

**United States Department of the Interior
Bureau of Land Management**

RANGELAND HEALTH ASSESSMENT AND EVALUATION REPORT

CEDAR BUTTE DEVIL CREEK ALLOTMENT #01002

January 27, 2016

U.S. Department of the Interior
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ALLOTMENT INFORMATION:

Field Office: Jarbidge Field Office (JFO)

Name of Permittee: Salmon Falls Land and Livestock

Allotment Name/Number: Cedar Butte Devil Creek (01002)

Date of Field Assessment: July 16 and 23, 2013

Stream Miles on Public Land: 0 miles of perennial stream; 6.6 miles of intermittent stream

Table 1: Cedar Butte Devil Creek Allotment Acres

Total Acres	BLM Acres	State Acres	Private Acres	Other Acres
31,991	18,946	2,562	10,483	0

Table 2: Assessment Participants

Name	Position
Kate Crane	TFD Fisheries Biologist
Jim Klott	JFO Wildlife Biologist
Michael Haney	JFO Botanist
Dan Strickler	JFO Rangeland Management Specialist
Andrea J. Cox	JFO Rangeland Management Specialist
Bonnie Ross	JFO GIS Specialist

CURRENT PERMITTED LIVESTOCK GRAZING USE

Total Active Use:

Permit: 3,210 AUMs

SSA: 2,288 AUMs (Stipulated Settlement Agreement)

Livestock Type: Cattle

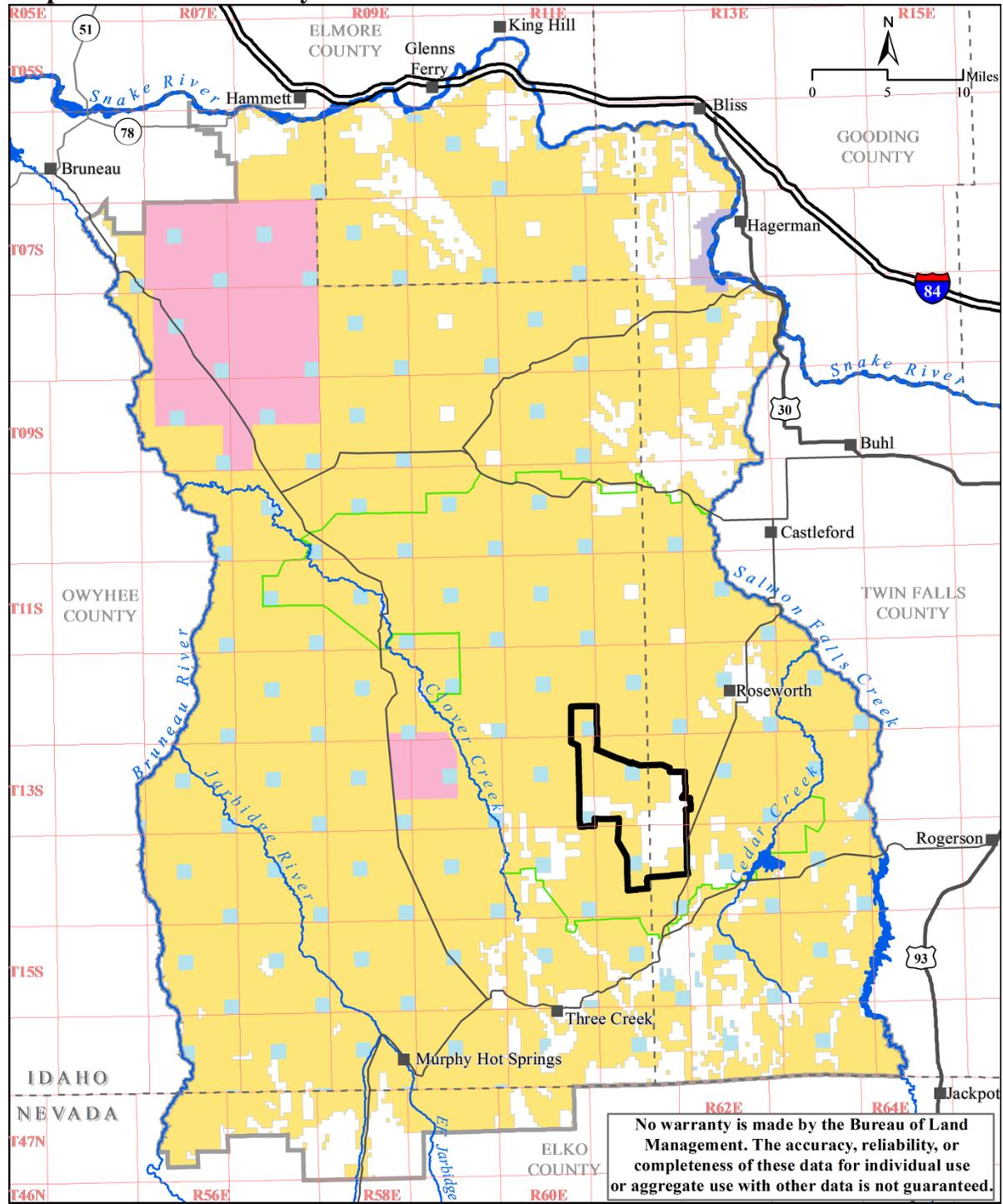
Livestock Numbers: 294 Cattle

Season of Use: 03/01 to 02/28

Current Land Use Plan: 2015 Jarbidge Resource Management Plan (RMP)

Current Stocking Level: 8.3 Acres/AUM (SSA)

Map 1: Allotment Vicinity



	Cedar Butte Devil Creek Allotment		Bureau of Land Management		Private; other
	Devil Creek Sub-region		Military, Department of Defense		State
			National Park Service	Map projection: UTM zone 11 NAD 1983	

ALLOTMENT PROFILE

The Cedar Butte/Devil Creek Allotment is located approximately 25 miles southwest of Castleford, Idaho (Map 1). The elevation ranges from approximately 4,900 feet to 5,700 feet.

Climatic conditions in south central Idaho are characterized by low humidity, clear skies, large diurnal variation in temperature, and wind patterns reflecting the westerly direction of the prevailing storm track. According to the Ecological Site Descriptions (ESD), annual rainfall in the Cedar Butte/Devil Creek Allotment ranges from 8-16” and the bulk of the moisture typically falls as snow and early spring rain.

Weather data collected at the Horse Butte RAWS station is used to assess precipitation and temperature trends from 2004 to 2013. The RAWS station is located in an 8-10” precipitation zone about 7 miles northwest of the allotment boundary. This area is slightly drier than the Cedar Butte Devil Creek Allotment; however, the data collected at the RAWS station should reflect any trends in precipitation and temperature due to its close proximity.

The thirty-year annual average precipitation at the Horse Butte RAWS station is 8.1”. Annual precipitation at the station was below the thirty-year average during five of the ten years, especially in 2012 and 2013 (Figure 1). Total rainfall in 2012 was 4.89” and in 2013 it was 4.52”. Rainfall was above the thirty-year average the remaining years. Moisture exceeded the thirty-year average by at least two inches in 2005 (14.12), 2006 (10.1”), and 2010 (10.46).

The thirty- year average for rain that fell during the growing season (March–June) is 4”. Growing season precipitation was below the thirty-year average during four of the ten years (2004, 2007, 2012, and 2013). Rainfall was especially low in 2012 (1.92”) and 2013 (1.48”). Spring rainfall was above average in 2005 and 2011 (2” or more above the spring average). (2” or more above the spring average). Except for 2004, temperatures during the growing season were cooler than the thirty-year average (Figure 2).

Figure 1: Precipitation (2004 – 2013) at the Horse Butte RAWS Station

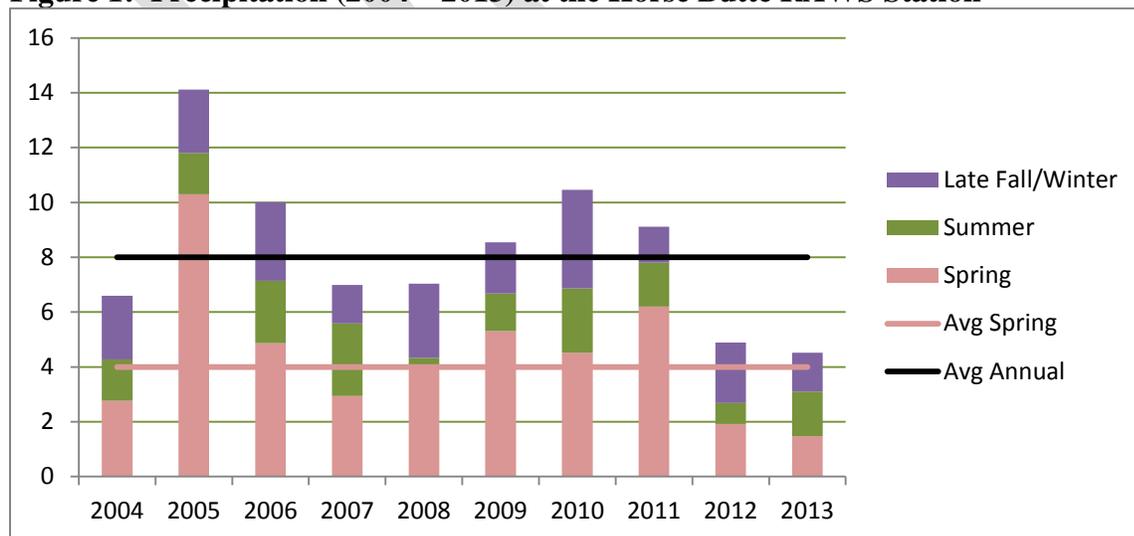
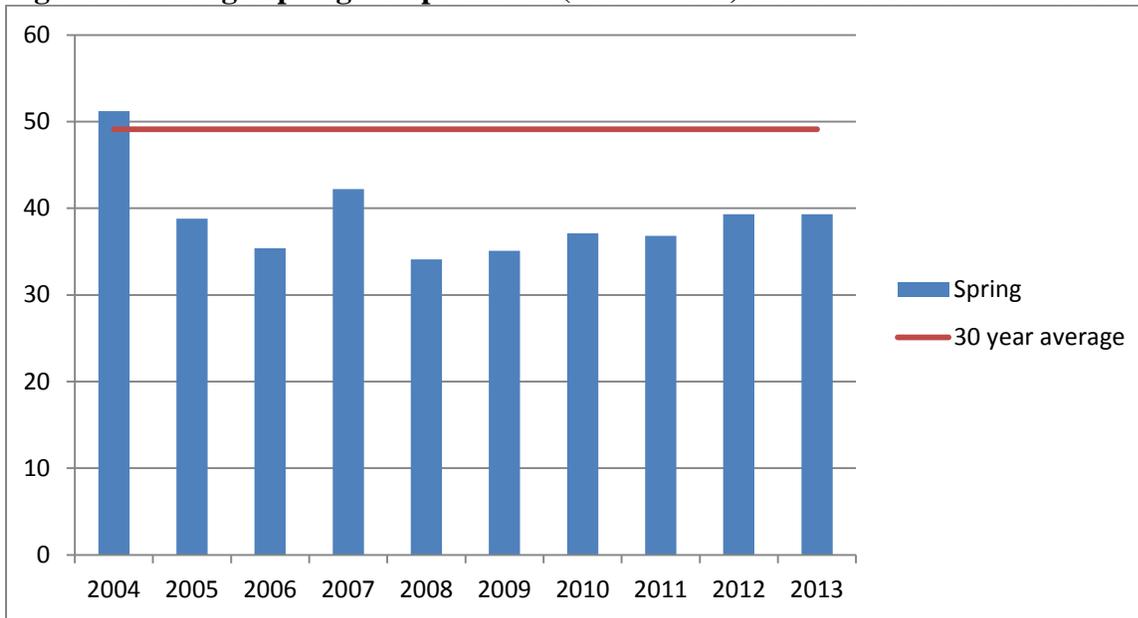


Figure 2: Average Spring Temperatures (2004 – 2013) at the Horse Butte RAWs Station



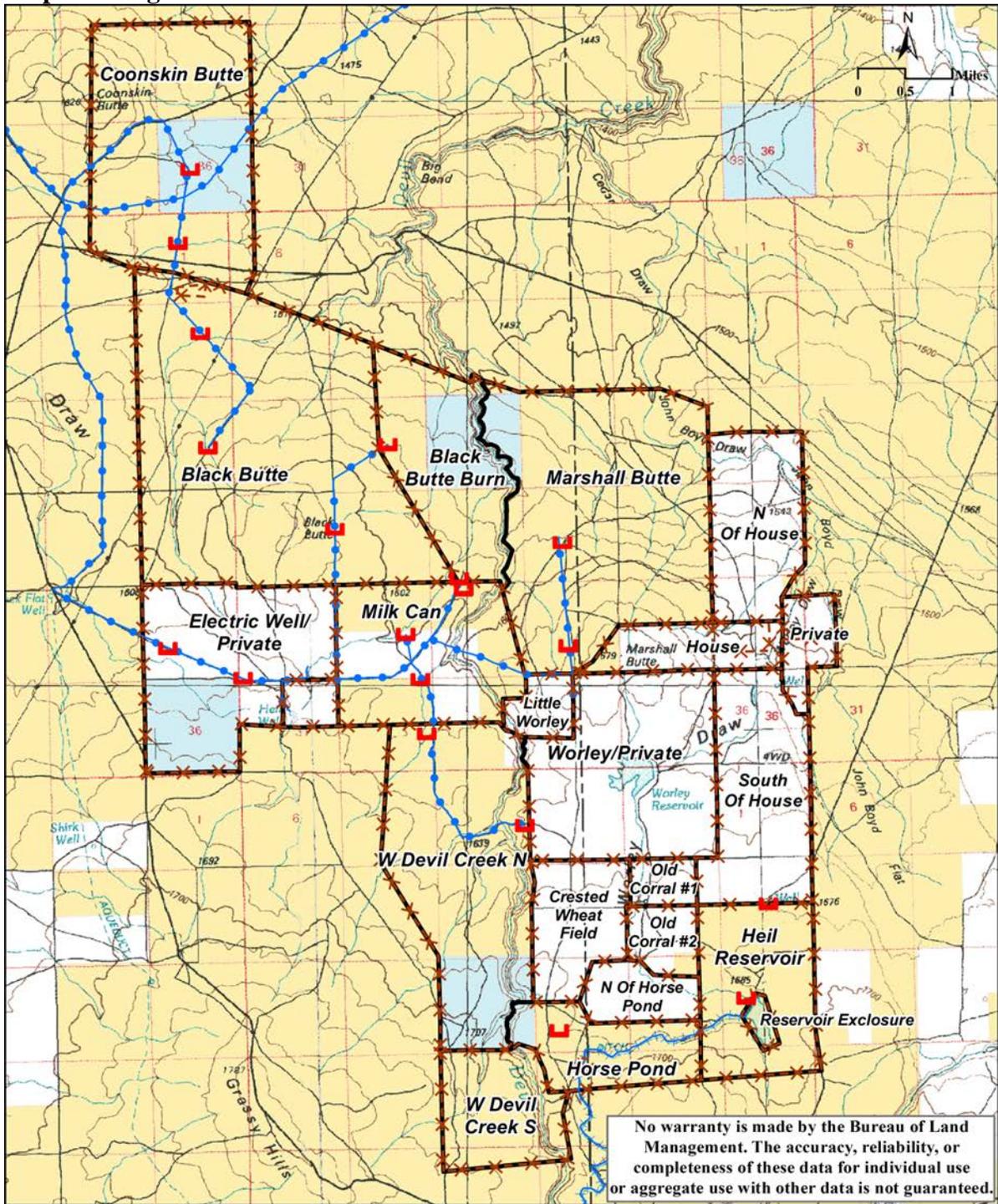
Grazing Management

The Cedar Butte Devil Creek Allotment consists of nine pastures. In addition to these nine pastures, an additional 140 acres administered by the BLM are within private pastures within the allotment boundary. These areas are very small tracts of land fenced in with private pastures due to fence placement. For the purposes of this Rangeland Health Assessment (RHA), these areas are assessed as being a part of the closest adjacent BLM administered pasture.

Table 3: Acreage by pasture and ownership in the Cedar Butte Devil Creek Allotment

Pasture Name	Public	State	Private	Total*
Black Butte	5,291	0	0	5,291
Black Butte Burn	1,054	463	0	1,517
Coonskin Butte	2,276	639	0	2,916
Heil Reservoir & Reservoir Enclosure	1,440	0	0	1,440
Horse Pond	802	79	24	905
Marshall Butte	3,616	177	0	3,793
Milk Can	1,161	0	641	1,802
W Devil Creek N	2,192	557	55	2,804
W Devil Creek S	972	5	0	977
Private Pastures	140	642	9,766	12,038
Allotment Total	18,946	2,562	10,483	31,991

Map 2: Range Infrastructure



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	Cedar Butte Devil Creek Allotment & Pastures		Trough		Bureau of Land Management
			Fence		Private; other
			Pipeline		State
			Worley Ditch		

The term grazing permit for the Cedar Butte Devil Creek Allotment was fully processed in early 2004. However, as a result of appeal and subsequent litigation, the allotment is subject to the interim grazing measures in the Stipulated Settlement Agreement (SSA) ordered by Chief Judge B. Lynn Winmill on October 20, 2005. The allotment was managed per the terms of the SSA through the 2010 grazing season and remains subject to the 2005 SSA, as modified on January 20, 2011. The SSA provides that Active Use be limited to 2,288 Animal Unit Months (AUMs) in the Cedar Butte Devil Creek Allotment. Livestock grazing within the allotment is managed pursuant to an Annual Grazing Plan (AGP) implemented at the beginning of each grazing year (March 1).

A summary of actual use in the Cedar Butte Devil Creek Allotment from 2004 to 2013 can be seen in Table 4. Since 2004, actual use within the Cedar Butte Devil Creek Allotment has averaged approximately 2,025 AUMs. Table 4 also includes average utilization in the allotment from 2004 through 2013 and locations of key utilization sites are shown on Map 3. Utilization has been measured on a variety of native and non-native grass species, including Thurber's needlegrass (*Achnatherum thurberianum*), bluebunch wheatgrass (*Pseudoroegneria spicata*), Sandberg bluegrass (*Poa secunda*) and crested wheatgrass (*Agropyron cristatum*). The average utilization in the allotment from 2004 through 2013 is calculated at 15 percent on Thurber's Needlegrass and bluebunch wheatgrass, 27 percent on crested wheatgrass and 14 percent on Sandberg bluegrass. Utilization data was collected using the Height-Weight Method (Cooperative Extension Service et al., 1999).

Table 4: Actual Use and Utilization Summary

Pasture	Year	Actual Use		Percent Utilization			
		Season of Use	AUMs	Bluebunch wheatgrass	Crested wheatgrass	Thurber's needlegrass	Sandberg bluegrass
Black Butte	2004	Fall	640	19%	-	43%	18%
	2005	Spring/Summer	456	8%	-	8%	-
		Fall	285				
	2006	Spring/Summer	92	6%	-	13%	-
		Fall	117				
	2007	Spring/Summer	509	7%	-	-	1%
	2008	Rested	-	-	-	-	-
	2009	Fall	545	4%	-	-	-
	2010	Spring	413	17%	-	15%	-
	2011	Spring	81	1%	-	-	-
Fall		217					
2012	Spring/Summer	355	10%	-	5%	-	
2013	Spring	112	-	-	-	-	
	Summer	375					
Black Butte Burn	2004	Spring/Summer	199	-	31%	-	-
	2005	Rested*	-	-	7%	2%	-
	2006	Summer	305	-	39%	16%	-
	2007	Summer	141	-	-	-	-
	2008	Rested	-	-	-	-	-
	2009	Fall	147	-	-	-	-
	2010	Fall	EOU 92	-	-	-	-

Pasture	Year	Actual Use		Percent Utilization			
		Season of Use	AUMs	Bluebunch wheatgrass	Crested wheatgrass	Thurber's needlegrass	Sandberg bluegrass
		Fall	115				
	2011	Spring/Summer	225	-	-	-	-
	2012	Fall	161	-	-	-	-
	2013	Spring/Summer	244	-	-	-	-
Coonskin Butte	2004	Spring Fall	208 40	32%	26%	38%	32%
	2005	Spring Fall	57 76	22%	-	27%	3%
	2006	Spring Fall	203 78	49%	-	18%	-
	2007	Spring	42	-	-	-	-
	2008	Rested	-	-	-	-	-
	2009	Rested*	-	6%	-	18%	-
	2010	Spring Fall Fall	EOU 92 EOU 23 253	7%	-	3%	-
	2011	Spring Fall	210 36	3%	-	1%	-
	2012	Spring Winter	89 143	1%	-	2%	-
	2013	Spring Fall	27 258	-	-	-	-
Heil Reservoir	2004	Spring/Summer	350	46%	41%	-	19%
	2005	Summer	220	14%	22%	-	-
	2006	Spring/Summer	269	44%	40%	-	-
	2007	Rested	-	-	-	-	-
	2008	Rested	-	-	-	-	-
	2009	Summer	185	11%	12%	-	-
	2010	Summer	193	14%	31%	-	-
	2011	Spring/Summer	240	1%	-	-	-
	2012	Rested	-	-	-	-	-
	2013	Rested	-	-	-	-	-
Horse Pond	2004	Rested**	-	14%	-	-	11%
	2005	Summer	138	10%	-	-	-
	2006	Summer	130	22%	-	-	-
	2007	Rested	-	-	-	-	-
	2008	Rested	-	-	-	-	-
	2009	Summer	108	10%	-	-	-
	2010	Summer/Fall	127	16%	-	-	-
	2011	Summer	190	18%	-	-	-
	2012	Summer	141	15%	-	-	-
2013	Summer	151	-	-	-	-	
Marshall Butte	2004	Summer/Fall Fall	183 366	-	23%	-	-
	2005	Summer	555	6%	32%	21%	

Pasture	Year	Actual Use		Percent Utilization			
		Season of Use	AUMs	Bluebunch wheatgrass	Crested wheatgrass	Thurber's needlegrass	Sandberg bluegrass
	2006	Summer/Fall	277				
		Fall	308	-	-	-	-
	2007	Summer	179	-	-	-	-
	2008	Rested	-	-	-	-	-
	2009	Summer/Fall	517	-	-	-	-
	2010	Summer	EOU 36				
		Summer	318	7%	16%	10%	-
		Fall	EOU 23				
Fall		207					
2011	Spring/Summer	394	5%	-	16%	-	
	Fall	72					
2012	Fall	528	-	-	-	-	
2013	Summer	305	-	-	-	-	
	Fall	55					
Milk Can	2004	Summer	263	44%	-	-	-
	2005	Summer	37	18%	-	-	-
		Summer/Fall	92				
	2006	Rested	-	-	-	-	-
	2007	Rested	-	-	-	-	-
	2008	Fall	292	-	-	-	-
	2009	Spring/Summer	280	18%	-	-	-
	2010	Summer	EOU				
		Summer	272	22%	-	-	-
		12					
2011	Summer	90	7%	-	-	-	
2012	Summer	247	16%	-	-	-	
2013	Spring	54	-	-	-	-	
	Summer	134					
West Devil Creek (North Pasture)	2004	Summer	495	23%	-	-	-
		Fall	105				
	2005	Summer	286	11%	-	-	-
	2006	Rested	-	-	-	-	-
	2007	Rested	-	-	-	-	-
	2008	Fall	447	6%	-	-	-
	2009	Spring	151	16%	-	-	-
		Summer	151				
	2010	Summer	EOU				
		Summer	127	7%	-	-	-
		345					
2011	Summer	264	10%	-	-	-	
2012	Spring/Summer	354	12%	-	-	-	
2013	Summer	338	-	-	-	-	
West Devil Creek	2004	Summer/Fall	236	-	-	-	-
	2005	Summer	137	29%	-	-	-
	2006	Summer	240	20%	-	-	-

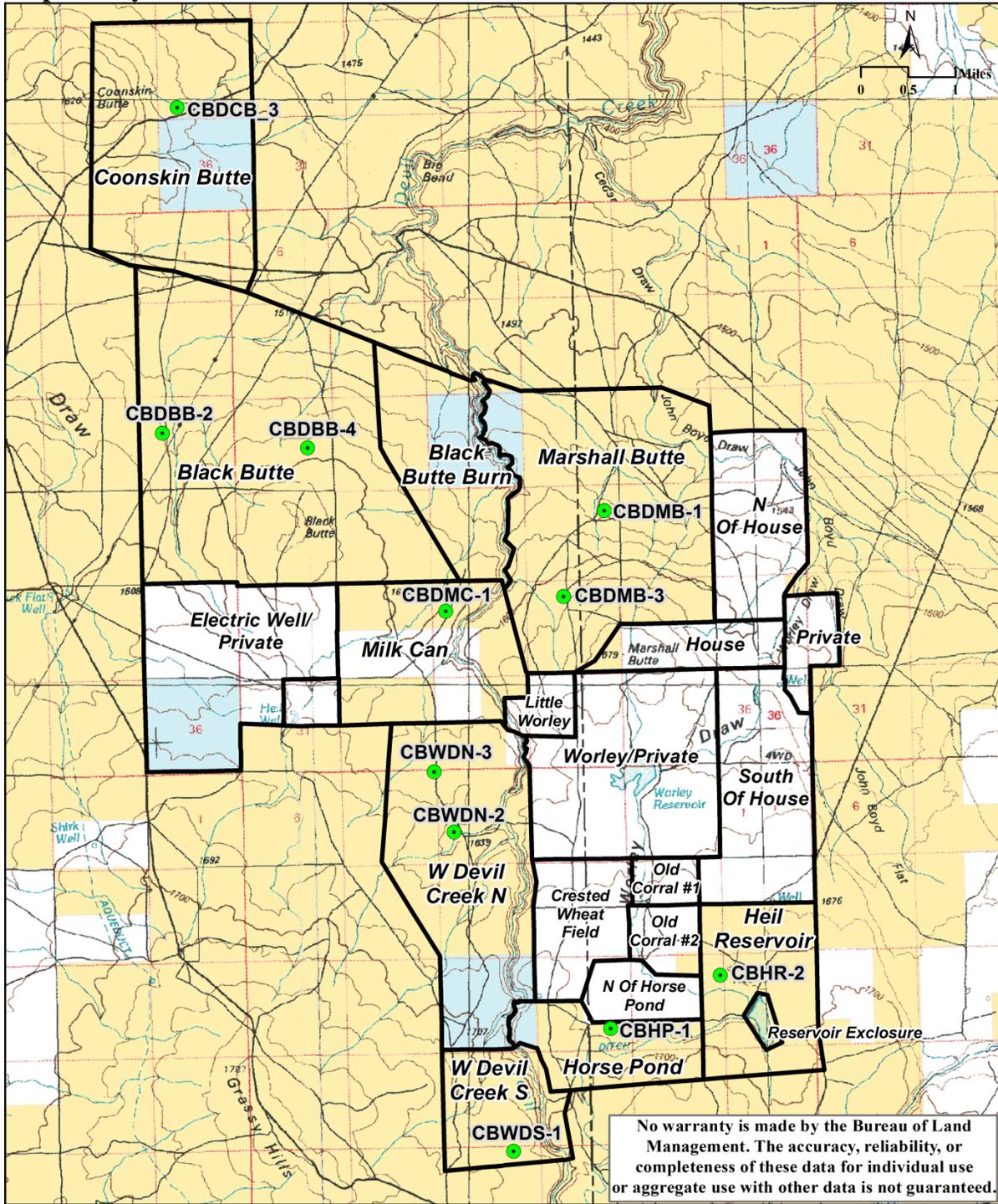
Pasture	Year	Actual Use		Percent Utilization			
		Season of Use	AUMs	Bluebunch wheatgrass	Crested wheatgrass	Thurber's needlegrass	Sandberg bluegrass
(South Pasture)	2007	Summer	119	-	-	-	-
	2008	Rested*	-	1%	-	-	-
	2009	Summer	205	19%	-	-	-
	2010	Summer	265	18%	-	-	-
	2011	Summer	248	5%	-	-	-
	2012	Summer	238	19%	-	-	-
	2013	Summer	204	28%	-	-	-

Winter Use (1/1 – 3/31); Spring Use (4/1 – 5/31); Summer Use (6/1 – 9/30); Fall Use (10/1 – 12/31)

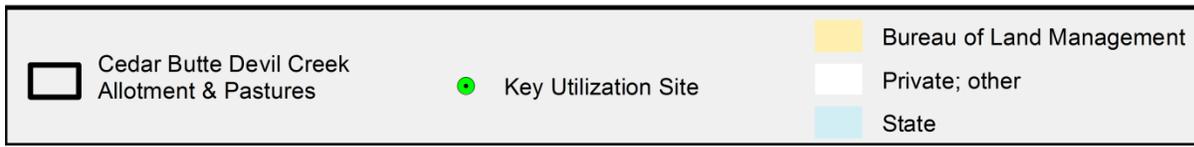
Note: Utilization may have been taken at more than one location and results were averaged by species. EOU is exchange of use. *No livestock grazing occurred this year; utilization was likely due to snow/wind that broke off grass stalks prior to measurement. **No livestock were scheduled to use the pasture but some trailing occurred.

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Map 3: Key Utilization Sites



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Vegetation

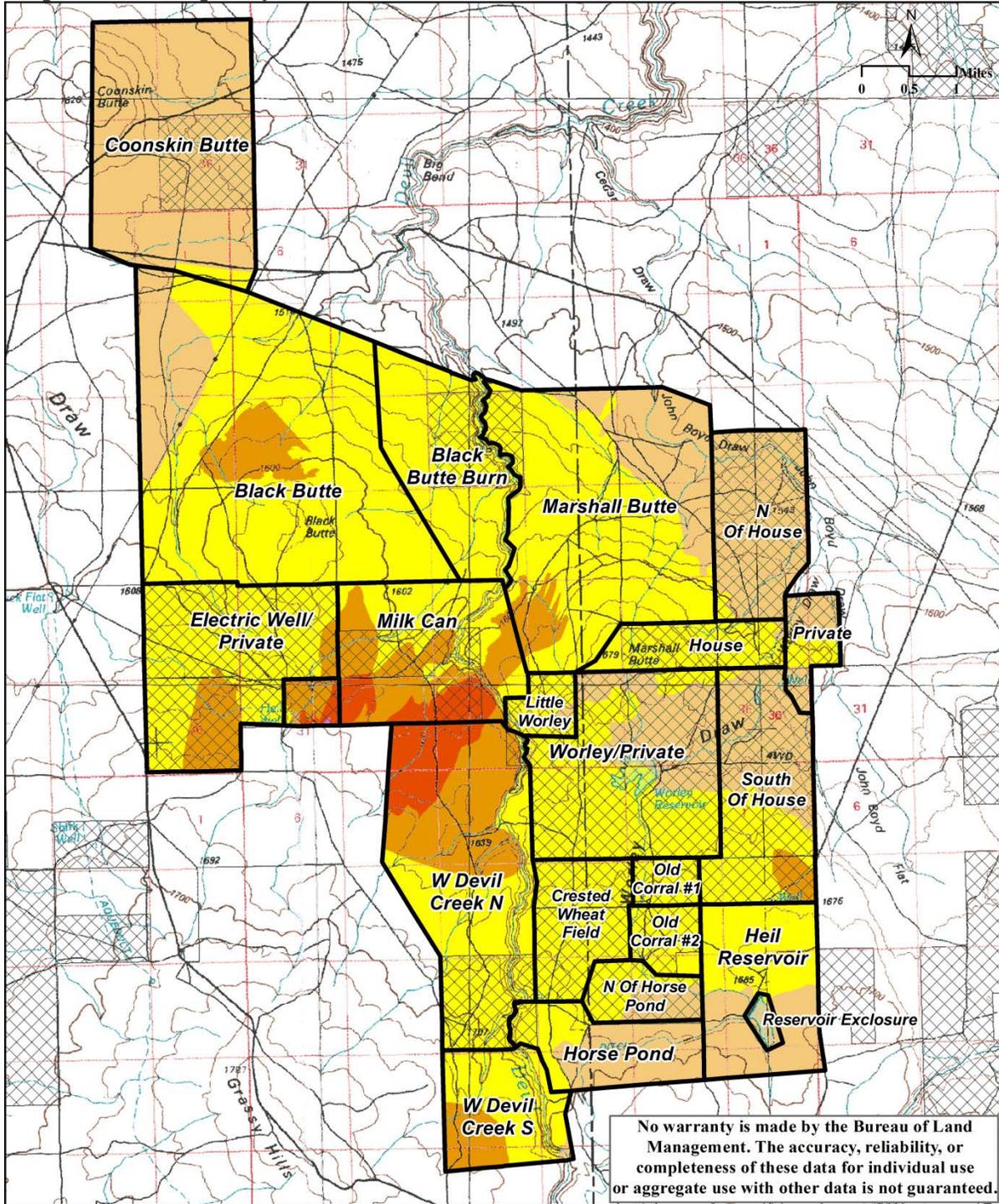
Vegetation in the Cedar Butte Devil Creek Allotment was initially mapped in 2006 using field observations, field cover data, and 2004 National Agriculture Imagery Program (NAIP) imagery. The vegetation map was updated in 2013 using field observations and NAIP imagery (Map 3). Vegetation communities were classified and mapped based on dominant plant cover using a minimum mapping unit of 20 acres, which is appropriate for landscape-level planning but is not intended to show the complexity of vegetation communities at a finer-scale. With this, fifty-three vegetation communities were classified and mapped based on dominant plant cover. These vegetation communities were subsequently organized into five classes and six sub-classes according to national standards (Grossman et al., 1998), with the exception of evergreen shrublands dominated by sagebrush; these communities were defined as having 10 percent or more shrub cover rather than the national standard of more than 25 percent shrub cover. This was done to provide consistency with defined habitat needs (Wisdom et al., 2000) and proposed management objectives for greater sage-grouse (sage-grouse).

The Cedar Butte Devil Creek Allotment was historically a shrub steppe plant community; however, the allotment has been affected by wildfires since at least 1960. Approximately 57 percent of the allotment has burned at least twice in the past 20 years and 100 percent of the allotment was burned in 2007 (Table 5 and Map 4).

Table 5: Fire Frequency by Pasture 1993 to 2013

Pasture	Number of Times Burned 1993 - 2013	Acres of Pasture	Percentage of Pasture
Black Butte (5,291 acres)	1	762	14%
	2	4,118	78%
	3	412	8%
Black Butte Burn (1,054 acres)	1	0	0%
	2	1,054	100%
Coonskin Butte (2,276 acres)	1	2,201	97%
	2	76	3%
Heil Reservoir (1,354 acres)	1	630	47%
	2	724	53%
Horse Pond (802 acres)	1	604	75%
	2	198	25%
Marshall Butte (3,616 acres)	1	924	26%
	2	2,499	69%
	3	193	5%
Milk Can (1,161 acres)	1	0	0%
	2	584	50%
	3	380	33%
	4	195	17%
	5	2	<1%
Reservoir Enclosure (86 acres)	1	80	93%
	2	6	7%
W Devil Creek N (2,192 acres)	1	0	0%
	2	907	41%
	3	859	39%
	4	426	19%
W Devil Creek S (972 acres)	1	20	2%
	2	697	72%
	3	255	26%

Map 4: Fire Frequency



Sixteen different wildfires have occurred within the allotment since 1960 and various drill and aerial seeding efforts have been undertaken to rehabilitate the burned areas. Five of the sixteen fires have occurred since 2000. Records indicate that much of the allotment has been drill and/or aerially seeded with a variety of native and non-native species. Areas within each pasture have been seeded following wildfires that have occurred since 2000.

The 1960 Grassy Hills Fire burned approximately 293 acres (10%) of the West Devil Creek North Pasture. No fire rehabilitation information is available for this fire.

The 1973 Devils Creek Fire burned approximately 713 acres (25%) of the West Devil Creek North Pasture. No fire rehabilitation information is available for this fire.

The 1979 House Creek Fire burned approximately 246 acres (6%) of the Marshall Butte Pasture. No fire rehabilitation information is available for this fire.

The 1980 Devil Creek 2 Fire burned approximately 542 acres (56%) of the West Devil Creek South Pasture. No fire rehabilitation information is available for this fire.

The 1983 Big Bend Fire burned approximately 726 acres (14%) of the Black Butte Pasture. No fire rehabilitation information is available for this fire.

The 1983 Devil II Fire burned approximately 212 acres (8%) of the West Devil Creek North Pasture. No fire rehabilitation information is available for this fire.

The 1985 Blackbutte Fire burned approximately 1,047 acres (69%) of the Black Butte Burn Pasture. The fire rehabilitation plan called for drill seeding in the fall of 1985 and aerial seeding in the spring of 1986 with a seed mix consisting of Russian wild rye, Nordan and Siberian crested wheatgrass, Ladak alfalfa, four wing saltbush, and small burnett.

The 1985 Cedar Draw Fire burned approximately 331 acres (18%) of the Milk Can Pasture and 2618 acres (69%) of the Marshall Butte Pasture. No fire rehabilitation information is available for this fire.

The 1995 Heil Well Fire burned approximately 428 acres (15%) of the West Devil Creek North Pasture and 388 (22%) of the Milk Can Pasture. No fire rehabilitation information is available for this fire.

The 1995 Signal Butte Fire burned approximately 254 acres (26%) of the West Devil Creek South Pasture. No fire rehabilitation information is available for this fire.

The 1999 Grassy Hill Fire burned approximately 302 acres (17%) of the Milk Can Pasture; approximately 158 acres is BLM administered land and 144 acres is privately owned. The BLM portion of the fire (158 acres) was drilled seeded with a mix of bluebunch wheatgrass, thickspike wheatgrass and sainfoin. The area was subsequently aerially seeded with a mixture of Wyoming big sagebrush, Ladak alfalfa, small burnett, yarrows and Lewis flax.

The 2000 Grass Fire burned approximately 94 acres (10%) of the West Devil Creek South Pasture, 118 acres (13%) of the Horse Pond Pasture, 726 acres (54%) of the Heil Reservoir Pasture, 6 acres (7%) of the Reservoir Exclosure Pasture, 4,517 acres (85%) of the Black Butte Pasture and 75 acres (3%) of the Coonskin Pasture. Additionally, 100% of the following pastures were burned: Black Butte Burn (1,516 acres), Milk Can (1,801 acres) and West Devil Creek North (2,803 acres). Following the 2000 Grass Fire, the majority of the burned areas within the allotment were drill seeded with a mix of ‘Secar’ Snake River wheatgrass, ‘Arriba’ western wheatgrass, squirreltail, ‘Trailhead’ basin wildrye and fourwing saltbush. All of the burned areas were aerially seeded with a mix of ‘Ladak’ alfalfa, western yarrow, Wyoming big sagebrush, and basin big sagebrush.

The 2000 Worley Draw Fire burned approximately 860 acres (88%) of the West Devil Creek South Pasture, 165 acres (18%) of the Horse Pond Pasture and 20 acres (1%) of the West Devil Creek North Pasture. The burned portion of the West Devil Creek South Pasture was aerially seeded using a mix of Appar Lewis Flax, western yarrow and Wyoming big sagebrush. The burned portion of the Horse Pond Pasture was aerially seed with the same mix and additionally, was drill seeded with ‘Secar’ Snake River wheatgrass, Idaho fescue, ‘Trailhead’ basin wildrye and Eski sainfoin.

The 2005 Marshall Butte Fire burned approximately 1,322 acres (47%) of the West Devil Creek North Pasture and 650 acres (36%) of the Milk Can Pasture. Approximately 250 acres were hand planted with bare-root Wyoming big sagebrush seedlings in scattered patches within 5 areas of the fire perimeter – 3 of those areas re-planted were located in the West Devil Creek North Pasture, 1 area was located in the Milk Can Pasture, and 1 area was located in the adjoining allotment.

The 2007 Murphy Complex Fire burned the entire allotment. The burned pastures were aerially seeded with Wyoming big sagebrush. Portions of the Horse Pond and the Heil Reservoir Pastures were drill seeded with a mix of arrowleaf balsamroot and fourwing saltbush. The burned portion of the Coonskin Butte Pasture was drill seeded with mix of ‘Secar’ Snake River wheatgrass, Sandberg bluegrass, squirreltail, Ladak alfalfa, Eski sanfoin, Appar Lewis flax, and munroe globemallow.

The 2013 Black Butte Fire burned approximately 412 acres (8%) of the Black Butte Pasture. There was no rehabilitation plan for this fire, due to the size, the location of the burn within an existing seeding and because the fire occurred in May.

As a result of the fires and seeding efforts, plant communities within the Cedar Butte Devil Creek Allotment have been modified. As a result of these treatments, the allotment is currently vegetated by both native and non-native perennial grass species (Table 6 and Map 5). Areas of the allotment also contain a forb component as shown in the 2013 Sage-grouse Habitat Assessment Framework (HAF) data and are further described in the 2013 Interpreting Indicators of Rangeland Health (IIRH) field observations.

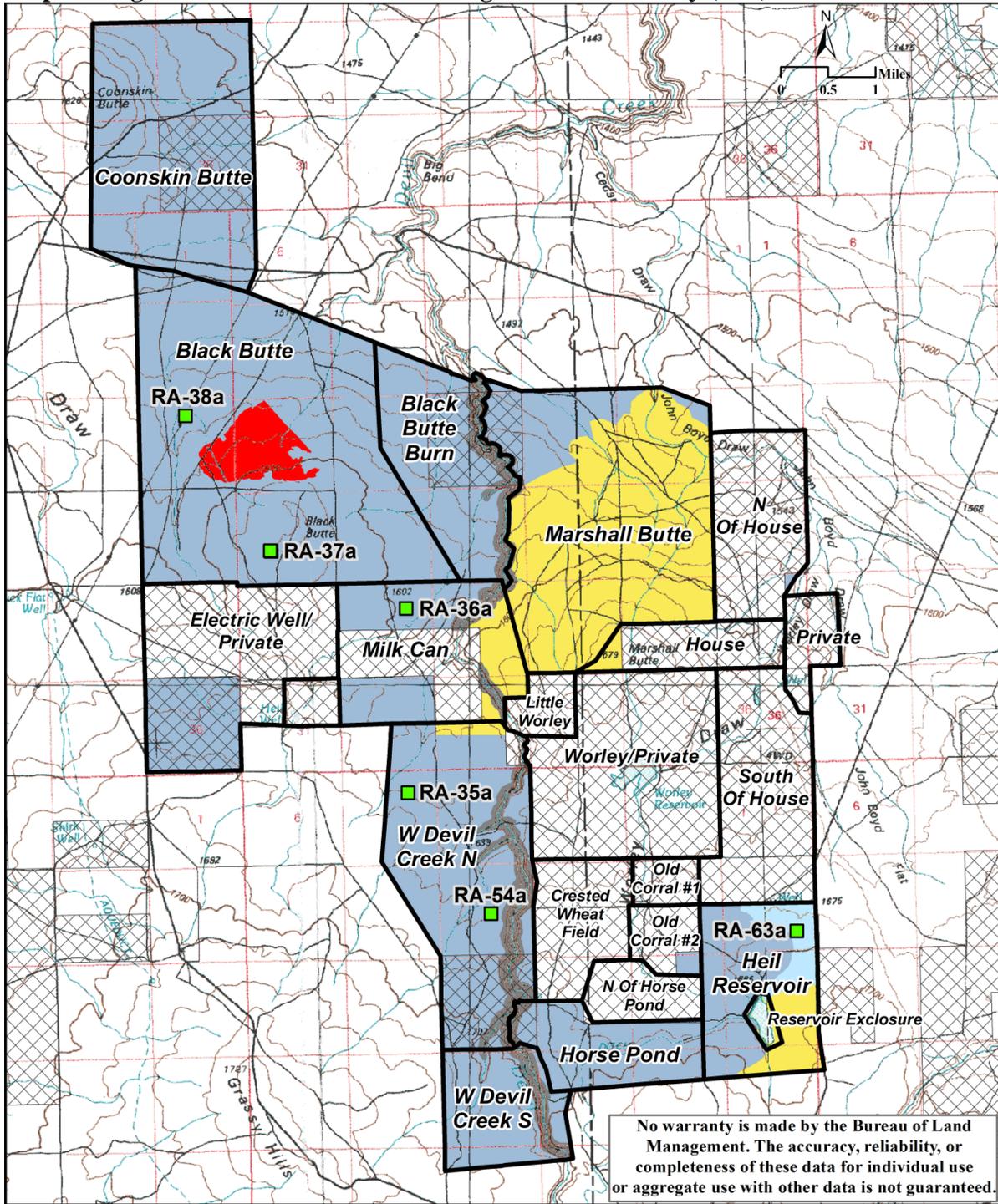
Table 6: Cedar Butte Devil Creek Vegetation Communities in Acres and Percentage by Pasture

Pasture	Vegetation Community						
	Recent Burn*	Crested wheatgrass	Sandberg bluegrass	Bluebunch wheatgrass	Breaks	Water	Annual
Black Butte	411 (8%)	0 (0%)	4,880 (92%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
Black Butte Burn	0 (0%)	1 (<1%)	965 (92%)	0 (0%)	88 (8%)	0 (0%)	0 (0%)
Coonskin Butte	0 (0%)	0 (0%)	2,276 (100%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
Heil Reservoir	0 (0%)	309 (23%)	771 (57%)	274 (20%)	0 (0%)	0 (0%)	0 (0%)
Horse Pond	0 (0%)	0 (0%)	802 (100%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
Marshall Butte	0 (0%)	3,085 (85%)	521 (14%)	0 (0%)	10 (<1%)	0 (0%)	0 (0%)
Milk Can	0 (0%)	294 (25%)	786 (68%)	0 (0%)	80 (7%)	0 (0%)	0 (0%)
Reservoir Exclosure	0 (0%)	31 (36%)	8 (9%)	3 (3%)	0 (0%)	45 (52%)	0 (0%)
West Devil Creek North	0 (0%)	66 (3%)	1,938 (88%)	0 (0%)	186 (8%)	0 (0%)	0 (0%)
West Devil Creek South	0 (0%)	0 (0%)	876 (90%)	0 (0%)	96 (10%)	0 (0%)	0 (0%)

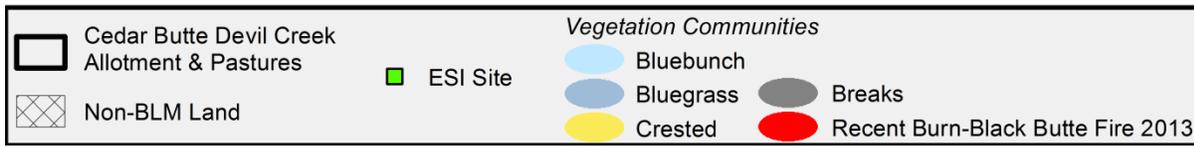
* Areas classified as Recent Burn have burned within the past two years and have not been reevaluated for vegetation community classification

Six Ecological Site Inventory (ESI) sites are located within the Cedar Butte Devil Creek Allotment (one site in Milk Can and Heil Reservoir Pastures and two sites each in Black Butte and West Devil Creek North Pastures) as shown in Map 5. Vegetative production data recorded during the 2006 ESI is available at the Jarbidge Field Office but is not include in this document because the data represent pre-fire production values. Due to differences in sampling locations and methodology (e.g. number of transects per site and number of points per transect) between the 2006 ESI data, the 2012 and 2013 HAF data, and the 2013 step-point method data, statistical tests cannot be used to analyze vegetative cover between years. However, the data can be used to describe general similarities or differences in vegetation between years or locations within the allotment.

Map 5: Vegetation Communities & Ecological Site Inventory (ESI) Sites



No warranty is made by the Bureau of Land Management. The accuracy, reliability, or completeness of these data for individual use or aggregate use with other data is not guaranteed.



Upland Trend Data

There are no trend monitoring sites established in the Cedar Butte Devil Creek Allotment, therefore there is no trend data available to include in the RHA.

Noxious Weeds

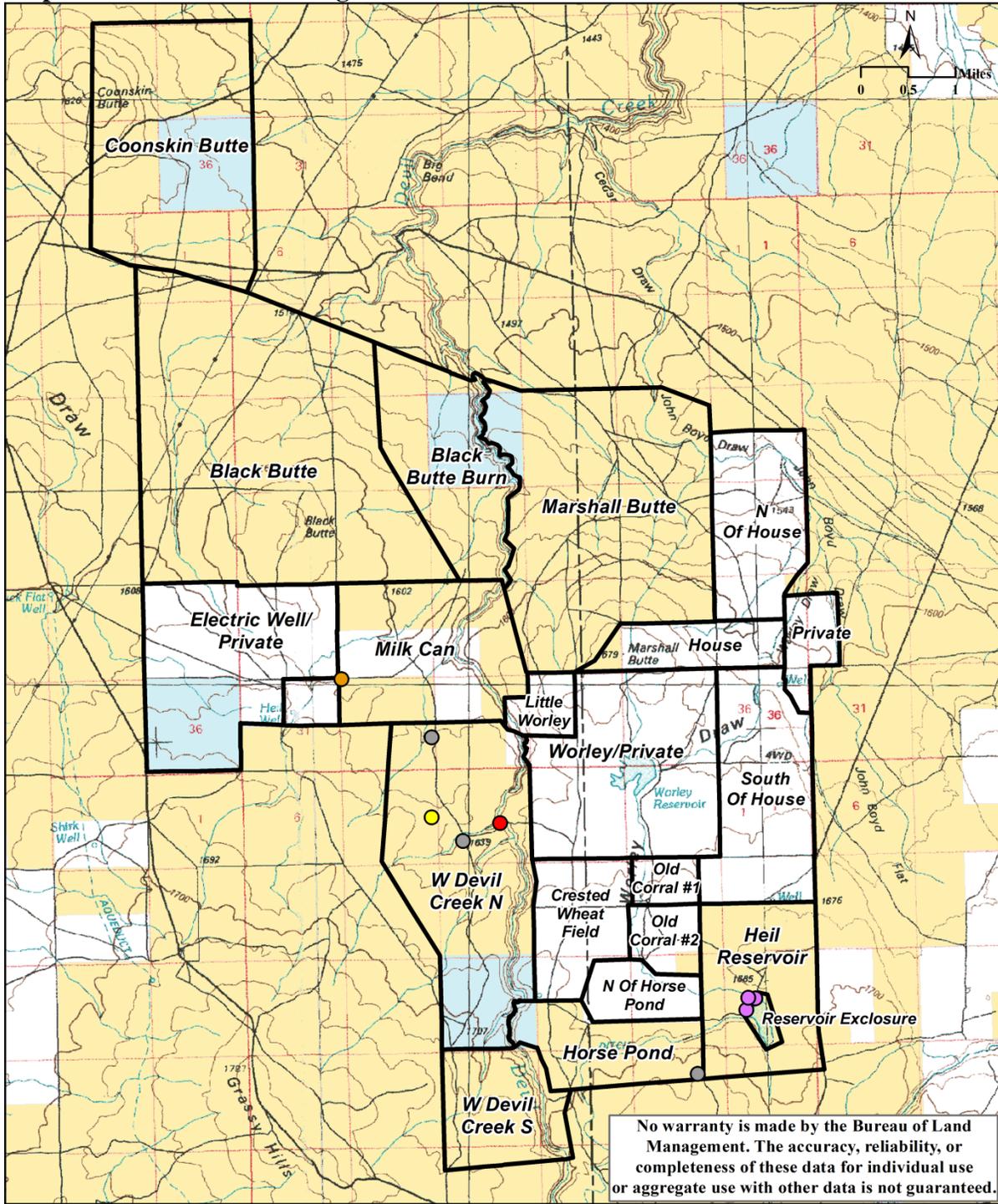
The State of Idaho has listed 65 plant species as noxious weeds. Five noxious weed species are known to occur within the Cedar Butte Devil Creek Allotment as of 2014 (Map 6). The species include Canada thistle (*Cirsium arvense*), Scotch thistle (*Onopordum acanthium*), rush skeletonweed (*Chondrilla juncea*), Russian knapweed (*Centaurea repens*) and diffuse knapweed (*Centaurea diffusa*).

In the Horse Pond Pasture, there is one occurrence of diffuse knapweed that was chemically treated in 2008. In the Milk Can Pasture, there is one occurrence of rush skeletonweed that was chemically treated in 2008. In the Reservoir Enclosure, there are three occurrences of Canada thistle and those occurrences were chemically treated in 2008 and 2009. In the West Devil Creek North Pasture, there are two occurrences of diffuse knapweed, which were chemically treated in 2006 and 2008, and one occurrence each of Russian knapweed and Scotch thistle, both of which were chemically treated in 2008.

Treatment goals are to reduce noxious weeds to where they will not have a significant economic or environmental impact and/or to eradicate them completely. The BLM also works to prevent the establishment of new species and infestations in areas where they presently do not occur.

Many of the known noxious weed infestations are found and treated through the Twin Falls District (TFD) Emergency Stabilization and Rehabilitation (ESR) program. Approved ESR plans allow three year funding for weed control and play a vital part in the reestablishment of naturally recovering vegetation, as well as in the successful establishment of newly seeded areas. Weed personnel grid the burned areas and treat noxious weed occurrences in order to allow for reduced competition during reestablishment of desired vegetation. Crews also treat road corridors throughout the field office which helps prevent the spread of weeds from vehicles that may be transporting weed seeds to new areas. Control methods used within the TFD for the treatment of noxious weeds include biological, mechanical, and chemical.

Map 6: Noxious Weed Management



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IDAHO RANGELAND HEALTH STANDARDS ASSESSMENT

There are eight standards for healthy rangelands that apply to BLM lands in the state of Idaho. Not all of the Standards apply to the Cedar Butte Devil Creek Allotment due to variances in the land type and geographical area. Of the eight Idaho Standards for Rangeland Health, the following standards are applicable to the Cedar Butte Devil Creek Allotment:

- **Standard 1** – Watersheds provide for the proper infiltration, retention, and release of water appropriate to soil type, hydrologic cycling, and energy flow.
- **Standard 2** – Riparian-wetland areas are in properly functioning condition appropriate to soil type, climate, geology, and landform to provide for proper nutrient cycling, hydrologic cycling, and energy flow
- **Standard 3** – Stream channels and floodplains are properly functioning relative to the geomorphology (e.g. gradient, size, shape, roughness, confinement, and sinuosity) and climate to provide for proper nutrient cycling, hydrologic cycling, and energy flow.
- **Standard 5** – Rangelands seeded with mixtures, including predominately non-native plants, are functioning to maintain life form diversity, production, native animal habitat, nutrient cycling, energy flow, and the hydrologic cycle.
- **Standard 7** – Surface and ground water on public lands comply with the Idaho Water Quality Standards.
- **Standard 8** – Habitats are suitable to maintain viable populations of threatened and endangered, sensitive, and other special status species.

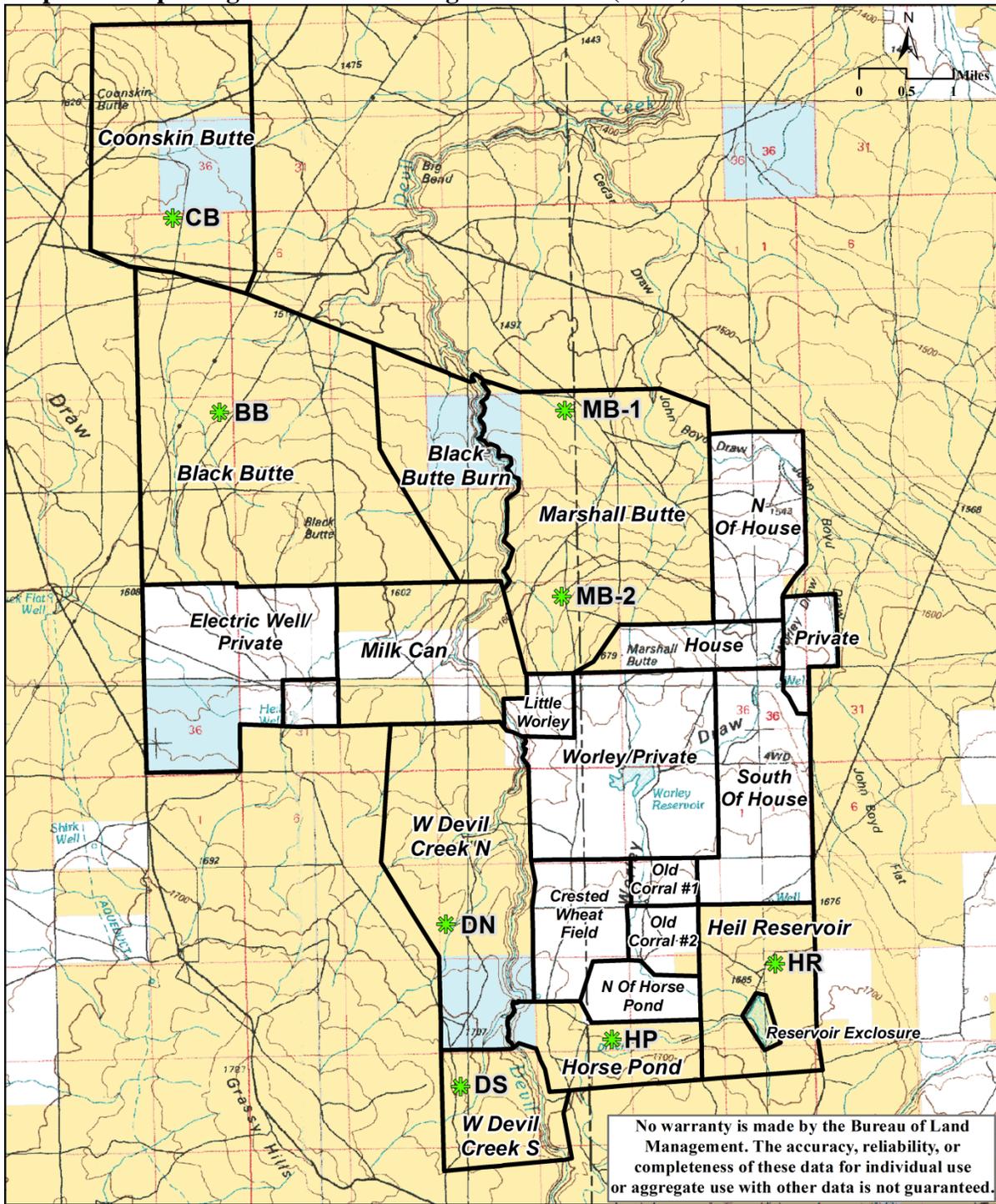
**Standards 4 and 6 do not apply to the Cedar Butte Devil Creek Allotment*

Table 7: Standards Applicable to the Cedar Butte Devil Creek Allotment by Pasture.

Standard	Pastures
1	All Pastures
2	West Devil Creek South Pasture
3	West Devil Creek South Pasture
4	Not applicable
5	All Pastures
6	Not applicable
7	Black Butte Burn, Milk Can, West Devil Creek North, and West Devil Creek South Pastures
8	All Pastures

An interdisciplinary (ID) team conducted IIRH field evaluations at eight sites representative of the Cedar Butte Devil Creek Allotment during July, 2013. The sites were located in the Black Butte, Coonskin Butte, Heil Reservoir, Horse Pond, Marshall Butte, West Devil Creek North and West Devil Creek South Pastures (Map 7). The sites were located in areas which contained both native and seeded non-native plant species. Of the eight sites at which IIRH evaluations were conducted, seven were HAF sites and one was a key utilization site.

Map 7: Interpreting Indicators of Rangeland Health (IIRH) Sites



No warranty is made by the Bureau of Land Management. The accuracy, reliability, or completeness of these data for individual use or aggregate use with other data is not guaranteed.



HAF sites were randomly generated through a GIS process (Appendix A). Key utilization sites were selected in representative areas based on the presence of key forage species, distance from livestock water, and accessibility of the area to livestock grazing. When the ID Team conducted IIRH field evaluations, the HAF sites were visited first. If the ID Team determined the HAF site(s) was not representative of the vegetation community, an ESI site was then selected if available within that vegetation community. If no ESI site was available, a key utilization site was used.

Indicators of rangeland health (Table 8) were used to evaluate three rangeland health attributes (Table 9): Soil and Site Stability, Hydrologic Function, and Biotic Integrity (Pellant et al., 2005). The IIRH evaluation sheet was completed at each site, photographs were taken, and a list of plant species observed was recorded. In addition, general field notes were recorded for the allotment that included such items as presence of noxious weeds, wildlife sign, recreation impacts, and presence or condition of range infrastructure.

Cover transects to determine vegetative cover were recorded at seven of the eight sites following the line point intercept method as described in the Sage-grouse Habitat Assessment Framework (HAF; Stiver et al., 2010) protocol. At IIRH site MB_2 in the Marshall Butte Pasture cover data was collected following the step-point method (BLM, 1996). Because forbs are important to sage-grouse, the line point intercept method was augmented using Daubenmire frames. Forb species were recorded in 7.9 inch by 19.7 inch (20 cm by 50 cm) Daubenmire frame placed at each point along the line intercept. This resulted in more comprehensive data on forb species diversity present than could be obtained by the line point intercept alone.

In addition to evaluating rangeland health indicators at each of the eight IIRH sites, the ID Team also examined other areas to ensure evaluation sites were representative of the vegetation communities throughout the allotment. Data collected at the evaluation sites were compared to the Natural Resource Conservation Service's (NRCS) ESD reference sheet for the soil types and potential vegetation communities in the Cedar Butte Devil Creek Allotment.

Indicator ratings for each site in the Cedar Butte Devil Creek Allotment are shown in Table 8. Rangeland health attributes ratings are shown in Table 9.

Table 8: Summary of 17 Rangeland Health Indicators

Indicators	Attributes	Degree of Departure from Ecological Site Description and/or Ecological Reference Area(s)				
	S = Soil & Site Stability H=Hydrologic Function B = Biotic Integrity	Extreme	Moderate to Extreme	Moderate	Slight to Moderate	None to Slight
1. Rills	S, H					BB, CB, HR, HP, MB_1, MB_2, DN, DS
2. Water-flow Patterns	S, H					BB, CB, HR, HP, MB_1, MB_2, DN, DS
3. Pedestals and/or terracettes	S, H					BB, CB, HR, HP, MB_1, MB_2, DN, DS
4. Bare ground	S, H					BB, CB, HR, HP, MB_1, MB_2, DN, DS
5. Gullies	S, H					BB, CB, HR, HP, MB_1, MB_2, DN, DS
6. Wind-scoured, blowouts, and/or deposition areas	S					BB, CB, HR, HP, MB_1, MB_2, DN, DS
7. Litter movement	S					BB, CB, HR, HP, MB_1, MB_2, DN, DS
8. Soil surface resistance to erosion	S, H, B					BB, CB, HR, HP, MB_1, MB_2, DN, DS
9. Soil surface loss or degradation	S, H, B					BB, CB, HR, HP, MB_1, MB_2, DN, DS

Indicators	Attributes	Degree of Departure from Ecological Site Description and/or Ecological Reference Area(s)				
	S = Soil & Site Stability H=Hydrologic Function B = Biotic Integrity	Extreme	Moderate to Extreme	Moderate	Slight to Moderate	None to Slight
10. Plant community composition and distribution relative to infiltration	H				BB, CB, MB_1, DN	HR, HP, MB_2, DS
11. Compaction layer	S, H, B					BB, CB, HR, HP, MB_1, MB_2, DN, DS
12. Functional/structural groups	B			MB_1	BB, CB, DN	NR, HP, MB_2, DS
13. Plant mortality/decadence	B					BB, CB, HR, HP, MB_1, MB_2, DN, DS
14. Litter amount	H, B		BB, CB, HP, DN, DS	MB_1	HR, MB_2	
15. Annual production	B					BB, CB, HR, HP, MB_1, MB_2, DN, DS
16. Invasive plants	B		MB_1	BB, CB	HP, DN, DS	HR, MB_2
17. Reproductive capability of perennial plants	B					BB, CB, HR, HP, MB_1, MB_2, DN, DS

BB = Black Butte Pasture site, CB = Coonskin Butte Pasture site, HR = Heil Reservoir Pasture site, HP = Horse Pond Pasture site, MB_1 = Marshal Butte Pasture site_1, MB_2 = Marshal Butte Pasture site_2, DN = West Devil Creek North Pasture site, DS = West Devil Creek South Pasture site.

The ratings of the 17 indicators do not result in a single rating of rangeland health for a site. The 17 indicators are related to three components of rangeland health known as attributes (soil and site stability, hydrologic function, and biotic integrity). The second column of Table 8 identifies which indicators are related to each of the three attributes. The ID team arrived at attribute departure ratings by considering the preponderance of evidence of departure for the group of indicators related to each attribute. Indicators showing departure from reference conditions may be weighted more heavily, based upon the effect of the departure on ecological function of the site being evaluated. The degree of departure ratings for each of the three attributes of rangeland health are shown in Table 9.

Table 9: Rangeland Health Attribute Rating by Site

Rangeland Health Attribute	Degree of Departure				
	Extreme to Total	Moderate to Extreme	Moderate	Slight to Moderate	None to Slight
Soil and Site Stability					BB, CB, HR, HP, MB_1, MB_2, DN, DS
Hydrologic Function				MB_1	BB, CB, HR, HP, MB_2, DN, DS
Biotic Integrity				BB, CB, MB_1, DN	HR, HP, MB_2, DS

BB = Black Butte Pasture site, CB = Coonskin Butte Pasture site, HR = Heil Reservoir Pasture site, HP = Horse Pond Pasture site, MB_1 = Marshal Butte Pasture site 1, MB_2 = Marshal Butte Pasture site 2, DN = West Devil Creek North Pasture site, DS = West Devil Creek South Pasture site.

Standard 1 (Watersheds)

Watersheds provide for the proper infiltration, retention, and release of water appropriate to soil type, vegetation, climate, and landform to provide for proper nutrient cycling, hydrologic cycling, and energy flow.

Rangeland Health Assessment

Multiple soil series exist within the Cedar Butte Devil Creek Allotment and are mostly silt loams with some clayey soils in the southern portion of the allotment. The majority of the allotment is relatively flat, except for Devil Creek that runs through the center of the allotment, and Marshall Butte in the north east part of the allotment. Locations with little or no slope are less likely to develop accelerated erosion issues from water runoff than locations with steeper slopes. The Soil Survey Geographic (SSURGO) Database (USDA and NRCS, 2012) shows that 89 percent of the allotment has a moderate wind erosion hazard, 7 percent has a non-erosional factor, 3 percent has no data, and 1 percent has a severe erosion factor for wind erosion. In addition, the soil survey shows that 75 percent of the allotment has a high water erosion hazard, 21 percent has a medium water erosion hazard, and 4 percent has no data for water erosion hazard. Although the soil survey shows potential for both wind and water erosion in this area, no indications of soil loss or active erosion were noted during the 2013 IIRH field visits. Bare ground is generally low, and adequate soil cover is present within the allotment to reduce potential erosion.

Litter percentage calculations used for rating indicator 14 include all litter, both plant material that is lying flat on the ground and still attached to the plant and plant material that is detached. In general, litter levels identified in the reference sheets for the ecological sites within this allotment are low (5-10%); however the actual litter on almost all sites is much higher (29-75% all layers). With this, even though the litter indicator may have been rated as a departure from the reference condition, this departure may not be reflected in the overall attribute rating.

Litter and biological soil crusts aid in water infiltration and reduce wind and sunlight contact with the soil surface which reduces soil temperatures and water loss (Pellant et al. 2005). While the amount of litter deviated from the reference condition in some areas, the ID Team determined that the litter amount was appropriate for site stability and ecological processes as shown by adequate soil moisture, as well as annual plant growth/production matching what is expected.

Four sites (BB, CB, MB_1, MB_2) were evaluated using the ESD (R011XY001ID) reference sheet for the Loamy 8-12" Wyoming Big Sagebrush/Bluebunch wheatgrass-Thurber's Needlegrass ecological site (USDA and NRCS, 2013a). The reference sheet for this ESD indicates bare ground should range from 30 to 40 percent cover (top layer), litter cover should range from 5 to 10 percent (cover for all layers), and soil stability test values should range from 4 to 6. Percent bare ground recorded in the 2006 ESI data, as well as the 2013 HAF data ranged from 5 to 20 percent cover. In addition, a soil stability test (Pellant et al., 2005) was completed within the Coonskin Butte Pasture, as representative of the soils in these pastures, and resulted in an average soil stability value of 5, indicating adequate soil surface resistance to erosion.

Two sites (HP, DN) were evaluated using the ESD (R025XY010ID) reference sheet for the Shallow Claypan 12-16" Low Sagebrush/Idaho fescue ecological site (USDA and NRCS, 2013b). The reference sheet for this ESD indicates bare ground should range from 40 to 50 percent, litter cover should be low, and soil stability test values should range from 3 to 5. Percent bare ground recorded in the 2006 ESI data, as well as the 2012 HAF data ranged from 1 to 4 percent cover. In addition, a soil stability test (Pellant et al., 2005) was completed within the West Devil Creek North Pasture, as representative of the soils in these pastures, and resulted in an average soil stability value of 4.5, indicating adequate soil surface resistance to erosion.

One site (HR) was evaluated using the ESD (R025XY043ID) reference sheet for the Loamy 11-13" Basin Big Sagebrush/Bluebunch wheatgrass ecological site (USDA and NRCS, 2013c). The reference sheet for this ESD estimates bare ground may range from 30 to 40 percent (bare ground values are for sites in mid-seral status), litter cover should range from 5 to 10 percent, and soil stability test values should range from 4 to 6. Percent bare ground recorded in the 2006 ESI data, as well as the 2012 HAF data ranged from 2 to 12 percent cover.

One site (DS) was evaluated using the ESD (R025XY024ID) reference sheet for the Loamy 12-16" Basin Big Sagebrush/Idaho fescue-Bluebunch wheatgrass ecological site (USDA and NRCS, 2013d). The reference sheet for this ESD estimates bare ground may range from 20 to 40 percent (bare ground values are for sites in mid-seral status), litter cover should range from 5 to 10 percent, and soil stability test values should range from 4 to 6. Percent bare ground recorded in the HAF data was 9 percent cover.

Black Butte and Black Butte Burn Pastures **IIRH Site BB. Loamy 8-12"**

Site BB is located in the Black Butte Pasture, and was used to represent both it and the adjacent Black Butte Burn Pasture (Map 7). The site is located in a native seeded community. Site BB is located in an area of relatively flat topography (~5% slope) with a north aspect. Both pastures completely burned in 2007.

According to the recorded top layer cover data for the site, BB had 5 percent bare ground which was less than the expected 30-40 percent and combined with 27 percent litter, 7 percent biological soil crusts, and 61 percent vegetation cover suggests that the majority of the site has adequate protection from raindrop induced erosion (Table 13). The soil stability test performed in the Coonskin Butte Pasture was used to represent these pastures also. The soil stability value for that site was 5 which is within the expected 4-6 range and suggests adequate soil surface resistance to erosion at the site. Signs of accelerated erosion in the form of pedestals, terracettes, or rills were not recorded at site BB (Table 8). Additionally, this site is fairly flat so little erosion would be expected. Overall accelerated erosion induced by raindrop impacts or from overland flows does not appear to be occurring on this site. Cheatgrass (*Bromus tectorum*) was recorded at 6 percent cover (all layers) and was identified in the field notes as being scattered around the site.

Sagebrush was observed at the site but was not recorded along the cover transects. Rabbitbrush which resprouts after fire is present at 3 percent cover. Fourwing saltbush (*Atriplex canescens*) is also present at the site at low density. Reduced sagebrush and fourwing saltbush abundance is expected at the site given the short time (~6 years) since fire. Cover data indicates that deep-rooted perennial bunchgrasses (bluebunch wheatgrass, basin wildrye, and Thurber's needlegrass) are well represented at 47 percent cover (all layers). Shrubs and tall bunchgrasses capture snow in the winter, slow overland flows, reduce wind speeds at ground level, and provide paths for water infiltration thus increasing the total amount of water available on a site (Ryel et al. 2002; Eldridge and Rosentreter 2004). Cheatgrass is present but at fairly low levels and is probably not affecting water infiltration on the site. Biological soil crusts are present according to the cover data at 14 percent (all layers) which is a high amount given that the Murphy Complex Fire reduced their abundance in 2007. Biological crusts are important because they help bind soil particles together which reduces the potential for erosion, and they fix both carbon and nitrogen (Belnap, 2003).

Cover data was also collected in the Black Butte Burn Pasture at HAF Site BBB which can supplement the data collected in the Black Butte Pasture. Top layer cover data indicates that bare ground is 26 percent, litter is 16 percent, biological soil crusts are at zero percent, and vegetative cover is 53 percent (Table 14). Cheatgrass composed eight percent of the vegetative cover. No IIRH assessment was performed at this site but the pasture was visited by the ID team and they determined that the site in the Black Butte Pasture was representative for both pastures.

Coonskin Butte Pasture
IIRH Site CB. Loamy 8-12"

Site CB is located in a native seeded vegetation community and was used to represent the entire pasture.

According to the recorded top layer cover data for the site, there was 8 percent bare ground which was less than the expected 30-40 percent and combined with 21 percent litter, 7 percent biological soil crusts, and 64 percent vegetation cover suggests that the majority of the site has adequate protection from raindrop induced erosion (Table 13). The soil stability test was performed at this site and was used to represent other pastures as well. The soil stability value for this site was 5 which is within the expected 4-6 range suggesting adequate soil surface

resistance to erosion. Signs of accelerated erosion in the form of pedestals, terracettes, or rills were not recorded at this site (Table 8). Additionally, this site is fairly flat so little erosion would be expected. Overall, accelerated erosion induced by raindrop impacts or from overland flows does not appear to be occurring on this site. Cheatgrass was recorded at 17 percent cover (all layers) but the field notes identified it as being less common visually. The notes state that cheatgrass was scattered around the site.

Sagebrush was removed by past fires but is beginning to establish based on the cover data (1%), field notes, and pictures. Reduced sagebrush abundance is expected at the site given the short time (~6 years) since fire. Cover data recorded bluebunch wheatgrass, a deep-rooted perennial bunchgrass, at 15 percent cover (all layers). The low level of bare ground that is exposed to direct sunlight and wind, and the lack of erosional features identified on the data sheet suggest that water is being retained and is infiltrating on site. Biological soil crusts are present according to the cover data at 19 percent (all layers) which is a high amount given that the Murphy Complex Fire reduced their abundance in 2007.

Heil Reservoir Pasture

IIRH Site HR. Loamy 11-13”

Site HR is located in a native seeded vegetation community and was used to represent the entire pasture (Table 6, Map 5). The IIRH assessment occurred in 2013 but the ID team used the cover data from the HAF assessment that occurred in 2012 at the same site.

According to the recorded top layer cover data for the site, there was 11.5 percent bare ground which was less than the expected 30-40 percent and combined with 8.5 percent litter, 6 percent biological soil crusts, 0.5 percent rock, and 73.5 percent vegetation cover suggests that the majority of the site has adequate protection from raindrop induced erosion (Table 13). The soil stability test performed in the Coonskin Butte Pasture was used to represent this pasture also. The soil stability value for that site was 5 which is within the expected 4-6 range and suggests adequate resistance to erosion at the site. Signs of accelerated erosion in the form of pedestals, terracettes, or rills were not recorded at this site (Table 8). Additionally this site is fairly flat so little erosion would be expected. Overall, accelerated erosion induced by raindrop impacts or from overland flows does not appear to be occurring on this site. Cheatgrass was not identified on the site.

Sagebrush was removed by past fires and was not recorded in the field notes or the cover data. Reduced sagebrush abundance is expected at the site given the short time (~6 years) since fire. Yellow rabbitbrush (*Chrysothamnus viscidiflorus*), a shrub that resprouts after fire, is present at the site at low density. Cover data indicates that deep-rooted perennial bunchgrasses (bluebunch wheatgrass, crested wheatgrass) are well represented at 48 percent cover (all layers). The low level of bare ground that is exposed to direct sunlight and wind and the lack of erosional features identified on the data sheet suggest that water is being retained and is infiltrating on site. The low density of shrubs can reduce the amount of snow captured on the site; however, large deep-rooted perennial bunchgrasses are abundant and are helping capture snow. Biological soil crusts are present according to the cover data at 25 percent (all layers) which is a high amount given that the Murphy Complex Fire reduced their abundance in 2007.

Horse Pond Pasture

IIRH Site HP. Shallow Claypan 12-16”

Site HP is located in a native seeded vegetation community and was used to represent the entire pasture. The site is of relatively flat topography with a north aspect and the entire pasture burned in 2007.

According to the recorded top layer cover data for the site, there was 1 percent bare ground which was less than the expected 30-40 percent and combined with 15.5 percent litter, 1.5 percent biological soil crusts, 3 percent rock, and 79 percent vegetation cover suggests that the majority of the site has adequate protection from raindrop induced erosion (Table 13). The soil stability test performed in the West Devil Creek North Pasture was used to represent this pasture also. The soil stability value for that site was 4.5 which is within the expected 3-5 range and suggests adequate soil surface resistance to erosion. Signs of accelerated erosion in the form of pedestals, terracettes, or rills were not recorded at this site (Table 8). Additionally, this site is fairly flat so little erosion would be expected. Overall, accelerated erosion induced by raindrop impacts or from overland flows does not appear to be occurring on this site. Cheatgrass was recorded at 22 percent cover (all layers) along the transect at the site. However, the cover transect ran through a small rocky draw where cheatgrass is common since the area was not reseeded after the Murphy Complex Fire. The field notes state that other than the rocky draw, cheatgrass is confined to small disturbed areas around badger and rodent diggings.

Sagebrush was removed by past fires and was not recorded along the cover transect but the field notes indicate that sagebrush seedlings are present. Reduced shrub abundance is expected given the short time (~6 years) since fire. Cover data shows that deep-rooted perennial bunchgrasses (bluebunch wheatgrass, basin wildrye, and Idaho fescue) are well represented at 45 percent cover (all layers). The low level of bare ground that is exposed to direct sunlight and wind and the lack of erosional features identified on the data sheet suggest that water is being retained and is infiltrating on site. Biological soil crusts are present according to the cover data at 23.5 percent (all layers) which is a high amount given that the Murphy Complex Fire reduced their abundance in 2007.

Marshall Butte Pasture

IIRH Site MB_1. Loamy 8-12”

Site MB_1 is located in the northwestern portion of the pasture (Map 7). The IIRH notes for the site indicate that it is not representative of the majority of the pasture. The notes state that the site is located within a draw with mainly bluebunch wheatgrass, Sandberg bluegrass, and cheatgrass. The surrounding area is mainly squirreltail and Sandberg bluegrass with some bluebunch wheatgrass.

According to the recorded top layer cover data for the site, there was 20 percent bare ground which was less than the expected 30-40 percent and combined with 16 percent litter, zero percent biological soil crusts, 2 percent rock, and 62 percent vegetation cover suggests that the majority of the site has adequate protection from raindrop induced erosion (Table 13). However, cheatgrass makes up 30 percent of the vegetative cover and while cheatgrass may block a raindrop, it does not stabilize the soil to restrict wind erosion or overland flow erosion as well as perennial bunchgrasses. Despite this, no erosional features (e.g. pedestals, terracettes, or rills)

were identified on the data sheet suggesting that accelerated erosion from raindrop impacts, overland water flow, or from wind is not occurring on site (Table 8). The soil stability test performed in the Coonskin Butte Pasture was used to represent this pasture also. The soil stability value for that site was 5 which is within the expected 4-6 range suggesting adequate resistance to erosion at the site.

Sagebrush was removed by past fires and the field notes and cover data suggest it only occurs at trace levels. Reduced sagebrush abundance is expected at the site given the short time (~6 years) since fire. Cover data indicates that deep-rooted perennial bunchgrasses (bluebunch wheatgrass, basin wildrye, Thurber's needlegrass) are represented at 17 percent cover (all layers). Cheatgrass is common at the site and is likely competing with native perennial species for soil moisture early in the growing season. Biological soil crusts are present at 2 percent cover (all layers) which is reduced but is not completely unexpected given that the Murphy Complex Fire reduced their abundance in 2007. Between the loss of sagebrush, reduced biological soil crusts, and the abundance of cheatgrass; infiltration and proper use of water is decreased at this site compared to the reference state. However, this site was not representative of the majority of the pasture.

IIRH Site MB_2. Loamy 8-12"

Site MB_2 is located in a crested wheatgrass seeding in the southern portion of the pasture (Table 6, Map 7). The field notes indicate that this site is representative of the majority of the pasture.

According to the recorded top layer cover data for the site, there was 17.3 percent bare ground which was less than the expected 30-40 percent and combined with 6.6 percent litter, 1.3 percent biological soil crusts, 2.6 percent rock, and 72 percent vegetation cover suggests that the majority of the site has adequate protection from raindrop induced erosion (Table 13). The soil stability test performed in the Coonskin Butte Pasture was used to represent this pasture also. The soil stability value for that site was 5 which is within the expected 4-6 range suggesting adequate soil surface resistance to erosion at the site. Signs of accelerated erosion in the form of pedestals, terracettes, or rills were not recorded at this site (Table 8). Overall accelerated erosion induced by raindrop impacts or from overland flows does not appear to be occurring on this site. Cheatgrass was recorded at 1.3 percent cover (all layers) and was identified in the field notes as being present in trace amounts at the site.

Sagebrush was removed by past fires and the field notes and cover data suggest it is still absent. Cover data indicates that deep-rooted perennial bunchgrasses (bluebunch wheatgrass, crested wheatgrass, Thurber's needlegrass) are well represented at 44 percent cover (all layers). The relatively low level of bare ground that is exposed to direct sunlight and wind suggest that water is being retained and is infiltrating on site. Further, the lack of erosional features identified on the data sheet suggest that accelerated erosion from overland flow and wind is not occurring on site. Biological soil crusts are present according to the cover data at 5.3 percent (all layers) which is not unexpected given that the Murphy Complex Fire reduced their abundance in 2007.

Milk Can and West Devil Creek North Pastures
IIRH Site DN. Shallow Claypan 12-16"

Site DN is located in the West Devil Creek North Pasture in a native vegetation community (Map 7, Table 6). The site is of relatively flat topography with a north aspect and the entire pasture burned in 2007. The ID team used the cover data collected at this site during the 2012 HAF assessment for the 2013 IIRH field assessment. The field notes suggest using site DN to represent conditions within the Milk Can Pasture also. Although the Milk Can Pasture is in a different ESD, the vegetative conditions appeared visually similar (Photos 1 and 2).

Photo 1: West Devil Creek North Pasture, IIRH site DN



Photo 2: Milk Can Pasture, HAF site MC



According to the recorded top layer cover data for site DN, there was 4 percent bare ground which was less than the expected 40-50 percent and combined with 31 percent litter, 1 percent biological soil crusts, 1 percent rock, and 63 percent vegetation cover suggests that the majority of the site has adequate protection from raindrop induced erosion (Table 13). The soil stability test performed in this pasture was used to represent other pastures also. The soil stability value for the site was 4.5 which is within the expected 3-5 range suggesting adequate soil surface resistance to erosion. Cheatgrass was identified at 18.5 percent cover (all layers) on the site and while cheatgrass may block a raindrop, it does little to stabilize the soil and restrict wind erosion or overland flow erosion. However, signs of accelerated erosion in the form of pedestals, terracettes, or rills were not recorded at this site (Table 8). Additionally this site is fairly flat so little erosion would be expected.

Sagebrush was essentially removed by past fires and was not recorded as being present in the cover data from 2012 nor in the field notes from 2013. Reduced sagebrush abundance is expected at the site given the short time (~6 years) since fire. Cover data indicates that deep-rooted perennial bunchgrasses (bluebunch wheatgrass, basin wildrye) are represented at 21 percent cover. The low level of bare ground that is exposed to direct sunlight and wind suggest that water is being retained and is infiltrating on site. This is further supported by the lack of erosional features identified on the data sheet. Cheatgrass was recorded at 18.5 percent cover (all layers) on the site and is likely competing with the perennial plants for soil moisture in the spring and early summer. Biological soil crusts are present according to the cover data at 3.5

percent (all layers) which is low but not unexpected given that the Murphy Complex Fire reduced their abundance in 2007.

Cover values from HAF Site MC-1 recorded in 2013 in the Milk Can Pasture provides insight into vegetative conditions within this pasture. Top layer cover data recorded bare ground at 15 percent with 21 percent litter, one percent rock, one percent biological soil crusts, and 62 percent vegetative cover (Table 14). Cheatgrass is present at 5 percent cover. Shrubs are absent and deep-rooted perennial grasses are represented at 20 percent. It is unknown if this HAF site is representative of the whole pasture but the data does suggest that the vegetation communities are similar, even though the site potential based on ESDs may be different. Bare ground was higher at this HAF site compared to IIRH site DN and cheatgrass cover was lower; otherwise vegetative cover data were similar.

West Devil Creek South Pasture **IIRH Site DS. Loamy 12-16”**

Site DS is located in a native vegetation community (Table 6, Map 5). The site is relatively flat with a slight north aspect. The entire pasture burned in 2007. The ID team used the cover data collected at this site during the 2012 HAF assessment for 2013 IIRH assessment.

According to the recorded top layer cover data for the site, there was 9 percent bare ground which was less than the expected 20-40 percent and combined with 17 percent litter, and 74 percent vegetation cover suggests that the majority of the site has adequate protection from raindrop induced erosion (Table 13). The soil stability test performed in the Coonskin Butte Pasture was used to represent this pasture also. The soil stability value for that site was 5 which is within the expected 4-6 range suggesting adequate soil surface resistance to erosion at the site. Signs of accelerated erosion in the form of pedestals, terracettes, or rills were not recorded at this site (Table 8). Additionally, this site is fairly flat so little erosion would be expected.

Sagebrush was essentially removed by past fires and was not recorded as being present in the cover data from 2012 nor in the field notes from 2013. Yellow rabbitbrush was recorded at 9 percent cover. Cover data indicates that deep-rooted perennial bunchgrasses (bluebunch wheatgrass, basin wildrye) are represented at 28.5 percent cover (all layers). The low level of bare ground that is exposed to direct sunlight and wind suggest that water is being retained and is infiltrating on site. This is further supported by the lack of erosional features identified on the data sheet. Cheatgrass was recorded at 6.5 percent cover (all layers) and is not likely affecting the infiltration, retention, and release of water on the site. Biological soil crusts are present according to the cover data at 4.5 percent (all layers) which is low but not unexpected given that the Murphy Complex Fire reduced their abundance in 2007.

Evaluation of Standard 1

The attributes of rangeland health related to Standard 1 are Soil and Site Stability and Hydrologic Function. The Soil and Site Stability attribute was rated none to slight departure from the reference condition for all eight IIRH sites within the allotment. Similarly, the Hydrologic Function attribute was rated none to slight departure from the reference condition for seven of the eight IIRH sites within the allotment. The Hydrologic Function attribute was rated slight to

moderate at site MB_1 in the Marshall Butte Pasture; however, site MB_1 is not representative of the pasture.

The indicator for plant community composition and distribution relative to infiltration was rated as a slight to moderate departure at sites BB, CB, MB_1, and DN due to lack, or reduced abundance, of shrubs. In addition, the indicator for litter amount was rated slight to moderate at sites HR and MB_2, moderate at site MB_1, and moderate to extreme at sites BB, CB, HP, DN, and DS. All other indicators related to the Soil and Site Stability and Hydrologic Function attributes were rated none to slight departure from the reference condition at all eight sites within the allotment.

Soil stability tests as described in technical reference 1734-6 (Pellant et al., 2005) were completed at evaluation sites CB and DN with an average stability value of 5.0 and 4.5 respectively, indicating adequate soil surface resistance to erosion.

No Signs of accelerated erosion in the form of pedestals, terracettes, or rills were observed at the IIRH sites within the allotment (Table 8).

The amount of litter found within the allotment is higher than what is described in the ESD. However, litter is providing cover for site protection, and replenishing nutrients, and does not appear to be negatively affecting ecological processes.

Evaluation Finding – Cedar Butte Devil Creek Allotment is:

- Meeting the Standard
- Not meeting the Standard, but making significant progress towards meeting
- Not meeting the Standard

Rationale for Evaluation Finding

Abundant perennial vegetation, as well as biological soil crusts, is present within the Cedar Butte Devil Creek Allotment to provide protection for site stability. Bare ground is lower than expected throughout the allotment and topography is relatively flat. Two soil stability tests were conducted within the allotment and resulted in soil stability ratings of 4.5 and 5, indicating adequate soil surface resistance to erosion.

Observations made by the ID Team during the 2013 IIRH evaluations, as well as cover data (Tables 13 and 14) collected within each pasture of the Cedar Butte Devil Creek Allotment indicates that ground cover (vegetation, biological soil crusts, litter, etc.) is sufficient for soil stability. Within some of the more recently burned areas, biological soil crusts are generally of lower abundance; however, adequate vegetation and litter are present within these areas to protect the soil surface from erosion. No signs of accelerated erosion, such as active rills, water flow patterns, gullies, or other indications of soil erosion were present within the allotment; therefore, the infiltration, retention, and release of water processes relative to soil, vegetation, climate and landform appear to be providing for adequate nutrient and hydrologic cycling and energy flow in most areas.

Due to wildfires and vegetation treatments, shrubs are lacking within some plant communities of the allotment. Wildfire has essentially eliminated shrubs in these areas. Shrubs trap snow and

have a taproot that penetrates deep into the soil profile; therefore, the lack of shrubs has the potential to affect infiltration and retention of soil moisture. However, an abundance of deep-rooted perennial bunchgrasses are present in most areas to carry soil moisture deep into the soil profile. In addition, perennial grasses appeared vigorous and were producing seedheads at all sites, suggesting that the reduction of shrub cover is not negatively affecting infiltration to the point of reducing plant vigor or reproductive capability.

The litter amount indicator ratings deviated from the reference condition found in the ESD at five of the six sites. However, litter is providing cover for site protection, replenishing nutrients, and does not appear to be negatively affecting ecological processes.

Standard 2 (Riparian Areas & Wetlands)

Riparian-wetland areas are in properly functioning condition appropriate to soil type, climate, geology, and landform to provide for proper nutrient cycling, hydrologic cycling, and energy flow.

Black Butte, Black Butte Burn, Coonskin Butte, Heil Reservoir, Horse Pond, Marshall Butte, Milk Can, and West Devil Creek North Pastures:

X Standard Doesn't Apply

PFC assessments have not been conducted for Devil Creek downstream of the state land due the lack of channel forming flow and sparse hydric vegetation. The ephemeral (i.e., flow altered) reaches of Devil Creek are included in the Black Butte Burn, Horse Pond, Marshall Butte, Milk Can, and West Devil Creek North Pastures of the allotment. Ephemeral streams also occur in the Black Butte and Coonskin Butte Pastures (USGS 2014; National Hydrography Dataset). Ephemeral streams only flow in direct response to precipitation and are above the water table throughout the year (BLM 1998). Therefore, Standard 2 doesn't apply to these pastures.

Three constructed reservoirs are also present in the allotment: Heil Reservoir (48 acres), Horse Pond Reservoir (3 acres) and an unnamed reservoir on Devil Creek in the West Devil Creek South pasture (2.5 acres). As the water levels in these three reservoirs are artificially maintained, Standard 2 does not apply.

West Devil Creek South Pasture:

Rangeland Health Assessment

Two stream reaches of Devil Creek within the West Devil Creek South pasture were assessed in 2006 using the PFC protocol (BLM 1998; Table 10). PFC reach 30.9-31.5 extends from the reservoir downstream to the state land section and PFC reach 31.5-32.4 extends from the upstream end of the allotment boundary downstream to the reservoir. Both of these reaches were determined to be Functioning At Risk. Below the state land section, Devil Creek becomes an ephemeral stream with hydric vegetation existing along the stream channel in sparse patches. West Devil Creek South Pasture is the only pasture where Standard 2 applies.

The Cedar Butte Devil Creek Allotment contains 6.6 miles of intermittent Devil Creek. All other streams within the allotment are ephemeral. Ephemeral streams only flow in direct response to precipitation and are above the water table throughout the year (USDI BLM TR 1737-15; BLM

1998). No perennial streams are present in the allotment. Devil Creek is listed in the National Hydrography Dataset (USGS 2014) as being perennial within the allotment but is intermittent due to water diversion and withdrawal occurring upstream of the allotment. During the growing season, Devil Creek is diverted for the purpose of private land irrigation. Outside of the growing season, Devil Creek is diverted into House Creek, which flows into the Cedar Creek (Roseworth) Reservoir. Due to the water withdrawals upstream of the allotment, Devil Creek typically only contains water during a short period during spring run-off.

Proper Functioning Condition (PFC) assessments (BLM 1998) were conducted in 2006 on the Devil Creek reaches within the allotment (Table 10). The PFC assessment is a broad-scale assessment that uses hydrology, vegetation, and erosion/deposition (soil) attributes and processes to qualitatively assess the condition of riparian areas. The PFC determinations include ratings of PFC, functioning at risk with an upward trend (FAR-UP), functioning at risk with no apparent trend (FAR-NA), functioning at risk with a downward trend (FAR-DN), and non-functioning (NF).

Table 10: Proper Functioning Condition Ratings by Stream Reach in the Cedar Butte Devil Creek Allotment.

Stream Name	Stream Reach Number	Pasture	2006 Rating
Devil Creek	30.9-31.5	West Devil Creek South	At Risk
Devil Creek	31.5-32.4	West Devil Creek South	At Risk

In 2013, the 2006 PFC reaches of Devil Creek were revisited to assess whether or not conditions had changed from the previous assessment ratings. Photographs were taken at the same locations as the previous PFC assessments. The conditions for PFC reaches 30.9-31.5 and 31.5-32.4 are represented by Photos 3, 4 and 5. The 2013 photos were used to determine if the previous PFC ratings were consistent with the riparian conditions observed in 2006. None of the 2006 PFC ratings were changed for the PFC rated reaches within the allotment.

Evaluation of Standard 2

Devil Creek Reach 30.9-31.5

Five of the seven vegetation indicators from the PFC assessments were marked “yes” in 2006 (Table 11). A “yes” indicates the attribute or process was working appropriately within the stream reach. The vegetation indicator, “plant community is an adequate source of woody debris,” was marked as not applicable to this stream reach. This reach of Devil Creek is a herbaceous meadow and large woody debris are not needed for channel stability therefore the indicator was marked “N/A”. The only indicator marked “no” is whether adequate riparian-wetland vegetative cover was present to protect banks and dissipate energy during high flows. This indicator was marked “no” because upland species occurred in approximately equal proportions to the hydric vegetation along this reach (Photos 3 and 4). Upland vegetation (e.g. Kentucky bluegrass) is not as effective in stabilizing stream banks relative to the deep-rooted herbaceous and woody hydric species (e.g. sedges, willows). The amount and distribution of upland species in the riparian area is as expected given the intermittent nature of water along the reach due to water diversion and withdrawal occurring upstream of the allotment. The trend of

the hydric vegetation was rated as “not apparent” indicating the assessment crew could not determine if the hydric vegetation was increasing or decreasing in the riparian area.

Table 11: Vegetation Indicators from 2006 PFC Assessments by Stream Reach

Vegetation Indicators	Stream Reach 30.9-31.5	Stream Reach 31.5-32.4
There is a diverse age class distribution of riparian-wetland vegetation (recruitment for maintenance and recovery)	Yes	Yes
There is a diverse composition of riparian-wetland vegetation (for maintenance/recovery)	Yes	Yes
Species present indicate maintenance of riparian-wetland soil moisture characteristics	Yes	Yes
Streambank vegetation is comprised of those plants or plant communities that have root masses capable of withstanding high-stream flow events	Yes	Yes
Riparian plants exhibit high vigor	Yes	Yes
Adequate riparian-wetland vegetative cover is present to protect banks and dissipate energy during high flows	No	Yes
Plant communities in the riparian area are an adequate source of coarse and/or large woody material (for maintenance/recovery)	N/A	N/A

Photo 3: Devil Creek Stream Reach 30.9-31.5, September 2006.



Photo 4: Devil Creek Stream Reach 30.9-31.5, June 2013.



Devil Creek Reach 31.5-32.4

All vegetation items on the assessment form for the stream reach were marked “yes” during 2006 (Table 11). A “yes” indicates the attribute or process was working appropriately within the stream reach. One exception was the “not applicable” response to whether the plant community is an adequate source of woody debris to this stream reach. This reach of Devil Creek would likely have more willow, aspen and other woody hydric species if surface flows were not diverted from Devil Creek for private land irrigation. In 2013, a portion of the reach was inundated by a complex of beaver dams, resulting in improved riparian conditions compared to those observed in 2006. The beaver dams raised the water table and increased the amount of saturated soil in the vicinity of the ponds (Photo 5).

Photo 5: Devil Creek Stream Reach 31.5-32.4, June 2013.



Evaluation Finding – West Devil Creek South Pasture

- Meeting the Standard
- Not meeting the Standard, but making significant progress towards meeting
- Not meeting the Standard

Rationale for Evaluation Finding

Devil Creek PFC Reach 30.9-31.5

The age class and structural diversity of riparian vegetation along this reach are sufficient for maintenance and recovery. Noxious weeds (Canada thistle) are present but do not appear to be increasing. Shallow rooted upland species are present along this reach in similar proportion as hydric species. Upland vegetation (e.g. Kentucky bluegrass) is not as effective in stabilizing stream banks relative to the deep-rooted herbaceous and woody hydric species (e.g. sedges, willows). However, the amount and distribution of upland species in the riparian area is expected given the intermittent flow of water along the reach due to water diversion and withdrawal occurring upstream of the allotment. All other vegetation indicators were rated as properly functioning. Therefore this stream reach is meeting Standard 2.

Devil Creek PFC Reach 31.5-32.4

The age class and structural diversity of riparian vegetation along this reach are sufficient for maintenance and recovery. Noxious weeds (Canada thistle) are present, but do not appear to be increasing. Riparian vegetation throughout this reach is sufficient for controlling erosion,

stabilizing stream banks, filtering sediment and dissipating stream energy. Riparian shrubs are lacking throughout much of this reach, but the hydric species present (primarily rushes) are adequately stabilizing stream banks. A complex of beaver dams in a portion of this reach in 2013 raised the water table and increased the amount of saturated soil and occurrence of hydric vegetation in the vicinity of the beaver ponds. The 2006 PFC assessment consisted of “yes” responses to all applicable vegetation indicators (Table 11) and the field visit in 2013 noted common spike rush (*Eleocharis palustris*) and mountain rush (*Juncus arcticus*) dominated the riparian area with few upland species. Therefore, this stream reach is meeting Standard 2.

Standard 3 (Stream Channel/Floodplain)

Stream channels and floodplains are properly functioning relative to the geomorphology (e.g. gradient, size, shape, roughness, confinement, and sinuosity) and climate to provide for proper nutrient cycling, hydrologic cycling, and energy flow.

Allotment Summary for Standard 3 (Stream Channel & Floodplain):

Black Butte, Black Butte Burn, Coonskin Butte, Heil Reservoir, Horse Pond, Marshall Butte, Milk Can, and West Devil Creek North Pastures:

X Standard Doesn't Apply

See Rangeland Health Assessment for Standard 2 for a description of why Standard 3 does not apply to these pastures.

West Devil Creek South Pasture:

Rangeland Health Assessment

See Rangeland Health Assessment for Standard 2 for a description of water and riparian resources within the West Devil Creek South Pasture.

Evaluation of Standard 3

Devil Creek Reach 30.9-31.5

Five of the eight hydrologic and erosion/deposition indicators applicable to the stream reach from the PFC assessment were marked “no” in 2006 (Table 12). A “no” indicates the attribute or process was not working appropriately within the stream reach. The assessment determined the floodplain is not inundated in relatively frequent events due to the altered stream flow. The width/depth ratio and sinuosity of this stream reach are not in balance with the landscape setting. The riparian zone does not appear to be at potential extent due to the amount of upland species present within the riparian zone. The notes indicate that the stream channel is aggrading which is expected given the reduced stream scouring flows. Overall, the stream channel/ floodplain characteristics are not functioning properly. The stream reach was rated as Functional-At-Risk with no apparent trend. In 2013, the reach was revisited and conditions appeared similar to the 2006 assessment.

Fences located along the downstream end of the reach are up and functional. The upper end of the reach is located within the middle portion of the pasture and is not fenced. Field notes from the PFC assessment indicate the upland watershed does not appear to be contributing to riparian/wetland degradation.

Table 12: Hydrologic and Erosion/Deposition Indicators from PFC Assessments by Stream Reach

Hydrologic and Erosion/Deposition Indicators	Stream Reach 30.9-31.5	Stream Reach 31.5-32.4
Floodplain above bank-full inundated in "relatively frequently" events (1-3 years) -	No	Yes
Active/stable beaver dams, where present -	N/A	Yes*
Sinuosity, width/depth ratio, and gradient are in balance with the landscape setting (i.e., landform, geology, and bioclimatic region) -	No	Yes*
Riparian zone is widening or has achieved potential extent -	No	Yes*
Upland watershed is not contributing to riparian-wetland degradation -	Yes	Yes
Floodplain and channel characteristics (i.e. rocks, overflow channels, coarse and/or large woody debris) are adequate to dissipate energy -	Yes	No
Point bars are revegetating with riparian-wetland vegetation -	N/A	N/A
Lateral stream movement is associated with natural sinuosity -	No	Yes
System is vertically stable -	Yes	Yes
Stream in in balance with the water and sediment being supplied by the watershed (i.e., no excessive erosion and deposition) -	No	Yes

* Marked as "no" during 2006 PFC assessment but changed to "yes." In 2013, actively maintained stable beaver dams were observed along the reach (photo 5). The width to depth ratio and channel characteristics are appropriate for a beaver complex. The riparian zone is widening due to the higher water table related to the beaver complex.

Devil Creek Reach 31.5-32.4

Eight of the nine hydrologic and erosion/deposition items applicable to this stream reach were marked "yes" in the PFC assessment (Table 12). A "yes" indicates the attribute or process was working appropriately within the stream reach. The only item marked as "no" or not functioning was floodplain and channel characteristics (i.e. rocks, overflow channels, coarse and/or large woody debris) are adequate to dissipate energy. The 2006 PFC assessment stated "not many rocks present to dissipate energy and no overflow channels observed." However, the 2006 assessment also described stable inactive beaver dams in a complex with young and old willows growing on the dams. These stable dams help to dissipate stream energy. In 2013, the reach was revisited and photos show that the water table has risen and these dams were being actively maintained by beavers. At the time of the PFC assessment in 2006 the stream reach was rated as Functional-At-Risk with no apparent trend. In 2013, the reach was revisited and there appeared to be some improvement in stream condition resulting from the actively maintained beaver dams.

Evaluation Finding – West Devil Creek South Pasture:

- Meeting the Standard
- Not meeting the Standard, but making significant progress towards meeting
- Not meeting the Standard

Rationale for Evaluation Finding

Devil Creek PFC Reach 30.9-31.5

The reach was determined to be Functional-At-Risk during the 2006 assessment and stream channel and floodplain conditions appeared the same in 2013. The floodplain is not inundated in relatively frequent events due to the altered stream flow. The width/depth ratio and sinuosity of this stream reach are not in balance with the landscape setting. The riparian zone does not appear to be at potential extent due to the amount of upland species present within the riparian zone. Overall, the stream channel/ floodplain characteristics are not functioning properly. Therefore, stream reach 30.9-31.5 is not meeting Standard 3.

Devil Creek PFC Reach 31.5-32.4

At the time of the PFC assessment in 2006 the stream reach was rated as Functional-At-Risk with no apparent trend. In 2013, the reach was revisited and there have been some improvements in the stream channel and floodplain condition from actively maintained beaver dams. Therefore, stream reach 31.5-32.4 is not meeting Standard 3, but appears to be making significant progress toward meeting.

There are no fences separating stream reach 30.9-31.5 from reach 31.5-32.4.

Standard 4 (Native Plant Communities)

Healthy, productive, and diverse native animal habitat and populations of native plants are maintained or promoted as appropriate to soil type, climate, and landform to provide for proper nutrient cycling, hydrologic cycling, and energy flow

- Standard Doesn't Apply

The plant communities with the Cedar Butte Devil Creek Allotment have been seeded with native and non-native species following wildfires, therefore Standard 4 does not apply to the allotment.

Standard 5 (Seedings)

Rangelands seeded with mixtures, including predominately non-native plants, are functioning to maintain life form diversity, production, native animal habitat, nutrient cycling, energy flow, and the hydrologic cycle.

Rangeland Health Assessment

All pastures in the allotment are being evaluated under Standard 5. The vegetation map shows the majority of the allotment as Sandberg bluegrass; however, every pasture has been seeded following wildfire, most recently after the entire allotment burned in the 2007 Murphy Complex Fire.

Vegetative cover data were recorded in 2012 and 2013 following the Line Point Intercept method, as described in the Sage-grouse Habitat Assessment Framework (Stiver et al., 2010) protocol (HAF), at seven (BB, CB, HR, HP, MB_1, DN and DS) of the eight IIRH sites within the allotment. Vegetative cover data was recorded at the remaining IIRH site (MB_2) in 2013 using the Step Point Method (BLM, 1996). This cover data is summarized below in Table 13. Vegetative cover data was collected at multiple layers; however, Table 13 displays only the top layer.

Vegetative cover data were also recorded in other areas of the Cedar Butte Devil Creek Allotment in 2013 (HAF). The additional 2013 HAF cover data are summarized below in Table 14. Vegetative cover data was collected at multiple layers; however, Table 14 displays only the top layer.

Table 13: IIRH Site Data - Percent Vegetative Cover (Top Layer Only)

Vegetation Class	Species	Black Butte Pasture IIRH-BB HAF-BB	Coonskin Butte Pasture IIRH-CB HAF-CB	Heil Reservoir Pasture IIRH-HR HAF-HR	Horse Pond Pasture IIRH-HP HAF- HP	Marshall Butte Pasture		West Devil Creek North Pasture IIRH-DN HAF-DN	West Devil Creek South Pasture IIRH-DS HAF-DS
						IIRH-MB_1 HAF-MB_1	IIRH-MB_2 Key Area CBDMB-3		
Perennial Grasses	Basin wildrye	6%	0%	0%	2%	5%	0%	6.5%	4%
	Bluebunch wheatgrass	22%	15%	34%	38%	7%	10.6%	14%	22%
	Squirreltail	2%	1%	0%	0.5%	1%	0%	0%	0%
	Canada Bluegrass	0%	0%	0%	5%	0%	0%	0%	0%
	Crested wheatgrass	0%	0%	10.5%	0%	0%	32%	0%	0%
	Idaho Fescue	0%	0%	0%	2%	0%	0%	0%	0.5%
	Sandberg bluegrass	11%	2%	15%	4%	9%	13.3%	12.5%	10%
	Thickspike Wheatgrass	0%	0%	0%	0%	2%	0%	0%	0%
	Thurber's Wheatgrass	2%	0%	0%	0%	4%	1.3%	0%	0%
	Western wheatgrass	2%	18%	0.5%	0%	1%	0%	14%	17%
Annual Grasses	Wheatgrass	2%	0%	0%	0%	0%	0%	0%	0%
	Cheatgrass	4%	15%	0%	16%	30%	1.3%	12.5%	4.5%
	Loose Silkybent	0%	0%	0.5%	0%	0%	0%	0%	0%
Perennial Forbs	Japanese Brome	0%	0%	0%	1.5%	0%	0%	0%	0%
	Common Yarrow	0%	0%	0%	0%	0%	0%	0%	0.5%
	Lewis Flax	0%	10%	0%	0%	0%	0%	0%	0%
	Longleaf phlox	0%	0%	1.5%	0.5%	0%	0%	0%	1%
	Lupine	7%	0%	1.5%	2.5%	0%	0%	2%	4%
	Morning Milkvetch	0%	0%	0%	0%	0%	2.6%	0%	0.5%
	Pale Agoseris	0%	0%	0%	0.5%	0%	0%	0%	0%
Annual Forbs	Swamp willowherb	0%	0%	0%	0%	0%	0%	0%	0.5%
	Wayside Gromwell	0%	0%	0%	0.5%	0%	0%	0%	0%
	Bur buttercup	0%	1%	0%	0%	1%	1.3%	0%	0%
Annual Forbs	Groundsmoke	0%	2%	0%	0%	0%	0%	0%	0%
	Tumble mustard	0%	0%	0%	0%	1%	0%	0.5%	0%

Vegetation Class	Species	Black Butte Pasture IIRH-BB HAF-BB	Coonskin Butte Pasture IIRH-CB HAF-CB	Heil Reservoir Pasture IIRH-HR HAF-HR	Horse Pond Pasture IIRH-HP HAF- HP	Marshall Butte Pasture		West Devil Creek North Pasture IIRH-DN HAF-DN	West Devil Creek South Pasture IIRH-DS HAF-DS
						IIRH-MB_1 HAF-MB_1	IIRH-MB_2 Key Area CBDMB-3		
	Western tansymustard	0%	0%	0.5%	1%	0%	0%	0%	0%
	Yellow Salsify	0%	0%	0%	0%	1%	0%	0.5%	0%
	Rubber rabbitbrush	3%	0%	0%	0%	0%	0%	0%	0%
Shrubs	Wyoming big sagebrush	0%	1%	0%	1%	0%	0%	0%	0%
	Yellow rabbitbrush	0%	0%	4.5%	3%	0%	9.3%	0%	9%
Vegetation Total		61%	65%	68.5%	78%	62%	71.7%	62.5%	73.5%
Other Cover	Bare Ground	5%	7%	12%	1%	20%	17.3%	4%	9%
	Biological soil crust	7%	7%	7%	1.5%	0%	1.3%	1%	0%
	Litter in Contact with Soil	9%	15%	5.5%	5%	7%	4%	11.5%	10.5%
	Litter Standing	18%	6%	6%	11.5%	7%	1.3%	19.5%	6.5%
	Persistent Litter	0%	0%	0.5%	0%	2%	0%	0.5%	0.5%
	Rock or Gravel	0%	0%	0.5%	3%	2%	2.6%	1%	0%
Grand Total		100%	100%	100%	100%	100%	100%	100%	100%

Table 14: Additional HAF Site Data - Percent Vegetative Cover (Top Layer Only)

Vegetation Class	Species	Black Butte Burn Pasture HAF-BBB	Milk Can Pasture HAF-MC
Perennial Grasses	Basin wildrye	1%	0%
	Bluebunch wheatgrass	3%	19%
	Squirreltail	0%	3%
	Crested wheatgrass	8%	0%
	Sandberg bluegrass	21%	17%
	Thurber's Wheatgrass	1%	0%
	Western wheatgrass	1%	14%
Annual Grasses	Cheatgrass	8%	5%
Perennial Forbs	Carpet phlox	1%	0%
	Longleaf phlox	0%	1%
	Lupine	2%	1%
	Morning Milkvetch	1%	0%
	Pale Agoseris	1%	1%
	Prickly-leaved phlox	1%	0%
Annual Forbs	Bur buttercup	1%	0%
	Small Blue Eyed Mary	0%	1%
	Tumble mustard	0%	0%
Shrubs	Rubber rabbitbrush	1%	0%
	Wyoming big sagebrush	0%	0%
	Yellow rabbitbrush	2%	0%
Vegetation Total		53%	62%
Other Cover	Bare Ground	26%	15%
	Biological soil crust	0%	1%
	Litter in Contact with Soil	11%	20%

Vegetation Class	Species	Black Butte Burn Pasture HAF-BBB	Milk Can Pasture HAF-MC
	Litter Standing	4%	1%
	Persistent Litter	0%	0%
	Rock or Gravel	6%	1%
Grand Total		100%	100%

The amount of litter deviated from the reference condition at all sites. However, litter is providing cover for site protection, replenishing nutrients, and does not appear to be negatively affecting ecological processes.

Black Butte and Black Butte Burn Pastures
IIRH Site BB (Loamy 8-12")

Site BB (Photo 6) is located in the Black Butte Pasture but is also representative of the Black Butte Burn Pasture. The site is relatively flat with a slight north aspect and the entire pasture burned in the 2007 Murphy Complex Fire. Site BB is located in a native vegetation community where bluebunch wheatgrass is the dominant grass species at 22 percent cover (Table 13). Sandberg bluegrass was recorded at 11 percent cover, basin wildrye was recorded at 6 percent cover, and squirreltail, Thurber’s wheatgrass, and Western wheatgrass were all recorded at 2 percent cover. Deep-rooted perennial grass species are well represented (32% cover) and appeared healthy and productive at the site. Eight species of forbs were observed and they occurred at low density. Rubber rabbitbrush (*Ericameria nauseosa*) which resprouts after fire is the dominant shrub species at 3 percent cover. Biological soil crusts comprise 7 percent cover top layer and 14 percent cover for all layers which is a high amount given that the site burned in 2007.

Photo 6: July 2013 overview of IIRH Site BB



The indicator for litter amount was rated as a moderate to extreme departure from the reference condition due to an increased amount of litter (61% cover for all layers) found at the site.

The indicator for functional structural groups was rated as a slight to moderate departure from the reference condition due to a reduction in shrubs and a lower abundance and diversity of forbs. Fourwing saltbush, rubber rabbitbrush, and Wyoming big sagebrush occur on the site at low densities.

Cheatgrass was recorded at 4 percent cover (top layer only) and was noted as being scattered throughout the site. Curveseed butterwort (*Ceratocephala testiculata*) was not recorded in the foliar cover transect but was noted during the IIRH as being found in disturbed areas at the site. The indicator for invasive plants was rated moderate because cheatgrass was scattered throughout the site and curveseed butterwort was found in disturbed areas.

All other indicators related to the Biotic Integrity attribute were rated none to slight. With this, the Biotic Integrity attribute was rated as a slight to moderate departure from the reference condition due to presence of invasive species and a shift in the functional structural groups.

Cover data was also collected in the Black Butte Burn Pasture at HAF Site BBB which can supplement the data collected in the Black Butte Pasture. Top layer cover data indicates that bare ground is 26 percent, litter is 16 percent, and vegetative cover is 53 percent (Table 14). Ten species of forbs were observed and they occurred at high density. Cheatgrass composed eight percent of the vegetative cover. No IIRH assessment was performed at this site but the pasture was visited by the ID team and they determined that the site in the Black Butte Pasture was representative for both pastures.

Coonskin Butte Pasture
IIRH Site CB (Loamy 8-12")

Site CB (Photo 7) is located in a native vegetation community that has been seeded. The site slopes with an east aspect from Coonskin Butte and the entire pasture burned in the 2007 Murphy Complex Fire. The dominant grass species are western wheatgrass (18% cover) and bluebunch wheatgrass (15% cover). Wyoming big sagebrush is the dominant shrub species at 1 percent cover (Table 13); the IIRH notes state “sagebrush is at low abundance but appears to be increasing with good recruitment of new seedlings.” Ten species of forbs were observed and they occurred at high density. Biological soil crusts comprise 7 percent cover top layer and 19 percent cover for all layers which is a high amount given that the site burned in 2007.

Photo 7: July 2013 overview of IIRH Site CB



The indicator for litter amount was rated as a moderate to extreme departure from the reference condition due to an increase in the amount of litter (61% cover for all layers) found at the site.

Shrubs are reduced at the site; however, Wyoming big sagebrush and fourwing saltbush seedlings are establishing. The indicator for functional structural groups was rated as a slight to moderate departure from the reference condition.

Cheatgrass was recorded at 15 percent cover (top layer only) and noted in IIRH field notes as being scattered throughout the site but found mostly in disturbed areas such as along roads, pipelines, and around rodent burrows. The indicator for invasive plants was rated as a moderate departure.

All other indicators related to the Biotic Integrity attribute were rated none to slight. With this, the Biotic Integrity attribute was rated as a slight to moderate departure from the reference condition due to presence of invasive species and a reduction of shrubs at the site.

Heil Reservoir Pasture

IIRH Site HR (Loamy 11-13")

Site HR (Photo 8) is located in a native vegetation community where bluebunch wheatgrass is the dominant grass species at 34 percent cover and yellow rabbitbrush is the dominant shrub species at 4.5 percent cover (Table 13). Crested wheatgrass was recorded at 10.5 percent cover. Cheatgrass was not identified on the site. Eleven species of forbs were observed and they

occurred at high density. Biological soil crusts comprise 7 percent cover top layer and 25 percent cover for all layers which is a high amount given that the site burned in 2007. The site is relatively flat with a slight north aspect. The entire pasture burned in the 2007 Murphy Complex Fire.

Photo 8: July 2013 overview of IIRH Site HR



The indicator for litter amount was rated as a slight to moderate departure from the reference condition due to an increased amount of litter (36% cover for all layers) found at the site.

All other indicators related to the Biotic Integrity attribute were rated none to slight which indicates the site is functioning properly given the time since fire. With this, the Biotic Integrity attribute was rated none to slight departure from the reference condition; the IIRH notes state the increased amount of litter was not enough to warrant a lower rating.

Horse Pond Pasture

IIRH Site HP. Shallow Claypan 12-16"

Site HP (Photo 9) is located in a native vegetation community where bluebunch wheatgrass is the dominant grass species at 38 percent cover and yellow rabbitbrush is the dominant shrub species at 3 percent cover (Table 13). Although Wyoming big sagebrush was recorded at only 1 percent cover, it was noted that “sagebrush appears to be increasing with good recruitment of new seedlings.” Nine species of forbs were observed and they occurred at high density. Biological soil crusts are common at the site (1.5% top layer cover and 23.5% cover for all layers). The site

is relatively flat with a north aspect and the entire pasture burned in the 2007 Murphy Complex Fire.

Photo 9: July 2013 overview of IIRH Site HP



The indicator for litter amount was rated as a moderate to extreme departure from the reference condition due to an increase in the amount of litter (61% foliar cover) found at the site.

Cheatgrass was recorded at 16 percent foliar cover. In the IIRH notes, cheatgrass and tumble mustard were observed as being mostly associated with disturbed areas and concentrated in a rocky draw that was not seeded following wildfire. Other than this unseeded area, cheatgrass and other invasive species were not present at the site; therefore, the indicator for invasive plants was rated slight to moderate.

All other indicators related to the Biotic Integrity attribute were rated none to slight. With this, the Biotic Integrity attribute was rated none to slight departure from the reference condition; the IIRH notes state the increased amount of litter was not enough to warrant a lower rating and the invasive species were limited to disturbed areas and the rocky draw.

Marshall Butte Pasture

IIRH Sites MB_1 (Loamy 8-12")

Site MB_1 (Photo 10) is located in a native vegetation community along a draw in the northwest corner of the pasture. This site is not representative of the majority of the pasture. Some native grass species were present including: Sandberg's bluegrass at 9 percent cover, bluebunch

wheatgrass at 7 percent cover, basin wildrye at 5 percent cover, Thurber's needlegrass at 4 percent cover, thickspike wheatgrass at 2 percent cover, and squirreltail and western wheatgrass at 1 percent cover each (Table 13). Ten species of forbs were observed at the site but they occurred at low density. There was no shrub component recorded. Biological soil crusts were not recorded in the top layer cover but were recorded at 2 percent cover for all layers. The site slopes northward from Marshall Butte and the entire pasture burned in the 2007 Murphy Complex Fire.

Photo 10: July 2013 overview of IIRH Site MB_1



The indicator for litter amount was rated as a moderate departure from the reference condition due to an increased amount of litter (54% cover for all layers) found at the site.

The indicator for functional structural groups was rated as a moderate departure due to a lack of shrubs at the site, a slight reduction in deep rooted perennial grasses and forbs, and cheatgrass being common at the site.

Cheatgrass was recorded at 30 percent cover and was noted as being common throughout the site; therefore, the indicator for invasive plants was rated moderate to extreme.

All other indicators related to the Biotic Integrity attribute were rated none to slight. With this, the Biotic Integrity attribute was rated slight to moderate departure from the reference condition due to the amount of invasive species present and the lack of shrubs.

IIRH Site MB_2 (Loamy 8-12”)

Site MB_2 (Photo 11) is located in a crested wheatgrass seeded vegetation community that is representative of the majority (85%) of the pasture. Crested wheatgrass is the dominant grass species at 32 percent cover (Table 13). Sandberg bluegrass was recorded at 13.3 percent cover and bluebunch wheatgrass was recorded at 10.6 percent cover. Thurber’s needlegrass and squirreltail are present at trace levels at the site. Yellow rabbitbrush is the dominant shrub species recorded at 9.3 percent cover. The field notes indicate that the site has a good forb component for a crested wheatgrass seeding with good diversity and abundance. Biological crusts comprise 1.3 percent top layer cover and 5.3 percent for all layers. The site is relatively flat and the entire pasture burned in the 2007 Murphy Complex Fire.

Photo 11: July 2013 overview of IIRH Site MB_2



The indicator for litter amount was rated as a slight to moderate departure from the reference condition due to an increase in the amount of litter (29.3% cover for all layers) found at the site.

Cheatgrass was recorded at 1.3% cover and curvseed butterwort were noted as being present at trace amounts, therefore, the indicator for invasive plants was rated none to slight.

All other indicators related to the Biotic Integrity attribute were rated none to slight. With this, the Biotic Integrity attribute was rated none to slight departure from the reference condition; the IIRH notes stated the amount of litter was not enough to warrant a lower rating.

West Devil Creek North and Milk Can Pastures

IIRH Site DN (Shallow Claypan 12-16”)

Site DN (Photo 12) is located in the West Devil Creek North Pasture but is also representative of the Milk Can Pasture. Site DN is located in a native vegetation community where bluebunch

wheatgrass and western wheatgrass are the dominant grass species with both occurring at 14 percent cover (Table 13). No shrub species were recorded along the cover transects. Twelve species of forbs were observed and they occurred at moderate density. Biological soil crusts comprise 1 percent top layer cover and 3.5 percent for all layers. The site is of relatively flat topography with a north aspect and the entire pasture burned in the 2007 Murphy Complex Fire.

Photo 12: July 2013 overview of IIRH Site DN



The indicator for litter amount was rated as a moderate to extreme departure from the reference condition due to an increase in the amount of litter (79% cover for all layers) found at the site.

The indicator for functional structural groups was rated as a slight to moderate departure from the reference condition due to the lack of shrubs at the site.

Cheatgrass was found in disturbed areas and was recorded at 12.5 percent cover. Clasping pepperweed was not recorded in the foliar cover transect but was noted during the IIRH as being found in disturbed areas at the site. The indicator for invasive plants was rated slight to moderate because cheatgrass and clasping pepperweed were found in disturbed areas.

All other indicators related to the Biotic Integrity attribute were rated none to slight. With this, the Biotic Integrity attribute was rated slight to moderate departure from the reference condition due to the lack of shrubs and cheatgrass and curvseed butterwort being found in disturbed areas. The IIRH notes state the increased amount of litter was not enough to warrant a lower rating.

Cover values from HAF Site MC-1 recorded in 2013 in the Milk Can Pasture provides insight into vegetative conditions within this pasture. Top layer cover data recorded bare ground at 15 percent with 21 percent litter, one percent rock, one percent biological soil crusts, and 62 percent vegetative cover (Table 14). Cheatgrass is present at 5 percent cover. Shrubs are absent and deep-rooted perennial grasses are represented at 20 percent. Nine species of forbs were observed and they occurred at moderate density. It is unknown if this HAF site is representative of the whole pasture but the data does suggest that the vegetation communities are similar even though the site potential based on ESDs may be different. Bare ground was higher at this HAF site compared to IIRH site DN and cheatgrass cover was lower; otherwise vegetative cover data were similar.

West Devil Creek South Pasture
IIRH Site DS (Loamy 12-16")

Site DS is located in a northwest portion of the pasture and is representative of the pasture. Bluebunch wheatgrass is the dominant grass species at 22 percent cover and yellow rabbitbrush is the dominant shrub species at 9 percent cover (Table 13). In addition, western wheatgrass was recorded at 17 percent cover and Sandberg bluegrass at 10 percent cover. Twelve species of forbs were observed and they occurred at high density. Biological soil crusts were not recorded in the top layer of the cover transects but were recorded at 4.5 percent for all layers. The site is relatively flat with a slight north aspect and the entire pasture burned in the 2007 Murphy Complex Fire.

Photo 13: July 2013 overview of IIRH Site DS



The indicator for litter amount was rated as a moderate to extreme departure from the reference condition due to increased amount of litter (65.5% cover all layers) found at the site. However, the IIRH notes state “Litter is greatly increased compared to the ESD according to the HAF cover data but litter does not appear this high.”

Cheatgrass was recorded at 4.5 percent cover and noted as being present in some disturbed areas at the site. Areas of cheatgrass were small and mainly confined around dirt mounds where rodent have been digging. The indicator for invasive plants was rated slight to moderate departure.

All other indicators related to the Biotic Integrity attribute were rated none to slight. With this, the Biotic Integrity attribute was rated none to slight departure from the reference condition; the IIRH notes state the increased amount of litter was not enough to warrant a lower rating and the invasive species are confined to disturbed areas.

Evaluation of Standard 5

The Biotic Integrity attribute was rated none to slight at four of the eight IIRH sites (HR, HP, MB_2, and DS) within the allotment, and slight to moderate at the remaining four IIRH sites (BB, CB, MB_1, and DN). Site MB_1 was noted to not be representative of the Marshall Butte Pasture.

The functional/structural group indicator was rated as none to slight departure from reference condition at four of the eight IIRH sites (HR, HP, MB_2, and DS), slight to moderate at three sites (BB, CB, and DN), and moderate at the remaining site (MB_1).

The litter amount indicator was rated slight to moderate departure at two IIRH sites (HR, MB_2), moderate at one site (MB_1), and moderate to extreme at the remaining five sites (BB, CB, HP, DN, DS). Percentages of litter used to evaluate the litter indicator included not only detached litter in contact with soil but also standing litter.

Invasive plants were rated none to slight at two IIRH sites (HR, MB_2), slight to moderate departure from the reference condition at three sites (HP, DN, DS), moderate at two sites (BB, CB), and moderate to extreme at one site (MB_1). Cheatgrass and/or curvseed butterwort ranged from being absent or confined to roadways and pipelines at some sites to being common throughout one site (MB_1).

The 2013 IIRH field notes indicate that shrubs are generally absent from some seeded plant communities of the Cedar Butte Devil Creek Allotment; however, some of these areas show recruitment of shrub seedlings, although they are currently at low densities. Some of the seeded plant communities also have low diversity and density of perennial forbs while other areas ranged from moderate diversity and high density. Most seeded plant communities within the allotments have a high abundance of deep-rooted perennial bunchgrasses, Sandberg bluegrass, as well as other desirable vegetation that are providing soil cover and competition to invasive species, as shown in the cover data (Tables 13 and 14). Cheatgrass was common throughout one site in the northern portion of the Marshall Butte Pasture, but it was determined that the site is not representative of the pasture. In most areas, cheatgrass and/or curvseed butterwort were

absent or confined to disturbed areas (roadways, pipelines, rodent mounds, etc.) but were scattered throughout two of the IIRH sites. IIRH field notes do not indicate any other invasive species were present at the evaluation sites. Overall, adequate desirable perennial species are present in most areas to hinder the further spread or establishment of cheatgrass or other invasive or noxious plant species.

Evaluation Finding - Cedar Butte Devil Creek Allotment is:

- Meeting the Standard
- Not meeting the Standard, but making significant progress towards meeting
- Not meeting the Standard

Rationale for Evaluation Finding

Diversity of perennial species within the Cedar Butte Devil Creek Allotment is as expected for areas that have burned by wildfire and have been drill seeded. Deep-rooted perennial bunchgrasses are well represented across most of the seeded plant communities and appeared healthy and productive. In addition, deep-rooted perennial bunchgrasses are the dominant functional/structural group within most areas of the seeded plant communities (Tables 13 and 14). All perennial species are productive and capable of reproduction and recruitment of new seedlings. Shrubs were generally absent from the seeded plant communities but are increasing in some areas, as shown by good recruitment of shrub seedlings; although currently present at low densities. Reduced sagebrush and other fire intolerant shrub species abundance is expected within the allotment given the short time (~6 years) since fire. Biological soil crust are well represented in most areas, given that the entire allotment burned in 2007. Biological soil crusts are important because they help reduce the potential for erosion and fix both carbon and nitrogen (Belnap, 2003). The 2013 IIRH field notes, as well as cover data, indicate that abundance and diversity of perennial forb species varies across the seeded plant communities of the allotment. Cover of perennial forbs ranged from 0 to 10 percent (top layer) across all cover transects recorded within the allotment (Tables 13 and 14).

The litter amount indicator rating deviated from the reference condition found in the ESD at all IIRH sites. The presence of seeded species can result in higher biomass production, resulting in more litter than is described in the ESD reference sheet. However, litter is providing cover for site protection and replenishment of nutrients and does not appear to be negatively affecting ecological processes, as shown by adequate soil moisture, as well as plant growth/annual production matching what is expected at each site.

Cheatgrass and/or curvseed butterwort were absent in some areas of the allotment but were scattered throughout some of the seeded plant communities (Tables 13 and 14). Conversely, these species were also common in some areas. Invasive species such as cheatgrass and curvseed butterwort can become a threat to biotic integrity following large scale disturbances such as wildfire; however, adequate desirable perennial species and biological soil crusts are present within the seeded plant communities to hinder further spread or establishment of invasive or noxious plant species. Most seeded plant communities within the Cedar Butte Devil Creek Allotment have a high abundance of deep-rooted perennial bunchgrasses and Sandberg bluegrass, as well as other desirable vegetation and biological crusts (Tables 22 and 23) that are providing soil cover and competition to invasive species. The perennial species present within

the pastures are appropriately productive and are capable of reproduction and recruitment of new seedlings.

Most of the current plant communities within the Cedar Butte Devil Creek Allotment lack vertical structure due to several wildfires, including the 2007 Murphy Complex Fire, which removed shrubs and their seed sources across the entire allotment. Use by native wildlife dependent on sagebrush for their habitat (i.e. sage thrasher (*Oreoscoptes montanus*), sagebrush vole (*Lemmiscus curtatus*), sagebrush lizard (*Sceloporus graciosus*), least chipmunk (*Neotamius minimus*), and Vesper sparrow (*Pooecetes gramineus*) is limited at this time. As shrubs re-establish and mature these animals should return to the area. In the meantime, the seeded plant communities provide habitat for grassland [Savannah sparrow (*Passerculus sandwichensis*), grasshopper sparrow (*Ammodramus savannarum*), and montane vole (*Microtus montanus*)] and generalist wildlife species [horned lark (*Eremophila alpestris*), Western meadowlark (*Sternella neglecta*), deer mouse (*Peromyscus maniculatus*), and coyote (*Canis latrans*)]. It also can provide seasonal forage for mule deer (*Odocoileus hemionus*), pronghorn (*Antilocapra americana*), and elk (*Cervus elaphus*).

The seeded vegetation communities within all pastures of the Cedar Butte Devil Creek Allotment are functioning to maintain life form diversity, production, native animal habitat, nutrient cycling, energy flow, and the hydrologic cycle. Therefore, all pastures of the allotment are meeting Standard 5.

Standard 6 (Exotic Plant Communities, Other than Seedings)

Exotic plant communities, other than seedings, will meet minimum requirements of soil stability and maintenance of existing native and seeded plants. These communities will be rehabilitated to perennial communities when feasible cost effective methods are developed.

X Standard Doesn't Apply

The plant communities with the Cedar Butte Devil Creek Allotment are dominated by native and seeded non-native species therefore Standard 6 does not apply to the allotment.

Standard 7 (Water Quality)

Surface and ground water on public lands comply with the Idaho Water Quality Standards.

Allotment Summary for Standard 7 (Water Quality):

Black Butte, Coonskin Butte, Heil Reservoir, Horse Pond, and Marshall Butte Pastures:

X Standard Doesn't Apply

Black Butte Burn, Milk Can, West Devil Creek North, and West Devil Creek South Pastures

See Standard 2 for a description of the water resources within the allotment.

Evaluation of Standard 7

The Cedar Butte Devil Creek Allotment contains 6.6 miles of intermittent Devil Creek. The reaches of Devil Creek within the Black Butte Burn, Milk Can, West Devil Creek North, and West Devil Creek South Pastures of the allotment are within the Idaho Department of

Environmental Quality (IDEQ) Assessment Unit (AU) ID17040213SK002_03 (IDEQ 2014). Therefore, Standard 7 applies to these four pastures of the allotment. This AU is listed by IDEQ as not supporting the beneficial use of cold water aquatic life due to water temperature (IDEQ 2014). Cold water aquatic life is the standard beneficial use identified by IDEQ for undesignated water bodies (i.e. waters for which uses have not been designated or have incomplete designations).

During the growing season, Devil Creek is diverted for the purpose of private land irrigation. Outside of the growing season, Devil Creek is diverted into House Creek, which flows into the Cedar Creek (Roseworth) Reservoir. Due to the water withdrawals upstream of the allotment, Devil Creek typically only contains water during a short period during spring run-off. However, since the portion of Devil Creek in the four identified pastures is not meeting its designated beneficial uses, Standard 7 is not being met for the Black Butte Burn, Milk Can, West Devil Creek North, and West Devil Creek South Pastures.

Evaluation Finding – Black Butte Burn, Milk Can, West Devil Creek North, and West Devil Creek South Pastures are:

- Meeting the Standard
- Not meeting the Standard, but making significant progress towards meeting
- Not meeting the Standard

Rationale for Evaluation Finding

Standard 7 is not being met in the Black Butte Burn, Milk Can, West Devil Creek North, and West Devil Creek South Pastures of the allotment based on IDEQ beneficial use support status and water quality impairment information (IDEQ 2014). The AU within the allotment is listed by IDEQ as not supporting the designated beneficial use of cold water aquatic life due to elevated water temperature (IDEQ 2014). Therefore, the Devil Creek reaches within the four identified pastures are not meeting Standard 7.

Devil Creek within the allotment does not contain the optimum flows required to meet the IDEQ numeric water temperature criteria (IDEQ 2014). The primary cause of the non-attainment for water temperature is due to the absence of surface water for private land irrigation upstream of the allotment.

Standard 8 (Threatened, Endangered and BLM Sensitive Plants and Animals)

Habitats are suitable to maintain viable populations of threatened and endangered, sensitive, and other special status species.

Rangeland Health Assessment

Plants:

There are no known BLM sensitive plants within the allotment. In the Jarbidge Field Office sensitive plants are generally associated with distinct soil types that occur on scattered portions of the field office. None of these soil types occur within the allotment based on SSURGO soil data (NRCS, 2012). Potential habitat occurs for one sensitive plant species, slickspot peppergrass (*Lepidium papilliferum*; Proposed Endangered, BLM sensitive species). Approximately 7,429 acres have been surveyed for slickspot peppergrass; slickspots were noted

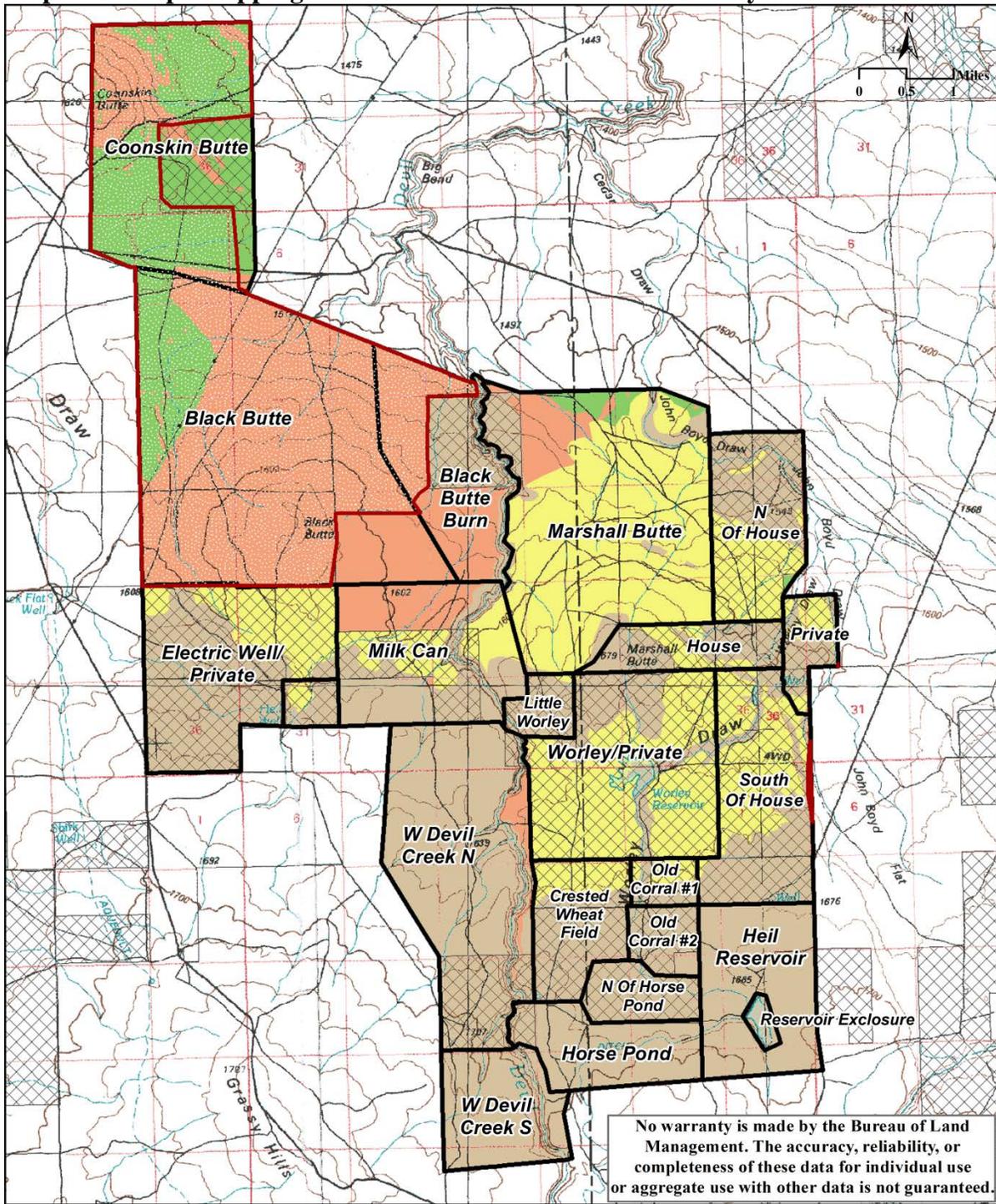
but slickspot peppergrass plants have not been found in these or previous surveys. Systematic inventories for other special status plants have not been conducted in the allotment. No special status plant species have been recorded during other monitoring efforts (e.g., slickspot peppergrass inventories, IIRH field visits, sage-grouse habitat assessments, fire rehabilitation monitoring, etc.).

Slickspot peppergrass grows in the semiarid sagebrush-steppe ecosystem of southwestern Idaho. Interspersed within this habitat type, slickspot peppergrass can be found in visually distinct microsites known as slickspots (mini playas or natric sites) that act as small water basins and where the sodium and clay content is higher than adjacent, unoccupied habitat (Moseley, 1994). The Cedar Butte Devil Creek Allotment contains 12,609 acres (67% of allotment) of potential slickspot peppergrass habitat (Map 8). A GIS model was developed to help focus inventory and clearance efforts to areas that would have a higher probability of finding slickspot peppergrass plants (BLM, 2012). This model used updated soils data, vegetation community data, fire frequency, slope, and elevation to further refine potential habitat and to categorize the habitat into groups (high, medium, and low) that identify the potential for finding the species. The allotment contains 2,618 acres of high potential, 6,963 acres of medium potential, 3,028 acres of low potential, and 6,337 acres of non-habitat for slickspot peppergrass (Table 15). The nearest known occupied habitat for slickspot peppergrass is 5 miles to the west, on the west side of Clover Creek.

Table 15: Slickspot Peppergrass Potential Habitat (Acres)

Pasture	High	Medium	Low	Non-habitat
Black Butte	744	4,542	5	0
Black Butte Burn	0	948	0	107
Coonskin Butte	1,698	578	0	0
Heil Reservoir	0	0	0	1,354
Horse Pond	0	0	0	802
House/ Private	0	0	1	63
Marshall Butte	160	341	2,868	247
Milk Can	0	445	150	566
N of Horse Pond/ Private	0	0	0	5
N of House/ Private	14	1	0	5
Old Corral #2/ Private	0	0	0	48
Private	2	0	0	1
Reservoir Enclosure	0	0	0	86
West Devil Creek North	0	108	3	2,081
West Devil Creek South	0	0	0	972

Map 8: Slickspot Peppergrass Potential Habitat and Areas Surveyed



No warranty is made by the Bureau of Land Management. The accuracy, reliability, or completeness of these data for individual use or aggregate use with other data is not guaranteed.



Animals:

Presence of various sensitive wildlife species are based upon primarily incidental observations by BLM personnel and data entered into the Idaho Natural Heritage Center database by other individuals. Species found in the Cedar Butte Devil Creek Allotment are discussed below.

There are no BLM sensitive or federally listed fish or aquatic invertebrates or their habitat within the allotment. No perennial streams are present in the allotment. Devil Creek is an intermittent stream that only contains water during a short period during spring run-off.

Greater Sage-Grouse (*Centrocercus urophasianus*; BLM sensitive species)

Sage-grouse require sagebrush and other shrub habitat to fulfill seasonal habitat needs (Connelly et al., 2000; Holloran et al., 2005). Sage-grouse are dependent on sagebrush ecosystems and require extensive stands of sagebrush with a diverse and vigorous herbaceous understory.

Sage-grouse display and breed on leks (i.e., display grounds with sparse vegetation cover) between March and May. After breeding hens disperse into nesting areas around the leks. Sage-grouse typically return to the same lek and nest areas year after year. Hens seek out nest sites that are concealed from predators especially avian predators (Conover et al., 2010) by a combination of sagebrush and grass cover. When chicks hatch the hen and her chicks feed on insects and forbs and slowly move towards wetter areas like wet meadows or streams and springs where forbs are still green and growing. A diverse forb component and an abundance of forbs are necessary to support a variety of insects which are critical to the growth of young sage-grouse (Knick and Connelly, 2011). In the fall as forbs dry up sage-grouse switch from eating forbs to sagebrush through the winter. Sage-grouse may either migrate to different seasonal habitats or may remain in a single general area throughout the year.

In 2010, BLM developed the Sage-Grouse HAF to assess seasonal sage-grouse habitats at multiple scales (Stiver et al., 2010). Habitat suitability requirements were based on the following guidelines which were published in 2000 and describe desired conditions for sage-grouse habitats during nesting and early brood rearing, late brood rearing, and winter:

- Nesting and early brood rearing habitat should support 15-25 percent canopy cover of sagebrush, perennial herbaceous cover should average at least 7” in height with at least 10 percent canopy cover for grasses and at least 5 percent for forbs and a diversity of forb species during spring (Connelly et al., 2000).
- Late brood rearing habitat should support 10-25 percent canopy cover of sagebrush. Riparian areas or wet meadows in the general area improve habitat for sage-grouse (Connelly et al., 2000).
- Winter habitat should have 10-30 percent canopy cover of sagebrush with at least 10-14” exposed above the snow (Connelly et al., 2000).

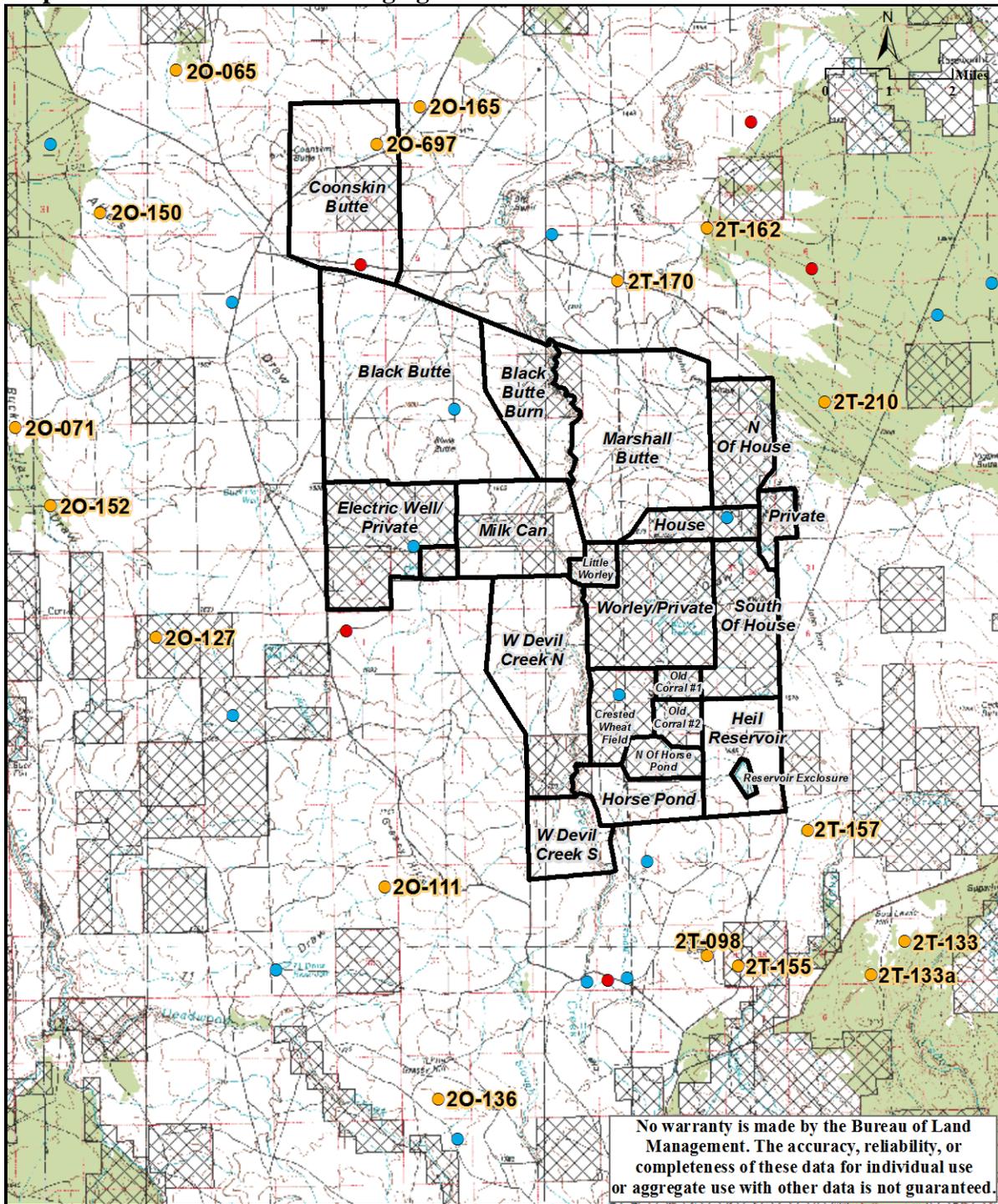
The Grass Fire in 2000 and the Murphy Complex Fires in 2007 essentially eliminated all sagebrush in the allotment. Since 1980 there have been eleven fires in the allotment. Without sagebrush the area is generally unsuitable for sage-grouse. Following the Murphy Complex fires

the BLM aerial seeded sagebrush in strips. Although sagebrush has been reseeded, recovery of the sagebrush community needed for sage-grouse is expected to take one (Wambolt and Payne, 1986) to several (Baker, 2006; Baker, 2011) decades assuming the absence of additional fire.

Large areas of sagebrush are generally absent around the allotment. The nearest large areas of sagebrush occurs 1 mile to the east in the Conover Allotment and 2 miles to the south on the south side of the Three Creek Highway (Map 9).

DRAFT

Map 9: Shrubland habitat and sage-grouse leks



 Cedar Butte Devil Creek Allotment & Pastures	 Shrubland	Management Status
 Non-BLM Land		 Occupied
		 Undetermined
		 Unoccupied

The Cedar Butte Devil Creek Allotment contains 1 occupied, 1 undetermined (due to a lack of recent surveys), and 1 unoccupied sage-grouse leks. Within five miles there are 17 occupied, 15 undetermined, and 5 unoccupied sage-grouse leks (Map 9). Sage-grouse attendance at occupied leks within 5 miles of the allotment are shown in Table 16. Leks are considered occupied if there has been documented sage-grouse activity within the past five years.

Table 16: Sage-grouse Attendance at Occupied Leks within Five Miles of the Cedar Butte Devil Creek Allotment, 2000-2014

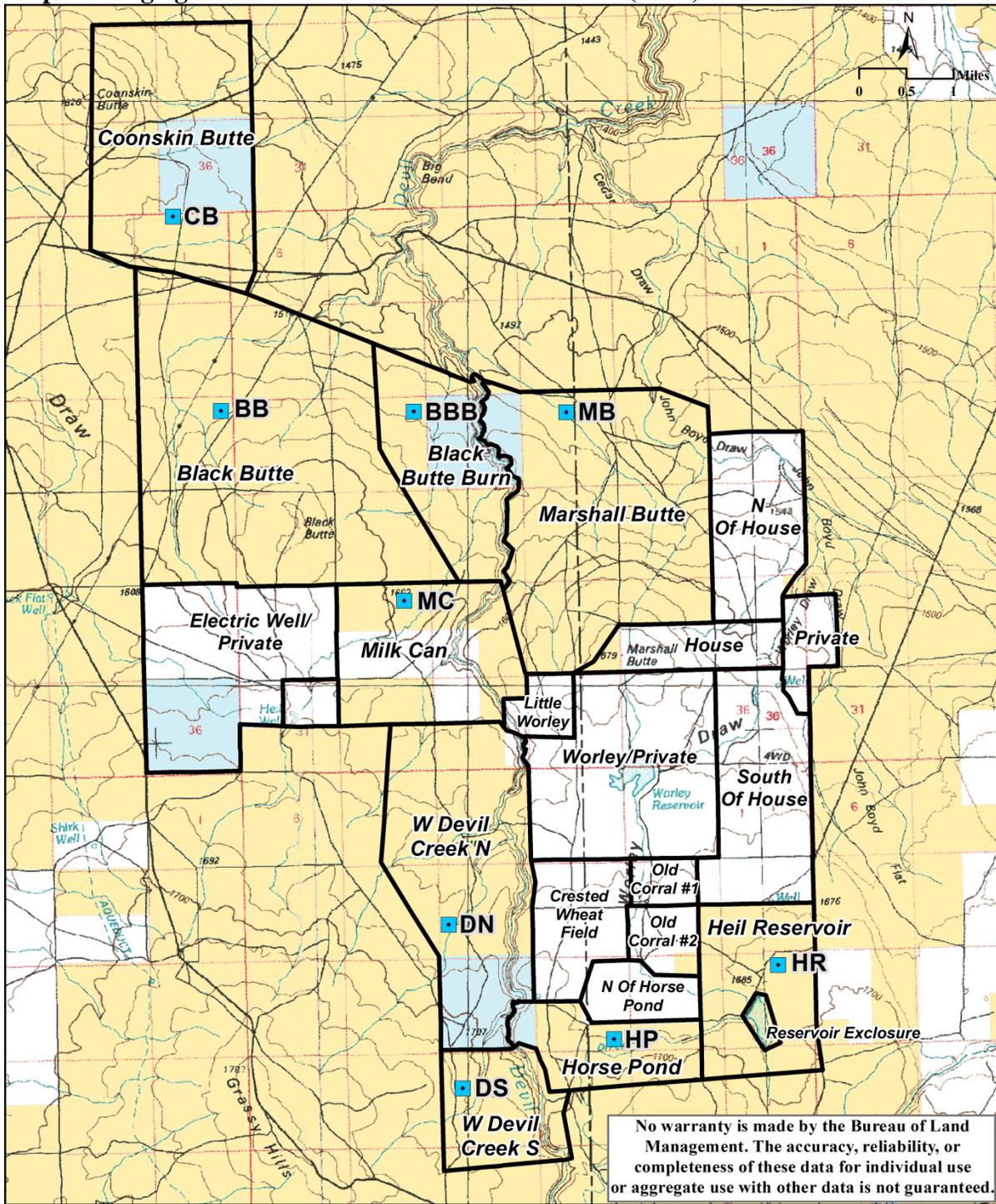
Lek	Location	Survey Year ¹														
		00	01	02	03	04	05	06	07	08	09	10	11	12	13	14
2O-697	Coonskin Butte Pasture								2*	0	0	4	1	4	0	0
2O-165	0.5 mile E	9	8	7	--	8	--	--	9*	9	4	2	4	--	0	4
2T-157	0.5 mile SE	18	16	8	--	15	13	14	10*	9	7	5	5	8	--	2
2T-170	1.1 mile N	9	2	--	--	--	16	17	24*	16	6	4	0	0	0	0
2T-210	1.8 mile E															18
2O-065	1.9 mile NW										12	5	--	--	--	--
2T-098	2.0 miles S	11	0	2	2	0	4	2	0*	2	8	6	13	15	19	19
2T-162	2.0 miles N	18	5	8	--	--	18	8	11*	12	14	5	8	3	10	6
2O-111	2.3 miles SW	20	--	--	8	8	7	19	--*	0	19	19	14	11	2	2
2T-155	2.4 miles S	6	0	1	--	--	--	--	--*	0	0	--	2	0	--	0
2O-127	2.7 miles W										6	3	--	--	--	--
2T-133	2.8 miles SE	10	5	4	3	13	0	14	13	8	7	6	10	10	4	0
2T-133a	2.9 miles SE	--	--	--	--	--	--	--	--	--	--	--	--	18	16	28
2O-150	3.0 miles W						19	--	7*	15	7	6	0	--	--	--
2O-136	3.7 miles SW						8	--	29*	26	12	15	15	--	--	--
2O-152	4.3 miles W	--	--	--	--	0	--	--	--*	--	--	0	11	0	--	--
2O-071	4.8 miles W										12	4	--	--	--	--

¹Where the table is blank the lek had not yet been identified; in years marked by dashes (--) the lek was not surveyed. An asterisk indicates area around lek burned in a wildfire that year (*).

Nesting and Early Brood Rearing Habitat

The current conditions of sage-grouse seasonal habitats were assessed following protocols outlined in the Sage-grouse HAF (Stiver et al., 2010). Sage-grouse habitat suitability assessments were conducted in 2012 at HAF sites **HR-** Heil Reservoir Pasture, **HP-** Horse Pond Pasture, **DN-** West Devil Creek North Pasture, and **DS-** West Devil Creek South Pasture. Assessments were conducted in 2013 at HAF sites **BB-** Black Butte Pasture, **BBB-** Black Butte Burn Pasture, **CB-** Coonskin Butte Pasture, **MB-** Marshall Butte Pasture, and **MC-** Milk Can Pasture. Locations of HAF sites are shown in Map 10.

Map 10: Sage-grouse Habitat Assessment Framework (HAF) Sites



Sage-grouse droppings were observed during the assessments at HAF sites in the Coonskin Butte and West Devil Creek North Pastures; however, no sign was observed in the other pastures. No sage-grouse sign was recorded during the IIRH field visits. Sage-grouse habitat suitability assessments are not necessarily an indication of rangeland health; they are merely indicators of habitat suitability. However, vegetation data collected as part of the habitat suitability assessments may be used to inform and interpret other rangeland health information and observations. Sage-grouse habitat suitability assessments are shown in Table 17.

Table 17: Sage-grouse Habitat Assessment Worksheet for Nesting and Early Brood Rearing Habitat (Arid Site)

Habitat Indicator	Suitable Habitat	Marginal Habitat	Unsuitable Habitat
Average Sagebrush Canopy Cover	15 – 25%	10 - < 15% or > 25%	< 10%
Average Sagebrush Height	12 - 30" CB(12")	10 -11" or >30"	< 10" BB(0"), BBB(0"), HR(0"), HP(0"), MB(0"), MC(0"), DN(0"), DS(0")
Sagebrush Growth Form	Spreading	Mix of spreading and columnar	Columnar BB, BBB, CB, HR, HP, MB, MC, DN, DS
Average Grass Height	≥ 7" BB(12.9"), CB(7.3"), HR(8"), HP(14"), MB(11.7"), DN(11"), DS(9")	5 - < 7" MC(6.5")	< 5" BBB(4.4")
Average Perennial Grass Canopy Cover	≥ 10% BB(77%), BBB(43%), CB(42%), HR(66%), HP(50.5%), MB(39%), MC(58%), DN(51.5%), DS(63%)	5 - < 10%	< 5%
Average Forb Canopy Cover	≥ 5% BB(10%), BBB(8%), CB(20%), HP(6%), MC(10%), DN(5%), DS(17%)	3 - < 5% HR(4%)	< 3% MB(1%)
Preferred Forb Abundance and Diversity	Forbs common with at least a few preferred species common BBB, CB, HR, MC, DN, DS	Forbs common, but only 1 or 2 preferred species present HP	Forbs rare to sparsely present BB, MB
Overall Site Evaluation			BB, BBB, CB, HR, HP, MB, MC, DN, DS
Pasture Evaluation			Black Butte, Black Butte Burn, Coonskin Butte, Heil Reservoir, Horse Pond, Marshall Butte, Milk Can, West Devil Creek North, West Devil Creek South

One HAF site is located in the Black Butte Pasture (HAF site BB). Wildfire has eliminated sagebrush in the pasture making it unsuitable for sage-grouse. HAF site BB is located in an area that is mapped as a Sandberg bluegrass vegetation community which represents the majority of the pasture. Attributes at the site were rated suitable for grass height, perennial grass canopy cover, and average forb canopy cover. Preferred forb abundance and diversity was rated unsuitable. Eight species of forbs were observed and they occurred at low density (1.05 forbs per 0.1 m² plot). The most common forbs were lupine (*Lupinus* spp.) and sagebrush phlox (*Phlox aculeata*). Cheatgrass was observed at 6 percent cover (cover values reported are for all layers). No mature sagebrush or sagebrush seedlings were observed during the IIRH field visit. Rabbitbrush and shadscale saltbush (*Atriplex confertifolia*) were observed at low densities scattered throughout the pasture.

The Black Butte Burn Pasture contained one HAF site (HAF site BBB). Wildfire has eliminated the majority of sagebrush in the pasture making it unsuitable for sage-grouse. HAF site BBB is located in the northern portion of the pasture that is mapped as a Sandberg bluegrass vegetation community. Attributes were rated suitable for grass and forb indicators with the exception of grass height which was rated unsuitable. Despite the unsuitable rating for grass height, the site contains 6 species of perennial grasses with 13 percent cover of deep rooted perennial grasses. Ten species of forbs were observed and they occurred at high density (2.47 forbs per 0.1 m² plot). The most common forbs were sagebrush phlox, lupine, pale agoseris (*Agoseris glauca*), onion (*Allium* spp.), and mountain tansymustard (*Descurainia incana*). Cheatgrass was observed at 8 percent cover (all layers). A few mature sagebrush plants were observed during the IIRH field visit and rabbitbrush is scattered throughout the pasture.

The Coonskin Butte Pasture contained one HAF site (HAF site CB). Wildfire has eliminated the majority of sagebrush in the pasture making it unsuitable for sage-grouse. HAF site CB is located in an area that is mapped as a Sandberg bluegrass vegetation community. Attributes at the site were rated suitable for average grass height, perennial grass canopy cover, average forb canopy cover, and preferred forb abundance and diversity. Ten species of forbs were observed and they occurred at high density (2.98 forbs per 0.1 m² plot). The most common forbs were Lewis flax (*Linum lewisii*), sagebrush phlox, pale agoseris, and longleaf phlox (*Phlox longifolia*). Cheatgrass was observed at 17 percent cover (all layers); however, the IIRH field notes indicate its distribution was scattered and mostly occurred in disturbed areas along roads, pipelines, and around rodent burrows. A few sagebrush seedlings were observed during the IIRH field visit. Shadscale saltbush was also observed at low density.

The Heil Reservoir Pasture contained one HAF site (HAF site HR). Wildfire has eliminated the majority of sagebrush in the pasture making it unsuitable for sage-grouse. HAF site HR is located in an area mapped as a Sandberg bluegrass vegetation community. Attributes at the site were rated suitable for all grass and forb indicators except for average forb canopy cover which was rated marginal. Eleven species of forbs were observed and they occurred at high density (2.92 forbs per 0.1 m² plot). The most common forbs were longleaf phlox, lupine, and pale agoseris. Cheatgrass was not recorded along the transects. Rabbitbrush plants were observed at low densities at the site (4% cover of yellow rabbitbrush).

The Horse Pond Pasture contained one HAF site (HAF site HP). Wildfire has eliminated the majority of sagebrush in the pasture making it unsuitable for sage-grouse. HAF site HP is located in an area mapped as a Sandberg bluegrass vegetation community. Attributes at the site were rated suitable for all grass and forb indicators except for preferred forb abundance and diversity which was rated marginal. Nine species of forbs were observed at the site and they occurred at high density (1.46 forbs per 0.1 m² plot). The only common forbs were longleaf phlox and lupine. Cheatgrass was observed at 22 percent cover and field brome was recorded at 2 percent cover (cover values reported are for all layers). However, the field notes indicate the transect crossed a small draw that was not reseeded following fire where cheatgrass is common. Outside of the draw, cheatgrass only occurs in small areas around badger and rodent diggings. Yellow rabbitbrush was recorded at 5 percent cover at the site. Sagebrush seedlings were observed at low densities during the IIRH field visit.

The Marshall Butte Pasture contained one HAF site (HAF site MB). Wildfire has eliminated the majority of sagebrush in the pasture making it unsuitable for sage-grouse. HAF site MB is located in an area mapped as a Sandberg bluegrass vegetation community. Grass indicators were rated suitable at the site; however, forb indicators were rated unsuitable. Ten species of forbs were observed at the site but they occurred at low density (0.60 forbs per 0.1 m² plot). The only common forbs were sagebrush phlox and pale agoseris. Cheatgrass was observed at 31 percent cover (cover values reported are for all layers). While sagebrush was not recorded along the transect at the site, young sagebrush are present at very low densities.

The Milk Can Pasture contained one HAF site (HAF site MC). Wildfire has eliminated sagebrush in the pasture making it unsuitable for sage-grouse. HAF site MC is located in an area mapped as a Sandberg bluegrass vegetation community. Attributes at the site were rated suitable for all grass and forb indicators except grass height which was rated marginal. Nine species of forbs were observed at the site and they occurred at moderate density (1.67 forbs per 0.1 m² plot). The most common forbs were sagebrush phlox, pale agoseris, longleaf phlox, and lupine. Cheatgrass was observed at 5 percent cover (all layers). Yellow rabbitbrush was recorded at 5 percent cover at the site.

The West Devil Creek North Pasture contained one HAF site (HAF site DN). Wildfire has eliminated sagebrush in the pasture making it unsuitable for sage-grouse. HAF site DN is located in an area mapped as a Sandberg bluegrass vegetation community. Attributes at the site were rated suitable for all grass and forb indicators. Twelve forbs were observed at the site and they occurred at moderate density (1.66 forbs per 0.1 m² plot). The most common forbs were longleaf phlox, lupine, and Lambstongue ragwort (*Senecio integerrimus*). Cheatgrass was observed at 18.5 percent cover (all layers).

The West Devil Creek South Pasture contained one HAF site (HAF site DS). Wildfire has eliminated sagebrush in the pasture making it unsuitable for sage-grouse. HAF site DS is located in an area mapped as a Sandberg bluegrass vegetation community. Attributes at the site were rated suitable for all grass and forb indicators. Twelve forbs were observed at the site and they occurred at high density (4.16 forbs per 0.1 m² plot). The most common forbs were longleaf phlox, lupine, western yarrow (*Achillea millefolium*), sagebrush phlox, and twin arnica (*Arnica*

sororia). Cheatgrass was observed at 6.5 percent cover (all layers). Yellow rabbitbrush was recorded at 10 percent cover at the site.

A list of plants species observed at each site, including preferred sage-grouse forbs is included in Appendix B.

Late Brood Rearing Habitat

Drainages occur throughout the allotment. These drainages contain water intermittently and reservoirs were constructed along these drainages to capture water from snowmelt. In some years these areas contain a higher abundance of sage-grouse preferred forbs than the surrounding uplands while in other years the drainages and reservoirs are dry. Since sagebrush is absent near these areas they have limited value as late brood rearing habitat for sage-grouse.

Devil Creek in the allotment only contains water intermittently and generally does not contain water into the late summer. Additionally, Devil Creek occurs in the bottom of a steep canyon. Riparian areas associated with steep drainages or canyons are not used by sage-grouse (Stiver et al., 2010).

Winter Habitat

The allotment is unsuitable for wintering sage-grouse since the majority of sagebrush has been eliminated by wildfires. Cover of grasses and forbs for wintering habitats generally is irrelevant, because of the complete reliance of sage-grouse upon sagebrush during this period (Homer et al., 1993).

Ferruginous Hawk (*Buteo regalis*; BLM sensitive species)

Ferruginous hawks typically inhabit flat and rolling terrain in grasslands and shrub-steppe regions (Bechard and Schmutz, 1995). They primarily nest in trees or less frequently on cliffs, rock outcrops or on the ground at the crest of ridges. Although ferruginous hawks exhibit flexibility in nest site selection, they prefer elevated nest sites and rarely nest on level ground (Bechard and Schmutz, 1995). Ferruginous hawks may have more than one nest site within their nesting territory that they may use in different years (Bechard and Schmutz, 1995). Locally, ferruginous hawks that nest on the ground are rarely successful. Both the male and female share in the nest selection, egg incubation and young rearing, though the male does most of the hunting. One clutch of 2-4 eggs is laid in spring and parents care for the young until several weeks after fledging (Bechard and Schmutz, 1995).

Ferruginous hawks prey primarily on smaller mammals. Prey species include ground squirrel (*Urocitellus* spp.), black-tailed jackrabbit (*Lepus californicus*), mountain cottontail (*Sylvilagus nuttalli*), and pocket gopher (*Thomomys talpoides*). Fledgling birds, reptiles and insects constitute a small percent of the diet (Bechard and Schmutz, 1995).

Management of shrub-steppe and grassland habitats that provide healthy native shrub and bunchgrass communities and a natural range of habitat variation would be expected to provide suitable habitat for ferruginous hawks.

There is one ferruginous hawk nests in the allotment. The nest is located in a live juniper along John Boyd Draw in the Marshall Butte Pasture (Nest F33; Table 18). Another nest was present in the Black Butte Burn Pasture, but the nest tree was destroyed in the Murphy Complex Fire of 2007 (Nest F19).

Table 18: Ferruginous Hawk Nest Data

Nest	Survey Year ¹																		
	95	96	97	98	99	00	01	02	03	04	05	06	07	08	09	10	11	12	13
F19	3	--	--	--	--	--	1	A	--	--	--	--	I	Nest tree burned in 2007					
F33		3	--	--	--	--	U	--	--	--	--	--	I	2	2	3	2	2	I

¹Where the table is blank the nest had not yet been identified; in years marked by dashes (--) the nest was not surveyed. If the nest was active with young, the number of young was recorded, if the nest was inactive (I) or active (A) with no young that was also recorded. Also if evidence of use was present but the species was unknown (U) was recorded.

Junipers that could be used for nesting by ferruginous hawks occur along the rim of Devil Creek Canyon in the Black Butte Burn, Milk Can, West Devil Creek North, and West Devil Creek South Pastures. The Marshall Butte Pasture contains one juniper along John Boyd Draw that is currently being used as a nest. The Coonskin Butte, Horse Pond, and Black Butte Pastures do not contain trees suitable for nesting.

The allotment is predominately a perennial grassland that provides marginal habitat for mammalian prey (black-tailed jackrabbit, mountain cottontail, ground squirrels, etc.) favored by ferruginous hawks.

Brewer’s Sparrow (*Spizella breweri*; BLM sensitive species)

Brewer’s sparrows are typically associated with sagebrush steppe. Brewer’s sparrow place nests primarily in shrubs, but occasionally on the ground. The nest shrub is typically taller and denser than in the surrounding habitat (Rotenberry et al., 1999). Shrubs used for nesting by Brewer’s sparrows include primarily big sagebrush (81%), with spiny hopsage (*Grayia spinosa*) (10%), antelope bitterbrush (*Purshia tridentata*) (6%), and rabbitbrush (*Chrysothamnus viscidiflorus*) (3%) (Rotenberry et al., 1999). Brewer’s sparrows construct their nest in the canopy of sagebrush which averaged 27 inches tall (Rotenberry et al., 1999). In Idaho, Brewer’s sparrow nests ranged from 7.8 to 19.6 inches above the ground, averaged 9 inches from the top of the sagebrush and averaged 7 inches from the edge of the shrub canopy (Rotenberry et al., 1999). These sparrows feed on small insects and seeds (Rotenberry et al., 1999).

Wildfires have eliminated the majority of sagebrush in the allotment making it unsuitable for Brewer’s Sparrow nesting. Scattered rabbitbrush occurs at low density throughout the allotment. Rabbitbrush plants may provide some limited nesting habitat.

Loggerhead shrike (*Lanius ludovicianus*; BLM sensitive species)

Loggerhead shrikes are associated with open grasslands and shrub-steppe habitats. In southern Idaho loggerhead shrikes place nests in big sagebrush, antelope bitterbrush and greasewood (Woods and Cade, 1996). Nest shrubs ranged from 35 to 117 inches tall (Woods and Cade, 1996). The average height of the nest was 31 inches and ranged from 13 to 63 inches above

ground (Woods and Cade, 1996). Although big sagebrush was shorter than greasewood or bitterbrush nest height was similar for all shrubs (Woods and Cade, 1996). In the Jarbidge Field Office a few loggerhead shrike nests have been found in western juniper.

Loggerhead shrikes feed on arthropods, amphibians, reptiles, small mammals and birds (Yosef, 1996). They use thorny bushes or barbed wire fences to impale their prey to facilitate feeding and to store future meals.

Management of shrub-steppe habitat that provides healthy native shrub and bunchgrass communities and a natural range of habitat variation would be expected to provide suitable habitat for loggerhead shrikes.

Wildfires have eliminated the majority of sagebrush in the allotment making it unsuitable for Loggerhead shrike nesting. Scattered rabbitbrush in the allotment is generally too short to provide nesting habitat for this species. Junipers along the rim of Devil Creek Canyon may provide nesting habitat for a few loggerhead shrikes. In addition, fourwing saltbush was observed at low densities in the Black Butte and Coonskin Butte Pastures.

Sagebrush sparrow (*Artemisioispiza nevadensis*; BLM sensitive species)

Sagebrush sparrows are sagebrush obligates that are typically common in shrub-steppe habitats (Martin and Carlson, 1998). Sagebrush sparrow nest in shrubs, in bunchgrasses or occasionally on the ground at the base of a shrub (Martin and Carlson, 1998). The nest shrub is usually taller than the surrounding vegetation (Martin and Carlson, 1998). In Idaho sagebrush sparrows nest in big sagebrush, however, in Oregon they may also use antelope bitterbrush, rabbitbrush, greasewood (*Sarcobatus vermiculatus*) and bunchgrasses (Martin and Carlson, 1998). In general sagebrush sparrow nests are placed closer to the main stem than the edge of the shrub. In shrubs the nest can range from 9 to 11 inches above the ground. Sagebrush sparrows feed on seeds, insects, spiders, fruits, and succulent vegetation (Martin and Carlson, 1998).

Wildfires have eliminated the majority of sagebrush in the allotment making it unsuitable for sagebrush sparrow nesting. Scattered rabbitbrush throughout the allotment may provide some limited nesting habitat.

Pygmy rabbit (*Brachylagus idahoensis*; BLM sensitive species)

Pygmy rabbits are sagebrush obligates that are usually found in areas with tall dense stands of big sagebrush and deep soils (Green and Flinders, 1980; Heady and Laundré, 2005). Pygmy rabbits usually excavate burrow systems with multiple entrances. Burrow entrances are often at the base of sagebrush (Green and Flinders, 1980). Pygmy rabbits spend most of their time (68%) in a generally small area (less than 200 feet radius [3 acres]) from the burrow within a larger (90 acres to 170 acres) home range. The primary food of pygmy rabbits is sagebrush which comprises 99 percent of its winter diet (Green and Flinders, 1980). Grasses and forbs make up more of the diet in the late spring into early summer.

Wildfires have removed essentially all sagebrush from the allotment making it unsuitable for pygmy rabbits. Prior to the wildfires, pygmy rabbits were documented in the Black Butte, Coonskin Butte, and Horse Pond Pastures.

Piute ground squirrel (*Urocitellus mollis*; BLM sensitive species)

Piute ground squirrels are associated with shrub-steppe habitats in southwestern Idaho. They emerge from hibernation in late February into March depending on the year and begin hibernation by late June (Yensen and Sherman, 2003). The diet of Piute ground squirrels is dominated by herbaceous vegetation including grasses and forbs, seeds, and animal matter (Rickart, 1987; Yensen and Sherman, 2003). Piute ground squirrels excavate deep and shallow burrow systems (Reynolds and Wakkinen, 1987).

Piute ground squirrels are an important prey item to many predators in shrub-steppe habitats including other sensitive species like ferruginous hawks and prairie falcons.

Management of shrub-steppe habitat that provides healthy native shrub and bunchgrass communities and a natural range of habitat variation would be expected to provide suitable habitat for Piute ground squirrels.

Although Piute ground squirrels have been observed in the allotment, the BLM does not have distribution data on ground squirrels within the allotment. Wildfires have converted shrub-steppe habitats in the allotments to perennial grass communities. Because shrub habitats provide more favorable environments for ground squirrels than grass habitats (Yensen et al., 1992; Van Horne et al., 1997) the allotment was rated marginal for Piute ground squirrels.

Spotted bat (*Euderma maculatum*; BLM sensitive species)

Spotted bats are typically found in arid portions of the western United States where it forages primarily on moths (Adams, 2003). It roosts in rock crevices in tall cliffs (Watkins, 1977). Little is known about the behavior and population size of spotted bats.

Tall cliffs that would provide suitable roosting habitat for spotted bats are present along portions of Devil Creek in the Black Butte Burn, Horse Pond, Marshall Butte, Milk Can, West Devil Creek North, and West Devil Creek South Pastures. No cliffs are present in the remaining pastures. Spotted bats may forage over the allotment. Water is found in the Heil (45 acres) and Horse Pond (0.4 acre) Reservoirs, as well as in numerous unnamed reservoirs throughout the allotment. Devil Creek also contains water intermittently.

Evaluation for Standard 8

There are no known BLM sensitive or federally listed plants within the Cedar Butte Devil Creek Allotment. Approximately 7,429 acres have been surveyed for slickspot peppergrass. However, systematic inventories for other special status plants have not been conducted in the allotment. GIS modeling predicts that the allotment contains 2,618 acres of high potential, 6,963 acres of medium potential, and 3,028 acres of low potential habitat for slickspot peppergrass. The nearest known occupied habitat for slickspot peppergrass is 5 miles to the west, on the west side of Clover Creek.

There are no BLM sensitive or federally listed fish or aquatic invertebrates or their habitat within the allotment. No perennial streams are present in the allotment. Devil Creek is an intermittent stream that only contains water during a short period during spring run-off.

Habitat for BLM sensitive wildlife species occurs within the allotment. Overall habitat ratings for each species by pasture are shown in Table 19.

Table 19: Overall Habitat Suitability for BLM Sensitive Wildlife Species by Pasture

Species Name and Type of Habitat	Black Butte	Black Butte Burn	Coonskin Butte	Heil Reservoir	Horse Pond	Marshall Butte	Milk Can	West Devil Creek North	West Devil Creek South
Sage-grouse (nesting & early brood rearing)	U	U	U	U	U	U	U	U	U
(late brood rearing)	U	U	U	U	U	U	U	U	U
(winter)	U	U	U	U	U	U	U	U	U
Ferruginous hawk (nesting)	U	S	U	S	U	S	S	S	S
(foraging)	M	M	M	M	M	M	M	M	M
Brewer's sparrow (nesting)	U	U	U	U	U	U	U	U	U
Sagebrush sparrow (nesting)	U	U	U	U	U	U	U	U	U
Loggerhead shrike (nesting)	U	U	U	U	U	U	U	U	U
Pygmy rabbit (year round)	U	U	U	U	U	U	U	U	U
Piute ground squirrel (year round)	M	M	M	M	M	M	M	M	M
Spotted bat (roosting)	U	S	U	U	S	S	S	S	S
(foraging)	S	S	S	S	S	S	S	S	S

S = Suitable (combination of components make the habitat suitable), M = Marginal (some habitat components are missing), U = Unsuitable (one or more critical habitat components are missing).

Overall, sage-grouse nesting and early brood rearing habitat is unsuitable since wildfire has eliminated the majority of sagebrush in the allotment. Restoration of sage-grouse habitat in portions of the Black Butte, Black Butte Burn, Coonskin Butte, Marshall Butte, West Devil Creek North, and West Devil Creek South Pastures would be difficult due to the amount of cheatgrass. Over time cheatgrass can limit native perennial and annual forbs and increase fine fuels making wildfires more likely. Numerous drainages and reservoirs are present in the allotment; however, sagebrush cover is absent near these areas making them unsuitable as late brood rearing habitat. The allotment does not contain sagebrush of suitable height or density for wintering sage-grouse.

Junipers along the rim of Devil Creek Canyon provide suitable nesting habitat for ferruginous hawks in the Black Butte Burn, Milk Can, West Devil Creek North, and West Devil Creek South Pastures. In addition, the Marshall Butte Pastures contains an isolated juniper along John Boyd Draw that is used for nesting. No trees are present in the Coonskin Butte, Horse Pond, and Black Butte Pastures. The allotment contains marginal habitat for prey species such as mountain cottontail, black-tailed jackrabbit and ground squirrels usually hunted by ferruginous hawk.

Without sagebrush the allotment was rated unsuitable for Brewer's sparrow, loggerhead shrike, and sagebrush sparrow nesting. Pygmy rabbit habitat was also rated unsuitable. Areas where pygmy rabbits were documented in the past have all burned.

Wildfires have converted shrub-steppe habitats in the allotment to perennial grass communities. Wildfires have converted shrub-steppe habitats in the allotments to perennial grass communities. Because shrub habitats provide more favorable environments for ground squirrels than grass

habitats (Yensen et al., 1992; Van Horne et al., 1997) the allotment was rated marginal for Piute ground squirrels.

Suitable roosting habitat for spotted bats is present along portions of Devil Creek in the Black Butte Burn, Horse Pond, Marshall Butte, Milk Can, West Devil Creek North, and West Devil Creek South Pastures. No cliffs that would provide roosting habitat are present in the remaining pastures. Spotted bats may forage over the allotment. Water is found in numerous reservoirs throughout the allotment.

Evaluation Finding – Cedar Butte Devil Creek Allotment is:

- Meeting the Standard
- Not meeting the Standard, but making significant progress towards meeting
- Not meeting the Standard

Rationale for Evaluation Finding

The Grass Fire in 2000 and the Murphy Complex Fires in 2007 essentially eliminated all sagebrush in the allotment. Since 1980, there have been eleven fires in the allotment. Without sagebrush the area is generally unsuitable for sage-grouse and other sagebrush dependent special status species. Following the Murphy Complex fires, the BLM aerial seeded sagebrush in strips. Although sagebrush has been reseeded, recovery of the sagebrush community needed for sage-grouse is expected to take one (Wambolt and Payne, 1986) to several (Baker, 2006; Baker, 2011) decades assuming the absence of additional fire. Restoration of sage-grouse habitat in portions of the Black Butte, Black Butte Burn, Coonskin Butte, Marshall Butte, West Devil Creek North, and West Devil Creek South Pastures would be difficult due to the amount of cheatgrass. Over time cheatgrass can limit native perennial and annual forbs and increase fine fuels making wildfires more likely. Therefore, the Cedar Butte Devil Creek Allotment is not meeting Standard 8.

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APPENDIX A: SAGE-GROUSE HABITAT ASSESSMENT FRAMEWORK

Sage-grouse Habitat Assessment Framework sites were randomly generated in the following manner. In GIS the vegetation layer was broken into the following habitat categories: shrublands, native perennial grass, non-native perennial grass, and annual grassland. The pasture layer was then incorporated and six random points were generated for each habitat category in the pasture.

Using National Agriculture Imagery Program imagery, any points that fell in non-habitat (maintained roads, ponds, gravel pits, cliffs) were removed. To ensure sampling transects did not cross allotment or pasture boundaries, randomly selected points within 100 meters of fences were removed. Random points were also evaluated for ease of access and to maximize sampling efficiency; random points that were more than one mile from a road, jeep trail, or fence were generally dropped. In cases where the amount of BLM land in a pasture was small and state or private land dominated the pasture, the pasture was generally dropped from sampling. Also if the habitat category was minimally present such as 30 acres of annual grassland out of a 1,200 acres pasture, no sampling would be done in the annual area. For shrublands to be evaluated they had to be at least 20 acres in size to accommodate sampling transects.

Ultimately, only two random sites in each habitat category were retained. Two points were retained to provide an alternate sampling site if the first point was not in the appropriate habitat category due to mapping errors. If both points were not in the appropriate habitat category, field crews were instructed to travel to the nearest appropriate habitat in the pasture, select a random bearing leading into the habitat category and pace a randomly selected distance prior to sampling.

Due to limited field crew and time when forbs are easily discernable, the following was the priority order for sampling: (1) shrubland habitats; (2) perennial native grassland, (3) non-native perennial grass; and (4) annual grass communities. When randomly generated points in shrubland habitats were in the same general area as randomly generated points in grassland habitats, field crews would often sample both sites on the same day regardless of their priority order. This was to increase sampling efficiency by reducing the amount of time spent traveling between points.

APPENDIX B: SPECIES LIST ACCUMULATED DURING UPLAND ASSESSMENTS

Scientific Name	Common Name	Species Type	Site(s) where species occurred
Perennial Grasses			
<i>Achnatherum thurberianum</i>	Thurber's needlegrass	Native	BB, BBB, CB, MB_1, MB_2
<i>Agropyron</i> spp.	Wheatgrass	Exotic, Native	BB
<i>Agropyron cristatum</i>	Crested wheatgrass	Exotic, Seeded	BBB, HR, MB_2
<i>Elymus elymoides</i>	Squirreltail	Native	BB, CB, HP, MB_1, MB_2, MC
<i>Elymus lanceolatus</i>	Thickspike wheatgrass	Native	MB_1, MB_2
<i>Festuca idahoensis</i>	Idaho fescue	Native	HP
<i>Leymus cinereus</i>	Basin wildrye	Native	BB, BBB, HP, MB_1, MC, DN, DS
<i>Pascopyrum smithii</i>	Western wheatgrass	Native	BB, BBB, CB, HR, MB_1, MC, DN, DS
<i>Poa secunda</i>	Sandberg bluegrass	Native	BB, BBB, CB, HR, HP, MB_1, MB_2, MC, DN, DS
<i>Pseudoroegneria spicata</i>	Bluebunch wheatgrass	Native, Seeded	BB, BBB, CB, HR, HP, MB_1, MB_2, MC, DN, DS
Annual Grasses			
<i>Bromus arvensis</i>	Field brome	Exotic	HP
<i>Bromus tectorum</i>	Cheatgrass	Exotic, Invasive	BB, BBB, CB, HP, MB_1, MB_2, MC, DN, DS
Perennial Forbs			
<i>Achillea millefolium</i>	Western yarrow	Native, Sage-grouse Preferred	CB, DN, DS
<i>Allium</i> spp.	Onion	Native	BBB, CB, HR, HP, MB_1, MB_2, MC, DN
<i>Antennaria dimorpha</i>	Low pussytoes	Native, Sage-grouse Preferred	DS
<i>Arenaria kingii</i>	King's sandwort	Native	HP
<i>Arnica sororia</i>	Twin arnica	Native	DS
<i>Aster</i> spp.	Aster	Native	MB_2
<i>Astragalus</i> spp.	Milkvetch	Native	BBB, MB_1, MC
<i>Astragalus atratus</i>	Mourning milkvetch	Native	BBB, CB, HP, MB_2
<i>Astragalus lentiginosus</i>	Freckled milkvetch	Native	CB, HR, HP, MB_1, DN, DS
<i>Astragalus purshii</i>	Woollypod milkvetch	Native	HR, HP, MB_2
<i>Balsamorhiza hookeri</i>	Hooker's balsamroot	Native	BB
<i>Cirsium</i> spp.	Thistle	Native	DS
<i>Crepis acuminata</i>	Tapertip hawksbeard	Native, Sage-grouse Preferred	BB, HR, HP
<i>Crepis occidentalis</i>	Largeflower hawksbeard	Native, Sage-grouse Preferred	DS
<i>Delphinium andersonii</i>	Anderson's larkspur	Native	HR
<i>Erigeron pumilus</i>	Shaggy fleabane	Native, Sage-grouse Preferred	BBB, CB, HR, HP, MC, DS
<i>Ionactis alpina</i>	Lava aster	Native, Sage-grouse Preferred	HR
<i>Linum lewisii</i>	Lewis flax	Native	BB, CB, MB_1
<i>Lithospermum ruderales</i>	Western stoneseed	Native	HP

Scientific Name	Common Name	Species Type	Site(s) where species occurred
<i>Lomatium cous</i>	Cous biscuitroot	Native, Sage-grouse Preferred	HR, DN
<i>Lomatium foeniculaceum</i>	Desert biscuitroot	Native, Sage-grouse Preferred	BBB, MC
<i>Lupinus</i> spp.	Lupine	Native	BB, BBB, HR, HP, MC, DN, DS
<i>Medicago sativa</i>	Alfalfa	Exotic, Sage-grouse Preferred	CB, HR, MB_1, MB_2
<i>Onobrychis viciifolia</i>	Sainfoin	Exotic, Sage-grouse Preferred	CB
<i>Penstemon</i> spp.	Penstemon	Native	CB, MB_2
<i>Phlox aculeata</i>	Sagebrush phlox	Native, Sage-grouse Preferred	BB, BBB, CB, MB_1, MB_2, MC, DN, DS
<i>Phlox hoodii</i>	Spiny phlox	Native, Sage-grouse Preferred	BBB, CB, HP, MB_1, MB_2
<i>Phlox longifolia</i>	Longleaf phlox	Native, Sage-grouse Preferred	BB, CB, HR, HP, MC, DN, DS
<i>Senecio integerrimus</i>	Lambstongue ragwort	Native	HP, DN
<i>Sphaeralcea munroana</i>	Munro's globemallow	Native	CB, MB_1
<i>Tragopogon dubius</i>	Yellow salsify	Exotic, Sage-grouse Preferred	CB, HP, MB_1, DN
<i>Zigadenus venenosus</i>	Meadow deathcamas	Native	BB, BBB, CB, MB_2
Annual Forbs			
<i>Agoseris glauca</i>	Pale agoseris	Native, Sage-grouse Preferred	BB, BBB, CB, HR, HP, MB_1, MC, DN, DS
<i>Agoseris heterophylla</i>	Annual agoseris	Native, Sage-grouse Preferred	CB
<i>Cerastium nutans</i>	Nodding chickweed	Native	BB, CB, HP, DN, DS
<i>Ceratocephala testiculata</i>	Curvseed butterwort	Exotic	BBB, CB, HR, MB_1, MB_2
<i>Collinsia parviflora</i>	Maiden blue eyed Mary	Native	HP, MB_2, MC
<i>Descurainia incana</i>	Mountain tansymustard	Native	BBB, MB_1, MC
<i>Descurainia pinnata</i>	Western tansymustard	Native	CB, HR, HP
<i>Descurainia sophia</i>	Herb sophia	Exotic	DS
<i>Draba verna</i>	Spring draba	Exotic	BB, CB, DN
<i>Epilobium paniculatum</i>	Tall annual willowherb	Native, Sage-grouse Preferred	CB, HR, HP, DN, DS
<i>Gayophytum</i> spp.	Groundsmoke	Native, Sage-grouse Preferred	CB
<i>Lactuca serriola</i>	Prickly lettuce	Exotic, Sage-grouse Preferred	CB, HR, HP
<i>Lepidium perfoliatum</i>	Clasping pepperweed	Exotic	CB, HR, HP, MB_2
<i>Microsteris gracilis</i>	Slender phlox	Native, Sage-grouse Preferred	CB, HR, HP, MB_2, MC, DN, DS
<i>Myosotis stricta</i>	Strict forget-me-not	Exotic	DN
<i>Sisymbrium altissimum</i>	Tall tumbled mustard	Exotic	CB, HR, HP, MB_1, DN
Shrubs			
<i>Artemisia tridentata</i> ssp. <i>wyomingensis</i>	Wyoming big sagebrush	Native	BB, CB, HP, MB_1
<i>Atriplex canescens</i>	Fourwing saltbush	Native	BB, CB, MB_2
<i>Chrysothamnus viscidiflorus</i>	Yellow rabbitbrush	Native	BB, BBB, CB, HR, HP, MB_2, DS
<i>Ericameria nauseosa</i>	Rubber rabbitbrush	Native	BB, BBB

This list does not include all plants that can be found in the Cedar Butte Devil Creek Allotment and is not exhaustive. Scientific and common names were derived from the USDA NRSC Plant Database (USDA and NRCS, 2013e).