cheatgrass. The creek is wide, shallow, and has several straight sections. Point bars, where present, have not been able to establish vegetation.

In the spring of 2003, segment 28.6 to 30.7 experienced a high energy flow which carried a significant amount of large wood, gravel and rock (up to ten inch diameter) downstream. In some areas, the flow extended approximately 25 feet beyond the stream bank. Because of the degraded condition of the riparian resource, the creek was not fully capable of withstanding the force of the water and debris. In some areas, the floodplain and stream banks were washed out and deposited downstream. Sedge mats were undercut and rolled up along the channel. Channel bars had formed and the channel braided in some sections. Several willows were uprooted and lying in the channel or on the verge of being torn away from washed out stream banks. Gravel and rock deposits on the floodplain were observed all along this 2.3 mile stretch of creek. Downstream of 28.6, evidence of the high water and debris flow persisted, but it was comparably less. At this point downstream, there are more boulders and willows, the creek is more narrowly confined, and livestock grazing impacts to the riparian resource are considerably less.

There are two sections of parallel fence, less than 50 yards apart, across the creek at 28.9. During the high spring flow, large wood debris caught the most upstream section of fence and tore it out. An aspen fell across the downstream section of fence and large wood has removed a

portion of this fence where it crosses the creek. Some livestock have been accessing the creek downstream of 28.9 to 28.6. Downstream of 28.6, use was considerably less than that observed upstream.

Cedar Creek from 30.7 to 31.1 is located within a riparian enclosure. Half of this enclosure was constructed in the mid-1980's; the remainder was constructed in the mid-1990's. Approximately 41 acres of springs, wetlands, and semi-wet meadows are fenced within the enclosure. Stream banks are well vegetated with riparian herbaceous and woody vegetation and are intact. Evidence of the high stream flow that occurred in 2003, was observed in areas along this stretch. Because the stream banks are protected and well-armored they held up under the force of water. Several springs, commonly known as the Dean Site springs, are located within this enclosure. One of the springs has been developed and pipes water to upland troughs.

Much of the channel for Cedar Creek has an out-of-balance width/depth ratio, particularly areas with a Rosgen "C" channel type. The stream is too wide and the water depth too shallow. In areas with a "B" channel, the stream width is less affected.

### **3. Standard 4 - Native Plant Communities**

Six sites were sampled in native range in 2002. These included 4 ecological sites loamy 10-13 (site CC-5); loamy 11-13 (sites CC-7 and 8); shallow clay pan 12-16 (sites CC6 and 9); and loamy 16+ (site CC-10).

At the loamy 10-13 range site, big sagebrush cover was 23 percent with an average height of 32.4 inches. Sagebrush in this area appeared fairly old and somewhat decadent and may have been xeric big sagebrush. Total perennial grass cover was 23 percent with Sandberg bluegrass (16 percent) being the most common species. Bottlebrush squirreltail (3 percent), Thurber needlegrass (2 percent) Indian ricegrass (1 percent) and western wheatgrass (1 hit) were the remaining perennial grasses. The native forb component was sparse and 2 percent cover was present. Bare ground was 14 percent cover, whereas biological soil crusts were limited to 12 percent. Exotic annuals totaled 5 percent cover, which was primarily cheatgrass with some bur buttercup also present. These exotic species were widespread and locally abundant. Diffuse knapweed was noted along the jeep trail to this site.

In the loamy 11-13 range site, big sagebrush cover was 0 percent at both sites sampled, due to past wildfires. At site CC-8 rabbitbrush provided 7 percent shrub cover. These plants averaged less than 15 inches in height. The most abundant grass was bluebunch wheatgrass (20 percent and 40 percent cover), followed by Sandberg bluegrass (18 percent and 13 percent cover) for CC-7 and CC-8, respectively. Intermediate wheatgrass (6 percent) and western wheatgrass (1 interception) were present at CC-7, whereas thickspike wheatgrass (4 percent) and bottlebrush squirreltail (2 percent) were present at CC-8. The average grass height was 4" at CC-7 (which had been grazed) compared to 12.8 inches in the un-grazed pasture. The un-grazed pasture was scheduled to be grazed in the fall. The perennial forb component provided 4 percent and 13 percent cover at sites CC-7 and CC-8, respectively. Phlox was present at both sites, however, at CC-8 wild onion and lupine were the most abundant native forbs. Bare ground was 15 percent at both sites, with biological soil crusts being fairly low (6 percent at CC-7 and 1 percent at CC-8). Cheatgrass and bur buttercup were observed at both sites and provided 3 percent cover at CC-8.

Neither of the shallow clay pan 12-16 range sites had been burned by wildfires. A mixture of low sagebrush and big sagebrush was present in both areas evaluated, with low sagebrush being the more abundant. Sagebrush cover varied from 16 percent at CC-6 to 19 percent at CC-9. Sagebrush height was 12.1 and 15.1 inches respectively. The generally low height of sagebrush is expected for sites with low sagebrush. Sandberg bluegrass was the more abundant (20 percent cover) at site CC-6, compared to (11 percent) at CC-9. Idaho fescue (24 percent cover) and bluebunch wheatgrass (4 percent) were present at CC-9, whereas Thurber needlegrass (11 percent), bluebunch wheatgrass (4 percent) and bottlebrush squirreltail (4 percent) were present at CC-6. Average grass heights (ungrazed) were 9.5 inches and 12.2 inches for CC-6 and CC-9. Native forbs were 5 percent and 12 percent cover for CC-6 and CC-9. Phlox was the most common forb hit at site CC-6, whereas biscuitroot was more abundant at site CC-9. Bare ground was 20 percent (CC-6) and 5 percent (CC-9), respectively. Biological soil crusts were 16 percent and 19 percent cover respectively, for CC-6 and CC-9. Cheatgrass and bur buttercup were present, but not intercepted, at CC-6.

At the loamy 16+ range site, mountain big sagebrush and low sagebrush provided 16 percent sagebrush cover and averaged 14.1 inches in height. Sagebrush height was influenced by the shorter species sagebrush present. Idaho fescue was the most abundant grass (44 percent cover) followed by bluebunch wheatgrass (9 percent) and 1 percent cover each of bottlebrush squirreltail and Sandberg bluegrass. The average grass height was 10.8 inches (ungrazed). Perennial forbs provided 5 percent, with onion the most frequently intercepted forb. This area contained very high forb diversity and was used by sage grouse broods for brood and late brood habitat based upon telemetry work conducted in the early 1990's. Bare ground was unexpectedly high (22 percent). At higher elevations and precipitation zones biological soil crusts decrease due to a greater amount of vegetative cover.

Diffuse knapweed, a noxious weed, has been documented at the native site (CC-5) in the Cedar Creek Allotment. Diffuse knapweed was mostly located along roads and trails and when present in plant community, it was sparse.

One mountain shrub community (antelope bitterbrush, snowberry, serviceberry) was sampled. Bitterbrush provided 11 percent cover and sagebrush averaged 14 percent. Utah serviceberry was present but not hit. Of concern was the large amount (average 16 percent) of gray (*Chrysothamnus nauseosus*) and green (*C. viscidiflorus*) rabbitbrush present in the area. All age classes of shrubs were present. Idaho fescue was the most common grass (average 27.5 percent cover), with lesser amounts of bluebunch wheatgrass (average 5 percent), Sandberg bluegrass (average 3.5 percent), and bottlebrush squirreltail (1 percent). Some thickspike wheatgrass was present across the flat. The native forb component was less abundant and diverse than expected. Bare ground averaged 19.5 percent, whereas, biological soil crust averaged 5 percent cover. Exotic annuals were higher than expected (average 2.5 percent cover), with cheatgrass being the primary species detected. Bur buttercup was widespread, but not hit.

Mountain mahogany and aspen stands were not sampled because of time restraints. Data collected 2002 at an aspen stand near Sagehen Spring in the Cedar Creek Allotment, for a separate project, showed 100 percent use on young aspen and heavy trampling/churning of the understory. Bare ground was 52 percent, shrub cover was 12 percent (mountain snowberry), grass and forb cover was 0 percent and litter on the ground was 34 percent cover. Due to the degree of trampling it was not possible to determine if any late seral grasses (pinegrass,

Columbia needlegrass, western needlegrass, mountain brome) were present at this site. Litter on the ground was primarily recently fallen aspen leaves. At aspen sites bare ground should be limited to soil exposed by burrowing mammals. Both aspen stands and mountain mahogany are important to a variety of wildlife including several identified as sensitive species.

#### **4. Standard 5 - Seedings**

The seedings met most of the indicators of the Standard 5 for Seedings with the exception of Invasive species. Diffuse knapweed has been noted in the lower elevation pastures (Roseworth Reservoir and Highway Fields) in the Cedar Creek Allotment and has expanded into the seedings in some areas. Heavy use on four-wing saltbush, seeded into crucial mule deer winter range, has resulted in severe hedging and mortality on this important browse species. The use appears to be being made by livestock in the summer and fall prior to mule deer moving onto the winter range. Bare ground was relatively high in seedings varying from 22 percent to 29 percent. Biological soil crusts were low (0 to 4 percent) in seedings. The soil crusts were early seral species. This is expected due to the impacts of wild fire and drill seeding. Grass cover varied from 26 to 57 percent in areas sampled in the seedings. Crested wheatgrass provided 35 percent (CC-4) 17 percent (CC-3), 28 percent (CC-2), and 17 percent (CC-1) cover. Sandberg bluegrass was present at all sites and contributed cover from 17 percent (CC-3) to 1 percent (CC-4). At sites CC-1 and CC-4 the only native grass present was Sandberg bluegrass. Bluebunch wheatgrass was present at CC-2 (1 percent cover) and CC-3 (6 percent cover). Perennial forbs in the seeding were limited (1 to 2 percent). Exotic annuals (grasses and forbs) were variable ranging from trace levels up to 4 percent cover. Exotic annuals intercepted were cheatgrass, bur buttercup, and tumbled mustard. Other exotic annuals observed were Russian thistle and halogeton.

#### **5. Standard 6 –Exotic Plant Communities, Other Than Seedings**

Not applicable.

#### **6. Standard 7 - Water Quality**

The two main perennial surface waters in the Cedar Creek allotment include Cedar Creek and Cedar Creek Reservoir. Of these two major water bodies, the Idaho Department of Environmental Quality (DEQ) has nominated the reservoir and the lower segment of Cedar Creek (outside the allotment) as “water quality limited” and are included on the 1996-98 303(d) list (and will remain on the 2002 list) in Hydrologic Unit Code (HUC) #17040213 for concerns of **nutrients, sediments, dissolved oxygen, flow alteration, and pathogens**, however severity of these concerns are currently rated as low. Additional water quality sampling by DEQ will begin in the spring of 2004 for the Salmon Falls Creek SBA/TMDL.

Although the upper segment of Cedar Creek, the 10 mile stretch above the reservoir that is entirely associated with the allotment, is not currently listed as water quality limited by DEQ, the BLM has been water quality monitoring this portion of the creek for the past ten years. Data summaries for each year (1993-2002) of the water quality sampling for temperatures and chemical attributes for this portion of the creek can be found in **Appendix II**.

A brief water quality summary discussion of the creek concludes that; for the past ten years (1993-02), Cedar Creek has been basically meeting all State water quality standards for the beneficial uses of a cold water biota and secondary recreation contact stream. However, maximum temperatures have approached the threshold of 22° C a few times in 1993, '94, '96,

'01 and '02. Also, a one-day-in-time fecal coliform count exceeded the standard of 800 per 100 ml in 1996. Other coliform counts have been at 800/100ml or less for the most part at other data collection times. More specific and dedicated coliform monitoring is probably needed in the future to reach a better understanding of this water quality attribute. All other water quality attributes measured by the BLM appear to be within the State's water quality limits and standards for the beneficial uses of this stream. No biological water parameters have been monitored by the BLM in this creek. The DEQ has monitored this segment of the creek above the reservoir in 2002 and will be assessed for the 2004 303(d) list.

Additionally, there are a few other open waters within the allotment consisting of springs and ponds. The quality of these waters has not been monitored by the BLM. Most water for livestock use is distributed throughout much of the allotment by means of pipelines and troughs. Sources for these pipeline systems come from either a spring on BLM land or a ground water well on private land. The quality of these sources is not monitored by the BLM either, but is assumed to be of high quality since they come directly from the individual sources.

#### **7. Standard 8 – Threatened and Endangered Plants and Animal Species**

A number of species presently designated as Sensitive species are present in the allotment. For the most part, the allotment has not been inventoried for sensitive species. Sensitive species occurrences are frequently noted from incidental observations. Also, a number of wildlife species presently designated as “watch” are also present. Watch species are **not** presently designated as Sensitive species, but may be added to the sensitive list in future years. No sensitive BLM plant species are known to occur in the Cedar Creek Allotment. Only limited surveys for sensitive plants have been conducted in this allotment. It is unknown whether the standard is being met for special status plant species. There is insufficient information available to determine whether livestock grazing management was having a significant impact on sensitive plant species. All sensitive species are shown in Table 8.

**Table 8 – Idaho BLM Sensitive and Watch species in the Cedar Creek Allotment**

<b>Common Name</b>	<b>Scientific Name</b>	<b>Status</b>	<b>Presence</b>
Greater sage grouse	<i>Centrocercus urophasianus</i>	S	C
Columbian sharp-tailed grouse	<i>Tympanuchus phasianellus columbianus</i>	S	C
Mountain quail	<i>Oreotyx pictus</i>	S	H
Prairie falcon	<i>Falco mexicanus</i>	S	C
Northern goshawk	<i>Accipiter gentilis</i>	S	C
Ferruginous hawk	<i>Buteo regalis</i>	S	C
Loggerhead shrike	<i>Lanius ludovicianus</i>	S	C
Brewer’s sparrow	<i>Spizella breweri</i>	S	C
Sage sparrow	<i>Amphispiza belli</i>	S	C
Calliope hummingbird	<i>Stellula calliope</i>	S	C
Lewis woodpecker	<i>Melanerpes lewis</i>	S	C
Willow flycatcher	<i>Empidonax trailli</i>	S	C
Redband trout	<i>Oncorhynchus mykiss gairdneri</i>	S	C
Northern leopard frog	<i>Rana pipiens</i>	S	H
Western toad	<i>Bufo boreas</i>	S	L
Columbia spotted frog	<i>Rana luteiventris</i>	C	L
Spotted bat	<i>Euderma maculatum</i>	S	L
Townsend big-eared bat	<i>Corynorhinus townsendii</i>	S	L
Swainson’s hawk	<i>Buteo swainsoni</i>	W	C
Wilson phalarope	<i>Phalaropus tricolor</i>	W	C
Short-eared owl	<i>Asio flammeus</i>	W	C
Western burrowing owl	<i>Speotyto cunicularia</i>	W	C
Sage thrasher	<i>Oreoscoptes montanus</i>	W	C
Green-tailed towhee	<i>Pipilo chlorurus</i>	W	C
Brewer’s blackbird	<i>Euphagus cyanocephalus</i>	W	C
Cassin’s finch	<i>Carpodacus cassinii</i>	W	C
Red-naped sapsucker	<i>Sphyrapicus nuchalis</i>	W	C
Pinyon jay	<i>Gymnorhinus cyanocephalus</i>	W	C
Western pipestrelle	<i>Pipistrellus hesperus</i>	W	C
Western small-footed myotis	<i>Myotis ciliolabrum</i>	W	C
Yuma myotis	<i>Myotis yumanensis</i>	W	L
Grasshopper sparrow	<i>Ammodramus savannarum</i>	W	L
Virginia’s warbler	<i>Vermivora virginiae</i>	W	L
Cordilleran flycatcher	<i>Empidonax occidentalis</i>	W	L
Slickspot peppergrass	<i>Lepidium papilliferum</i>	C	L
Status codes: S = designated Sensitive species; C = FWS candidate species; W = Watch category			
Presence codes: C = presence confirmed in allotment; L = presence likely in the allotment; H = historic, likely extirpated			

Greater sage grouse. There are records of 3 sage grouse leks in the Cedar Creek Allotment ( 1 active and 2 historic). An additional 7 sage grouse active leks are known to be within 2 miles of the allotment boundary. Two historic leks were in adjacent allotments, but no specific data are in

the present data base. Portions of the Cedar Creek Allotment have not been inventoried for sage grouse leks since the early 1980's. The Idaho Department of Fish & Game flew a portion of the Cedar Creek Allotment in 2000 during a lek survey. Data for the sage grouse leks is contained in Table 9. Research on sage grouse in the early 1990's documented the movement of sage grouse from lower elevations (5200 feet) on Browns Bench to higher elevations (7500 feet) as summer progressed. Sage grouse droppings were observed at sites CC-5, 6, 9 and 10, where adequate sagebrush cover was present. Grazing Idaho fescue, Sandberg bluegrass, bottlebrush squirrel-tail and Thurber needlegrass to a 40 percent use level will not provide the minimum residual cover for sage grouse nesting at distances 0.5 miles and more from water. A 40 percent use level or less will likely provide some areas of adequate residual for sites dominated by bluebunch wheatgrass in areas greater 0.5 miles from water.

**Table 9 - Numbers of male sage grouse at leks in or near the Cedar Creek Allotment for which there is data.**

Lek #	# Males	Year of Recent Count	Highest # Males	Year of Count
2T-22	0	2000	42	1961
2T-24	0	1998	10	1965
2T-111	18	2002	25	1998
<b>2T-133</b>	4	2002	18	1998
2T-150	0	2003	13	2000
2T-155	1	2002	8	1998
2T-157	8	2002	21	1998
2T-161	0	2000	98	1967
* indicates historic lek with no specific count data				
Lek # bolded are located within the Cedar Creek Allotment				

Columbian sharp-tailed grouse. Radio marked Columbian sharp-tailed grouse were documented nesting in the pasture south of the Rogerson Highway and using the mountain shrub lands in the southern portion of this allotment.

Mountain quail. Mountain quail were historically present in several canyons in the area including Cedar Creek.

Prairie falcon. Prairie falcons have been observed in the cliffs associated with Cedar Creek. No nest sites have been reported in the area.

Northern goshawk. In the past, Goshawks have been observed flying along Cedar Creek and in aspen stands during the nesting period. No nest sites have been documented in the allotment, however, very limited inventory for this species has been done. The taller aspen with larger diameter trees provide suitable nesting habitat for this species.

Loggerhead shrike. Shrikes have been observed in areas with tall sagebrush (Wyoming big sagebrush). Wild fires have reduced some of the habitat for this species.

Brewer's sparrow and Sage sparrow. Both species have been observed in areas with adequate shrub height for nesting.

Calliope hummingbird. Calliope hummingbirds have been observed in the riparian zone associated with the springs at the head of Cedar Creek.

Lewis woodpecker. Lewis woodpecker has been observed in a stand of larger diameter aspen along Cedar Creek. Lewis woodpecker is a large (crow sized) species and nests in aspen patches with trees greater than 10 inches diameter. This species is likely present in other aspen stands. Aspen stands are often associated with seeps, spring, some east facing slopes, and areas below snow concentrations, generally in the higher elevations.

Redband trout. Redband trout have been observed in Cedar Creek from the headwaters stream down to Cedar Creek Reservoir. Livestock trampling has resulted in widening of the stream channel adversely effecting pool depth. Water temperatures tend to increase in the lower portions of Cedar Creek

Northern leopard frog. Northern leopard frogs were historically present in the lower portion of Cedar Creek. No recent amphibian inventory has occurred in the Cedar Creek Allotment. Some beaver ponds provide suitable breeding and over wintering habitat.

Western toad. There is no data for western toad in the Cedar Creek Allotment. It was historically present in Salmon Falls Creek and may persist.

Columbia spotted frog. The U.S. Fish & Wildlife Service has designated the Great Basin population of Columbian spotted frog as a ‘Candidate’ species. Spotted frogs have not been documented in this allotment nor has any inventory for this species been conducted. Suitable habitat is present along portions of Cedar Creek. Spotted frogs have been documented in Rocky Canyon to the south of this allotment.

Slickspot peppergrass. Slickspot peppergrass is not known to occur in this allotment, however, 482 acres of suitable habitat does occur. Threats to this species include degradation of slickspots and surrounding area habitat, trampling from livestock, and weed invasion.

### **C. Guidelines for Grazing Management**

The current grazing management plan provides for periodic rest during the critical growth period in the spring between the boot stage and flowering. Not all water troughs have functional escape ramps for wildlife. The fence wire spacing is not to BLM specifications for mule deer, antelope, and bighorn sheep. The top wire is generally too high. Per the *Idaho Standards for Rangeland Health and Guidelines for Livestock Grazing Management*, the following Guidelines need to be implemented to promote significant progress toward the Standards:

Guideline 5 – Maintain or promote grazing management practices that provide sufficient residual vegetation to improve, restore, or maintain healthy riparian-wetland functions and structure for energy dissipation, sediment capture, ground water recharge, streambank stability, and wildlife habitat appropriate to site potential.

Guideline 6 – The development of springs, seeps, or other projects affecting water and associated resources shall be designed to protect the ecological function, wildlife habitat,

and significant cultural and historical/archaeological/paleontological values associated with the water source.

Guideline 7 – Apply grazing management practices to maintain, promote, or progress toward appropriate stream channel and streambank morphology and functions. Adverse impacts due to livestock grazing will be addressed.

Guideline 18 – Use grazing management practices, where feasible, for wildlife control and to reduce the spread of targeted undesirable plants (e.g., cheatgrass, medusa head wildrye, and noxious weeds) while enhancing vigor and abundance of desirable native or seeded species.

## **V. Conclusions**

Standard 1 (Watershed) of the Standards for Rangeland Health is being met. Standards 2 (Riparian/Wetlands), Standard 3 (Stream Channels/Floodplains), Standard 4 (Native Plant Communities), Standard 5 (Seedings), and Standard 8 (Special status species) are not being met.

## **VI. Consultation**

Arnold Pike, Range Conservationist  
Cedar Creek Cattle Co.-Chuck Jones  
Clare Josaitis, Natural Resource Specialist  
Jeff Ross, Archaeologist  
Jim Klott, Wildlife Biologist  
John Ash, NRS – Climate, Monitoring and Water Quality  
Sheri Hagwood, Botanist

## **VII. Recommendations**

Increase current permitted grazing use from 4,233 AUMs (4,212 cattle AUMs and 21 sheep AUMs) to 4,443 AUM (4,421cattle AUMs and 22 sheep AUMs) and allocate the remaining permitted use to watershed and wildlife. This level of grazing use would result in an expected utilization of less than 40 percent at key areas on near normal production years. This level of use was proposed in the RMP for 2005.

Maintain 2,700 acres of existing vegetation improvements. Allow the remaining 500 acres of seedings to naturally transition to an big sagebrush overstory.

Change season of use to remove livestock from identified crucial winter range by mid-November or earlier.

Improve up to 4,345 acres of lands in poor ecological condition.

Implement noxious weed control for the current invasion of Russian Knapweed and any other noxious weeds.

Manage for light utilization levels (up to 40%) in native pastures in order to maintain the existing native communities. Under the forage allocation proposed, a portion of the forage production

would be allocated to watershed and wildlife, and would maintain the native plant communities and provide habitat for wildlife.

Manage for moderate utilization levels (up to 50 percent) in pastures predominately seeded to crested wheatgrass. In areas of seeded pastures where crested wheatgrass plants are becoming decadent or “wolfy” allow higher utilization (up to 70 percent) on an occasional basis (once in 5 years) to condition plants and remove standing dead material. This treatment will promote plant vigor, increase ground litter, overall palatability and maintain healthy stands of crested wheatgrass in accordance with the Jarbidge RMP. Increased palatability of seeded species will decrease grazing pressure on native species thus resulting in better plant vigor in the native herbaceous component. This level will be cumulative between livestock and wildlife. When 70 percent grazing use is authorized at key areas within a seeded pasture, use in the remaining seeded pastures would be at 50 percent or less; in the native pastures at 40 percent or less; and total grazing use would be limited to the permitted use in the allotment.

Allow no more than 50 percent frequency of browsing on current year leaders on key upland woody species\*.

Establish riparian standards for use on key riparian herbaceous species, key woody species, and bank alteration for all creeks and wetlands in the allotment.

Plant and manage for preferred browse species on crucial mule winter range in areas previously seeded to crested wheatgrass following wild fire. Preferred browse species to be used may consist of a combination of Wyoming big sagebrush, four-wing saltbush, and antelope bitterbrush. Livestock use of browse species will be managed to ensure that palatable browse species are maintained or increased for wildlife on winter range.

Remove livestock from identified crucial winter range by November 15 every year.

Modify 4 strand barbed wire pasture fence to 3 strand barbed wire fence (mule deer wire spacing) between Highway Field and Monument Springs Field and any other pasture fences to meet BLM standards and remove restrictions to mule deer movement. This would not apply to fences bordering the Rogerson Highway.

Add management guidelines for use in aspen patches.

Provide water in all water troughs for wildlife, even when livestock are not in the pastures. Ensure that wildlife escape ramps are correctly installed and functional.

No salting should occur within 0.25 miles of Cedar Creek or Cedar Creek Reservoir to protect cultural resources.

Enlarge the enclosure at the headwaters of Cedar Creek by expanding it to the east to protect significant cultural resources.

\*Note: 50 percent use on key woody species is not allocated to livestock. Use is expected to be low except for during the winter if snow covers herbaceous vegetation. Crucial winter range was identified in this allotment.

**Appendix 1**

**Stocking Rate Based Climate and Production**

**Allotment: Cedar Creek #1131**

**Date: 1/15/2004**

Station	Avg. PPT (Inches)	75% of Avg. (Inches)	# of Years $\geq 75\%$ of Avg.	# of Years of Data	% of Years $\geq 75\%$ of Avg.
Three Creek	22.00	16.50	34.00	44.00	77%

Productn Total lb	Three Creek 2002 Yield Index	Decision			AUMs Available for Livestock
	Adjustment	Weighted Use Factor	% of Years $\geq 75\%$ of Avg. PPT	% of Veg. Prod'tn Available	
11,385,090	0.99	40%	77%	31%	4,443

Pasture	Vegetation	Acres	lbs/ Acre	lb.of Forage	Utilization Factor	Weighted Forage
#1 - Roseworth Field	Crested	1,030	1,091	1,123,730	40%	449,492
	Wy sage/Thurbers	430	169	72,670	40%	29,068
	Wy sage/crested	1,150	815	937,250	40%	374,900
Subtotal		2,610				
#2 - Highway Field	Crested	1,660	1,178	1,955,480	40%	782,192
	Wy sage/crested	252	347	87,444	40%	34,978
	Wy sage/Thurbers	144	169	24,336	40%	9,734
	Low sage/fescue	667	390	260,130	40%	104,052
	Mt. big sage/fescue	9	329	2,961	40%	1,184
	Mt. big sage/bluebunch	665	262	174,230	40%	69,692
	Basin big sage/fescue	40	329	13,160	40%	5,264
Subtotal		3,437				
#3 - Burn Field	Wy sage/crested	516	347	179,052	40%	71,621
	Intermediate wheatgrass	296	496	146,816	40%	58,726
	Mt. big sage/fescue	1,818	329	598,122	40%	239,249
	Low sage/fescue	233	390	90,870	40%	36,348
	Basin big sage/fescue	19	329	6,251	40%	2,500
	Bluebunch	539	984	530,376	40%	212,150
	Mt. Brush*	75	200	15,000	40%	6,000
Subtotal		3,496				
#4 - Monument Springs	Low sage/fescue	4,058	390	1,582,620	40%	633,048
	Mt. big sage/fescue	9,509	329	3,128,461	40%	1,251,384
	Basin big sage/fescue	24	329	7,896	40%	3,158
	Crested	13	1,178	15,314	40%	6,126
	Mt. Brush*	1,243	200	248,600	40%	99,440
Subtotal		14,847				
FFR (Fenced Federal Rang)	Basin big sage/fescue	17	329	5,593	40%	2,237
	Low sage/fescue	278	390	108,420	40%	43,368
	Mt. big sage/fescue	147	329	48,363	40%	19,345
	Wy sage/bluebunch	97	169	16,393	40%	6,557
	Wy sage/crested	16	347	5,552	40%	2,221
Subtotal		555				
Total		24,945		11,385,090		4,554,036

Weighted Use Factor	0.40
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\* Production (lb/ac) estimated based on professional experience.

## Appendix II

### Water Temperatures (°C) Summary Report for Cedar Creek

	1993			1994			1995			1996		
	Ave	Max	Min	Ave	Max	Min	Ave	Max	Min	Ave	Max	Min
June										13.7	17.4	10.4
July	14.4	17.6	11.2	15.8	19.5	12.8	14.5	17.9	11.7	15.4	19.1	12.2
Aug.	15.5	18.4	12.9	15.5	18.9	12.9	14.3	17.8	11.3	14.3	17.8	11.3
Sept.	12.8	15.7	10.4	12.6	15.5	10.4	12.4	15.3	10.1	11.0	13.7	8.5
	1997			1998			1999			2000		
	Ave	Max	Min	Ave	Max	Min	Ave	Max	Min	Ave	Max	Min
June	12.7	15.3	9.6	11.7	13.6	9.9	12.1	14.8	9.8	13.3	17.2	10.1
July	13.9	17.1	11.2	14.7	16.2	12.9	13.8	16.8	11.1	14.3	18.0	11.2
Aug.	14.2	17.6	11.4	13.9	15.6	12.6	13.6	16.4	11.4	13.9	17.1	11.2
Sept.	12.2	14.8	10.1	12.4	13.3	11.6	10.7	13.2	8.5	11.0	13.8	8.6
Oct.							8.3	9.5	6.7	8.3	10.5	6.4
	2001			2002			4-10 Year Aves.					
	Ave	Max	Min	Ave	Max	Min	Ave	Max	Min			
June	12.8	17.0	9.4	13.1	16.9	9.9	12.8	16.0	9.9			
July	14.3	18.5	11.2	14.8	18.4	11.9	14.6	17.9	11.7			
Aug.	14.3	18.3	11.2	12.8	16.2	10.0	14.2	17.4	11.6			
Sept.	11.7	15.1	9.0	10.9	13.4	8.8	11.8	14.4	9.6			
Oct.	8.9	11.7	6.6	8.1	9.9	6.7	8.4	10.4	6.6			

### Cedar Creek Summary Report for Other Water Quality Attributes

Years	1994	1995	1996	1997	1998	1999	2000	2001	2002	7/9 Yr.
	<u>Ave.</u>									
DO (mg/l)	9.4	8.7	7.7	8.2	6.3	9.6	9.4	8.7	8.7	8.5
%DO			83.1	86.3	60.7	92.2	93.4	88.7	91.4	85.1
pH	8.3	8.7	7.6	7.9	7.5	7.5	7.8	7.9	8.0	8.0
Sp. Cond (uS/cm)		49.3	50.8	55.3	51.6	41.3	42.4	44.1	47.8	
TDS (g/l)			.032	.032	.033	.033	.024	.027	.028	.030
Nitrates (mg/l)				.47						n/a
T. Phos. (mg/l)				.11						n/a
E. Coli (cfu/100ml)									360	n/a
F. Coli. (cfu/100ml)^		1,400*	305						360*	680♦
Total Susp. Solids (TSS)							17^		38	28

n/a - not applicable

\* - One reading only, not an average.

♦ - Not true average.

^ - Average of 3 readings of 25, 22 and 3.