

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

RANGELAND HEALTH ASSESSMENT AND EVALUATION REPORT

SOUTH CROWS NEST ALLOTMENT #01135

November 6, 2015

U.S. Department of the Interior
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ALLOTMENT INFORMATION

Field Office: Jarbidge Field Office (JFO)

Name of Permittee: Guerry, Inc.

Allotment Name/Number: South Crows Nest (01135)

Date of Field Assessment: June 28, 2012

Stream Miles on Public Land: 0

Table 1: South Crows Nest Acres

BLM Acreage	Private Acreage	State Acreage	Total Acreage
10,437	0	640	11,077

Table 2: Assessment Participants

Name	Position
Kate Crane	TFD Fisheries Biologist
Jim Klott	JFO Wildlife Biologist
Michael Haney	JFO Wildlife Biologist
Dan Strickler	JFO Rangeland Management Specialist
Andrea J. Cox	JFO Rangeland Management Specialist
Bonnie Ross	TFD GIS Specialist
Carmela Romerio	JFO Supervisory Rangeland Management Specialist (Acting)

CURRENT PERMITTED LIVESTOCK GRAZING USE

Total Active Use: 790 Animal Unit Months (AUMs)

Livestock Type: Cattle

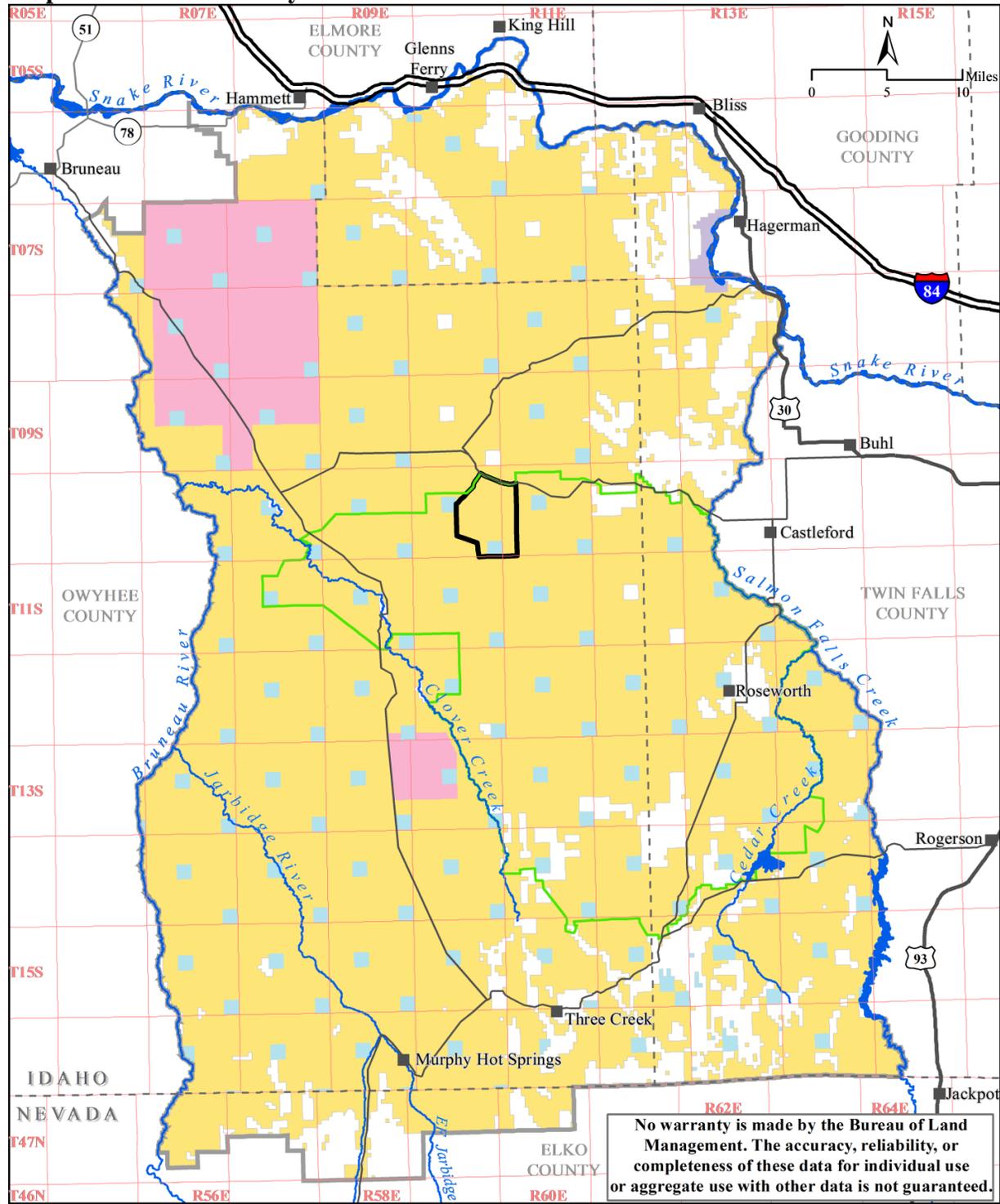
Livestock Numbers: 790 Cattle

Season of Use: 06/01 to 06/30

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

Current Stocking Level: 13.8 Acres/AUM

Map 1: Allotment Vicinity



South Crows Nest 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 South Crows Nest Allotment is located approximately 17 miles west of Castleford, Idaho (Map 1). The elevation ranges from approximately 3,910 feet to 4,530 feet.

Climate

Climatic conditions in the allotment are typical of south central Idaho. They are characterized by low humidity, clear skies, large diurnal variation in temperature, and wind patterns reflecting the westerly direction of the prevailing storm track. Rainfall is between 8 to 12 inches annually with the bulk of the moisture typically falling as rain from the late fall through late spring.

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 within the allotment boundary. 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"). Plant growth was likely enhanced in 2005 and 2011 due to higher amounts of spring rainfall (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: Annual Precipitation (2004 – 2013) at the Horse Butte RAWS Station

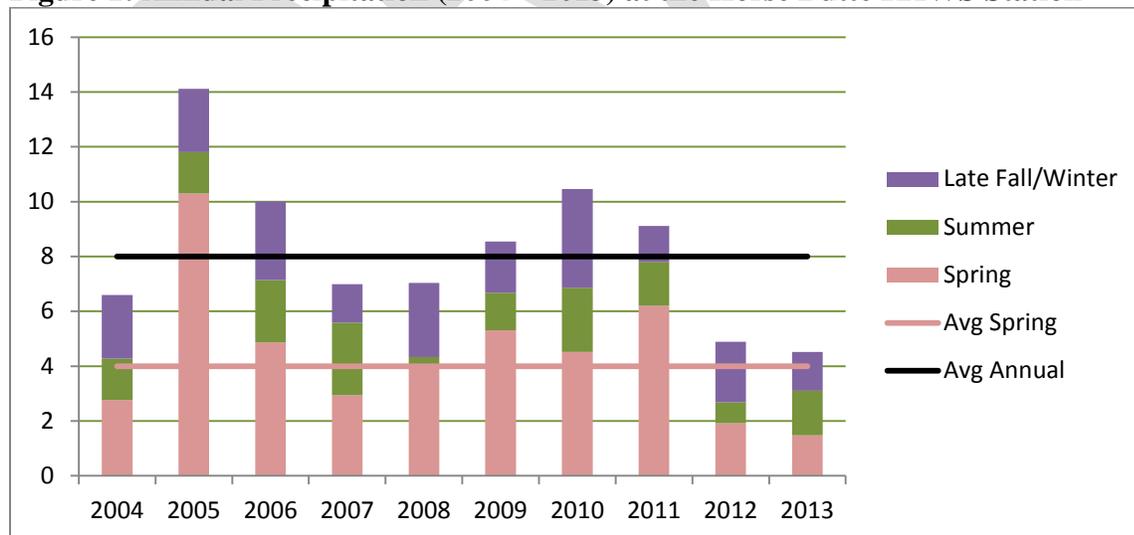
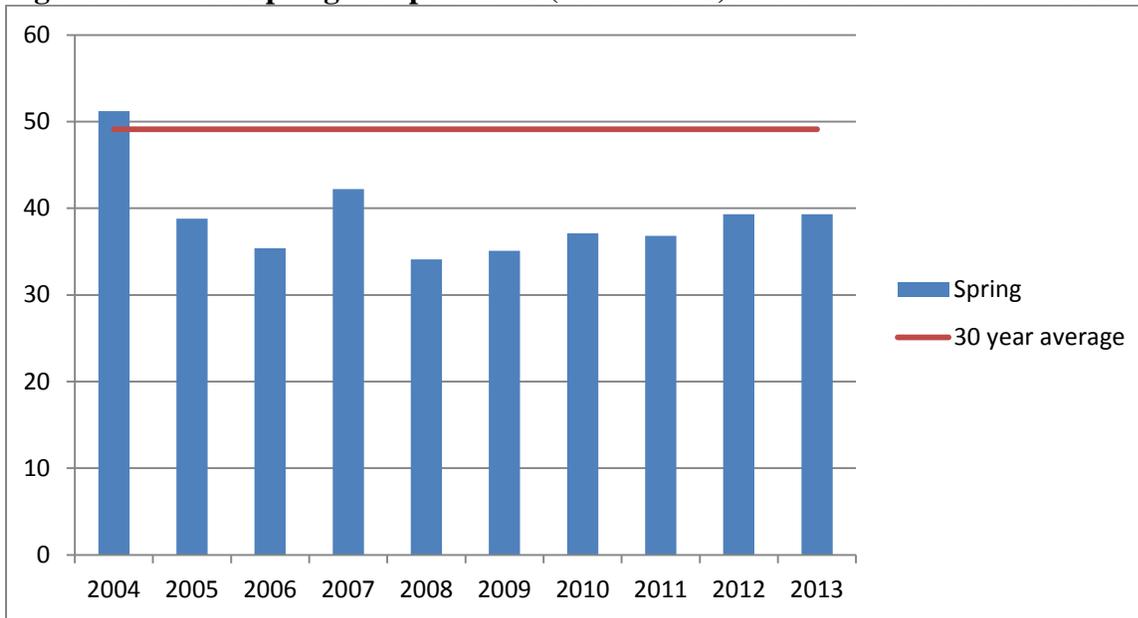


Figure 2: Annual Spring Temperatures (2004 – 2013) at the Horse Butte RAWs Station



Grazing Management

The South Crows Nest Allotment is divided into four pastures that are used in a rotation system (Table 3). There are no natural water sources within the allotment; livestock water is available through an underground pipeline that is a part of the Coonskin AMP water system and a series of water troughs and storage tanks. All four pastures within the allotment are completely fenced; no natural barriers (i.e. rim rocks, etc.) are used as pasture boundaries (Map 2).

Table 3: Acreage by pasture and ownership in the South Crows Nest Allotment

Pasture Name	BLM	State	Private	Total*
Northwest	2,005	0	0	2,005
Northeast	2,449	0	0	2,449
Southwest	2,835	0	0	2,836
Southeast	3,147	639	0	3,787
Allotment Total	10,437	639	0	11,077

*Total acres may not match the sum of individual ownership acres due to rounding

Historically, the South Crows Nest Allotment was managed under the Devil Creek Allotment Management Plan (DCAMP) which was approved on January 16, 1970. The DCAMP established a rest rotation grazing system where each pasture was to receive season long rest every fourth year and provided for a season of use from April through December. However, the DCAMP did not establish a limit on AUMs within the allotment and stated:

“Pastures may be utilized to their fullest extent consistent with the guidelines set out in this plan. The limiting stocking rate will be the condition of the cattle as determined by the range user. Likewise, any adjustment in period of use will be made by the discretion of the range user.

Adjustments will be based on actual use records, range response, and success of the proposed management practices.”

In accordance with the DCAMP, the class of livestock authorized to graze on the South Crows Nest Allotment would be both sheep and cattle.

In 1990, the Guerry, Inc. Livestock Management Plan (GILMP) was created as an addendum to the DCAMP. The GILMP, effective March 1, 1990, also authorized dual use in the South Crows Nest Allotment and allowed a preference adjustment as stated below:

“...Initially, an increase to the preference will only be made in the South Crowsnest and Signal Butte allotments. This increase will be limited to ten percent of currently recognized Class I preference AUMs and further adjusted as called for in the Analysis, Interpretation and Evaluation (AI&E) process...”

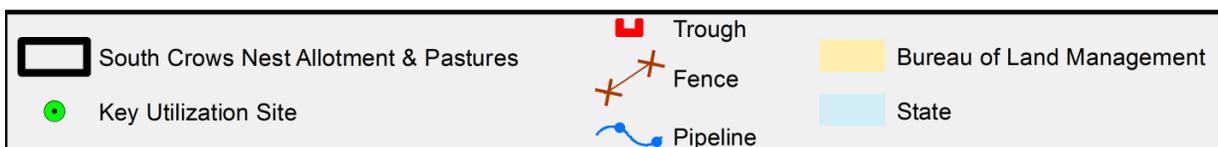
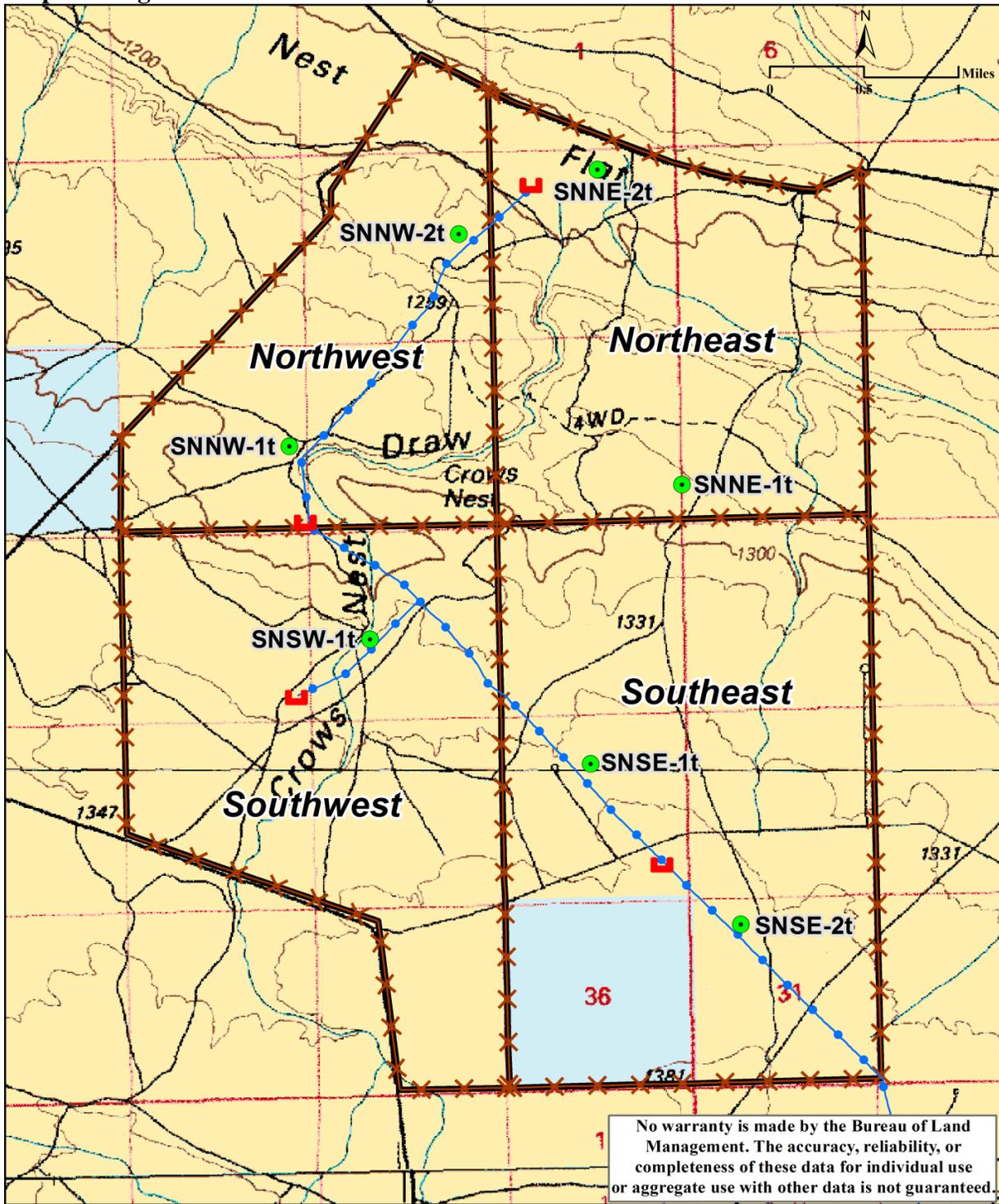
Per the current permit, cattle are authorized to graze the allotment from June 1 to June 30 with a permitted active use of 779 AUMs. However, the DCAMP authorized dual use with no AUMs specified. The GILMP also authorized dual use and recognized 790 Class I Preference AUMs; in addition, a 10 percent increase was granted, which should be reflected on the current permit as a total of 869 active AUMs.

The GILMP also speaks to a rest/rotation grazing system as stated below:

“Coonskin AMP – South Crowsnest: These allotments will be managed as one operational area used primarily for winter through early summer grazing. Spring/early summer pastures will be rested every other year. Grazing on winter pastures will be terminated prior to spring green up. In the event spring grazing does occur on a winter pasture, that pasture will be rested from grazing the following spring...”

Up until 2004, when a Federal District Court order disallowed Temporary Non-Renewable (TNR) authorizations, TNR had been authorized under the DCAMP or through annual National Environmental Policy Act (NEPA) analysis and decisions. Since 2005, Congressional Appropriations language has allowed the JFO to annually authorize up to the allotment's highest TNR authorization granted between 1997 and 2003, which is 1,984 AUMs, when forage is available.

Map 2: Range Infrastructures and Key Utilization Sites



A summary of actual use in the South Crows Nest Allotment from 2003 to 2014 can be seen in Table 4. Since 2003, actual use, including preference and TNR within the South Crows Nest Allotment has ranged from 60 to 2,756 AUMs.

Table 4: Actual Use and TNR Summary

Year	Class of Livestock	Season of Use	Actual Use (AUMs) ¹	TNR (AUMs) ¹	Total AUMs Billed
2003	Sheep	04/09/03 – 05/18/03	342	0	1,513
	Cattle	12/09/03 – 12/31/03	353	0	
	Cattle	01/01/04 – 02/28/04	95	723	
2004	Sheep	04/09/04 – 06/01/04	264	0	2,054
	Cattle	12/21/04 – 01/28/05	526	56	
	Cattle	01/29/05 – 02/28/05	0	1,208	
2005	Sheep	04/11/05 – 06/07/05	254	0	2,756
	Cattle	12/01/05 – 01/04/06	529	0	
	Cattle	01/05/06 – 02/28/06	7	928	
	Cattle	01/01/06 – 02/28/06	0	1,038	
2006	Sheep	03/29/06 – 05/10/06	236	0	299
	Cattle	03/01/06 – 03/05/06	63	0	
2007	Sheep	Closed to Grazing ²	0	0	0
	Cattle	Closed to Grazing ³	0	0	
2008	Sheep	Closed to Grazing ³	0	0	60
	Cattle	02/16/09 - 02/28/09	60	0	
2009	Sheep	Closed to Grazing ³	0	0	993
	Cattle	03/01/09 – 04/19/09	170	0	
	Cattle	12/30/09 – 02/28/10	620	203	
2010	Sheep	03/27/10 – 04/11/10	86	0	961
	Cattle	03/01/10 – 03/05/10	68	0	
	Cattle	12/22/10 – 02/28/11	636	171	
2011	Sheep	04/12/11 – 05/12/11	250	0	1,694
	Cattle	03/01/11 – 03/20/11	222	0	
	Cattle	12/01/11 – 02/28/12	318	904	
2012	Sheep	04/07/12 – 05/08/12	281	0	483
	Cattle	03/01/12 – 03/15/12	202	0	
	Cattle	Closed to Fall Grazing ⁴	0	0	
2013	Sheep	Closed to Spring Grazing ⁴	0	0	789
	Cattle	12/16/13 – 02/28/14	789	0	
2014	Sheep	03/19/14 – 05/03/14	409	0	2,037
	Cattle	03/01/14 – 03/20/14	240	0	
	Cattle	12/09/14 – 02/28/15	141	1,247	

¹Actual use is calculated and billed after the grazing season and was not shown by pasture until the 2012 grazing season

²The allotment was closed to grazing due to the Sailor Cap Fire

³The allotment was closed and/or limited the grazing due to the Murphy Complex Fire

⁴The allotment was closed to grazing and TNR due to the Kinyon Road Fire

The percent utilization in the allotment is shown in Table 5 and the locations of key utilization sites are shown in Map 2. Utilization data was not collected during three years in which the allotment burned within the grazing season or was closed to grazing due to wildfire. Utilization has been measured on crested wheatgrass (*Agropyron cristatum*), bluebunch wheatgrass (*Pseudoroegneria spicata*) and Thurber’s needlegrass (*Achnatherum thurberianum*). Utilization data was collected by the Height-Weight Method (Cooperative Extension Service et al., 1999).

Table 5: Vegetation Species and Percent Utilization by Pasture

Pasture	Year	Actual Use		Percent Utilization					
		Season of Use	AUMs	Crested wheatgrass	Thurber’s needlegrass	Sandberg bluegrass	Squirreltail	Bluebunch wheatgrass	
NE	2003	Winter	1171	42.5%	-	-	-	-	
	2004	-	-	-	-	-	-	-	
	2005	Spring	254	20.0% ¹	-	-	-	-	
	2006	Spring	299	No Data	-	-	-	-	
	2007	Closed to Grazing due to Fire							
	2008	Closed to Grazing due to Fire							
	2009	Winter	823	17.0%	-	-	-	-	
	2010	-	-	-	-	-	-	-	
	2011	-	-	-	-	-	-	-	
	2012	-	-	-	-	-	-	-	
	2013	-	-	-	-	-	-	-	
	2014	Spring	649	0.0%	-	-	-	-	
	NW	2003	Winter	1171	45.0%	-	19.0%	20.0%	-
		2004	Winter	1790	21.0%	-	-	-	-
2005		Spring	254	13.0% ¹	-	-	-	-	
2006		-	-	-	-	-	-	-	
2007		Closed to Grazing due to Fire							
2008		Closed to Grazing due to Fire							
2009		Winter	823	12.0%	-	-	-	-	
2010		Winter	807	17.6%	-	-	-	-	
2011		Winter	1222	7.9%	-	-	-	-	
2012		-	-	-	-	-	-	-	
2013		-	-	-	-	-	-	-	
2014		-	-	-	-	-	-	-	
SE		2003	Winter	1171	29.0%	-	-	-	-
		2004	Winter	1790	27.0%	-	-	-	-
	2005	Spring	254	7.0% ¹	-	-	-	-	
	2006	-	-	-	-	-	-	-	
	2007	Closed to Grazing due to Fire							
	2008	Closed to Grazing due to Fire							
	2009	Winter	823	20.0%	4.0%	-	-	1.0%	
	2010	Winter	807	7.7%	-	-	-	10.3%	
	2011	-	-	-	-	-	-	-	
	2012	-	-	-	-	-	-	-	
	2013	Winter	789	6.2%	-	-	-	-	
	2014	-	-	-	-	-	-	-	

Pasture	Year	Actual Use		Percent Utilization				
		Season of Use	AUMs	Crested wheatgrass	Thurber's needlegrass	Sandberg bluegrass	Squirreltail	Bluebunch wheatgrass
SW	2003	Winter	1171	35.0%	36.0%	30.0%	-	-
	2004	Winter	1790	-	-	-	-	-
	2005	Spring	254	7.0% ¹	-	-	-	-
	2006	-	-	-	-	-	-	-
	2007	Closed to Grazing due to Fire						
	2008	Closed to Grazing due to Fire						
	2009	-	-	-	-	-	-	-
	2010	Winter	807	19.4%	-	-	-	-
	2011	Winter	1222	6.7%	-	-	-	-
	2012	-	-	-	-	-	-	-
	2013	Winter	789	9.7%	-	-	-	-
	2014	-	-	-	-	-	-	-

Winter Use (12/01 – 02/28); Spring Use (3/01 – 5/31); Summer Use (6/1 - 6/30)

¹This utilization was based on the Landscape Appearance Method

Vegetation

Vegetation in the South Crows Nest 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 South Crows Nest Allotment was historically a shrub steppe plant community; however, the allotment has been affected by wildfires since at least 1979. The allotment has burned three times in last 20 years with approximately 39% of the allotment having burned five times in the past 20 years. The entire allotment burned in 2007 and 2012 (Table 6 and Map 3).

Table 6: Fire Frequency by Pasture from 1993 to 2012

Pasture	Number of Times Burned from 1993 to 2012	Acres of Pasture Burned	Percentage of Pasture
Northeast Pasture	3	<1	<1%
	4	709	29%
	5	1524	62%
	6	224	9%
Northwest Pasture	3	855	43%
	4	1130	56%

Pasture	Number of Times Burned from 1993 to 2012	Acres of Pasture Burned	Percentage of Pasture
	5	21	1%
Southeast Pasture	3	340	10%
	4	808	25%
	5	2111	65%
Southwest Pasture	3	2	<1%
	4	2408	85%
	5	428	15%

Thirteen different wildfires have occurred within the allotment since 1979 and various drill and aerial seeding efforts have been undertaken to rehabilitate the burned areas. Six of the thirteen fires have occurred since 2000, including the most recent Kinyon Road Fire of 2012 that burned the whole allotment. Records indicate that some areas of the allotment have been drill seeded and aerially seeded with a variety of native and non-native species. Areas within each pasture have been seeded following wildfires that have occurred since 1979.

The 1979 Crows Nest Fire burned approximately 1,772 acres (88%) of the Northwest Pasture, 817 acres (33%) of the Northeast Pasture, 1,185 acres (42%) of the Southwest Pasture and 3 acres (1%) in the Southeast Pasture. Following the fire, drill seeding occurred in the Northwest and Southwest Pastures with a mix of crested wheatgrass and fourwing saltbush.

The 1983 Crows Nest Fire burned approximately 198 acres (10%) of the Northwest Pasture, 99 acres (4%) of the Northeast Pasture and 88 acres (3%) of the Southwest Pasture. No fire rehabilitation information is available for this fire.

The 1984 Crows Nest Fire burned approximately 138 acres (6%) of the Northeast Pasture. No fire rehabilitation information is available for this fire.

The 1985 West Juniper Fire burned approximately 52 acres (2%) in the Southeast Pasture. No fire rehabilitation information is available for this fire.

The 1985 Crossroad II Fire burned approximately 1,078 acres (38%) of the Southwest Pasture and 96 acres (3%) in the Southeast Pasture. No fire rehabilitation information is available for this fire.

The 1991 Big Bend Fire burned approximately 184 acres (6%) of the Southwest Pasture and 29 acres (1%) in the Southeast Pasture. No fire rehabilitation information is available for this fire.

The 1994 Crows Nest Fire burned approximately 138 acres (7%) of the Northwest Pasture, 1,987 acres (81%) of the Northeast Pasture, 383 acres (14%) of the Southwest Pasture and 2,921 acres (93%) in the Southeast Pasture. Following the fire, the burned areas of the allotment were aerially seeded with Ladak alfalfa, western yarrow and Wyoming big sagebrush. In addition, drill seeding occurred in the Northeast and Southeast Pastures with a mix of crested wheatgrass, Russian wildrye, bluebunch wheatgrass and Fourwing saltbush.

The 2000 Crimson Fire burned approximately 40 acres (2%) of the Northwest Pasture and 48 acres (2%) in the Southwest Pasture. Following the fire, the burned area of the Northwest and Southwest Pastures were aerially seeded with Sandberg bluegrass, Ladak alfalfa, western yarrow, and Wyoming big sagebrush.

The 2005 Clover Fire burned approximately 577 acres (23%) of the Northeast Pasture and 24 acres (1%) of the Southeast Pasture. Following the fire, the burned areas of the Northeast and Southeast Pastures were aerially seeded with Wyoming big sagebrush.

The 2006 Sailor Cap Fire burned approximately 2005 acres (100%) of the Northwest Pasture; 1,850 acres (76%) of the Northeast Pasture; 2,836 acres (100%) of the Southwest Pasture and 3,734 acres (100%) of the Southeast Pasture. Following the fire, approximately 1,850 acres (76%) of the Northwest Pasture, 21 acres (1%) of the Northeast Pasture, 2,835 acres (100%) of Southwest Pasture and 1,005 acres (27%) of Southeast Pasture were aerially seeded with Wyoming big sagebrush. In addition, 628 acres (22%) of Southwest Pasture was drill seeded with Sandberg bluegrass, Anatone bluebunch wheatgrass, squirreltail, Trailhead basin wildrye, Appar Lewis flax, Eski sainfoin, and Munroe globemallow (*Sphaeralcea munroana*).

The 2007 Murphy Complex Fire burned the entire South Crows Nest Allotment. Following the fire, 525 acres (26%) of the burned area in the Northeast Pasture and 22 acres (1%) of the Southeast Pastures were aerial seeded with a mix of Sandberg bluegrass, squirreltail, bluebunch wheatgrass, Appar Lewis flax, alfalfa, and sainfoin. In addition, portions of all affected pastures within the allotment were aerially seeded with Wyoming big sagebrush.

The 2011 Long Butte Fire burned approximately 994 acres (49%) of the Northwest Pasture, 2,449 acres (100%) of Northeast Pasture and 2,529 acres (67%) of Southeast Pasture. Following the fire, the burned areas in the Northwest, Northeast and Southeast Pastures were aerially seeded with Wyoming big sagebrush.

The 2012 Kinyon Road Fire burned approximately 11,077 acres (100%) of the South Crows Nest Allotment. The fire rehabilitation plan did not prescribe seeding the burned area within the allotment post fire.

As a result of the fires and seeding efforts, plant communities have been modified. The South Crows Nest Allotment is predominantly vegetated with a mixture of perennial and annual grass species, with little to no brush component (Table 5). Seeding efforts began prior to 1980 and have continued following wildfires. Various drill and aerial seeding efforts have been undertaken to rehabilitate areas burned by wildfire and have resulted in the current vegetative community, which is a mixture of native and seeded non-native species occurring throughout the majority of the allotment.

Map 3: Fire Frequency

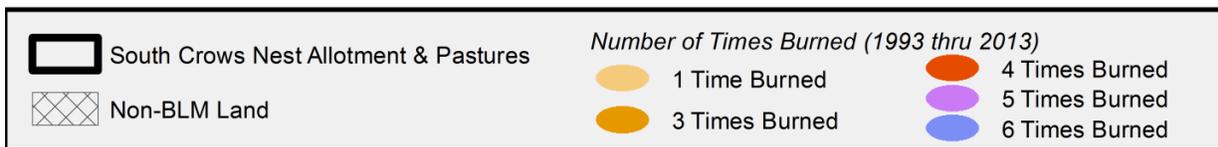
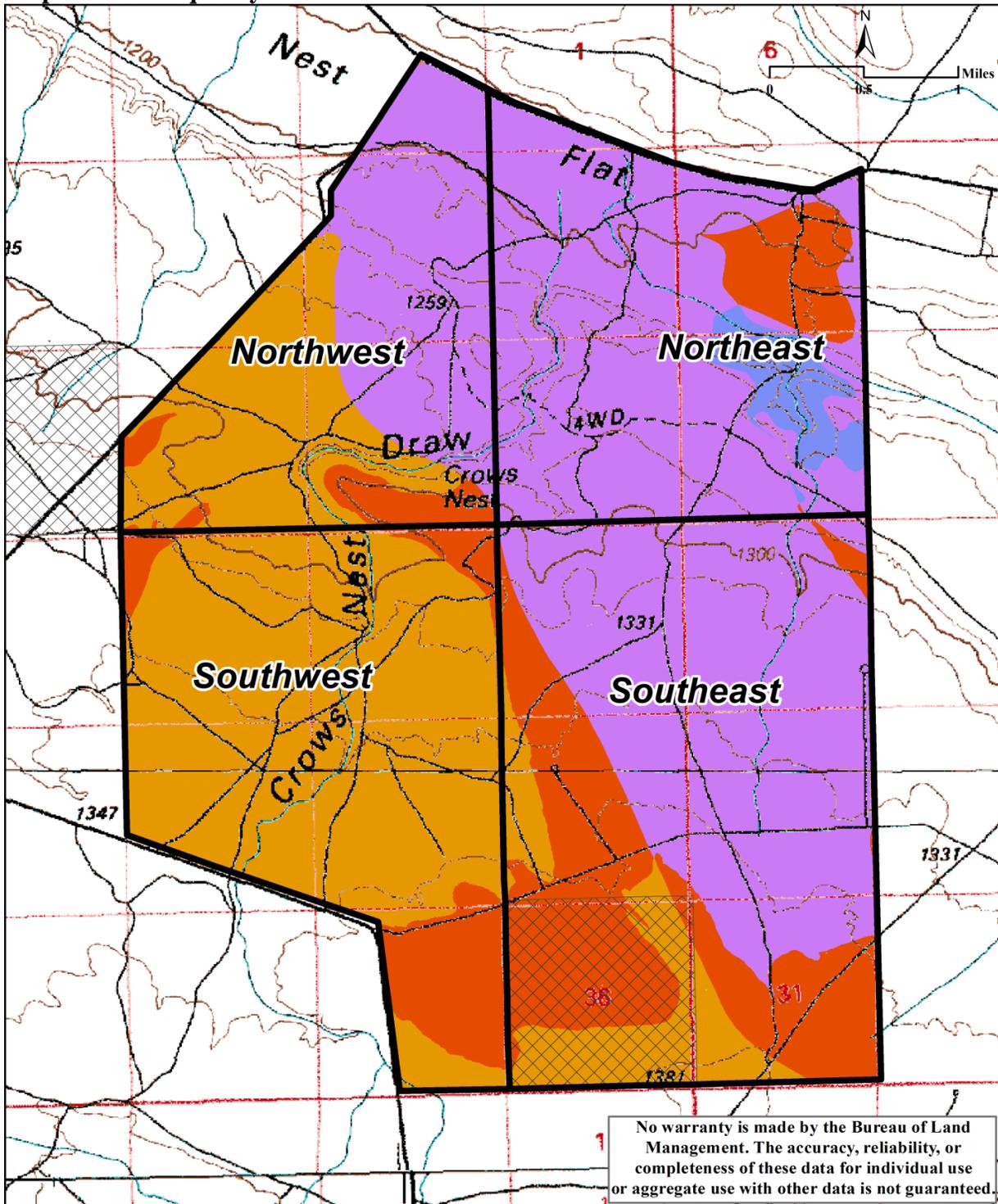


Table 7: South Crows Nest Vegetation Communities in Acres and Percentage by Pasture

Pasture	Annual Grass	Sandberg Bluegrass	Crested Wheatgrass	Recent Burn ¹
Northeast Pasture	0 (0%)	1,569 (64%)	890 (36%)	2,452 (100%)
Northwest Pasture	326 (16%)	566 (28%)	1,123 (56%)	2,007 (100%)
Southeast Pasture	0 (0%)	1,088 (34%)	2,070 (66%)	3,147 (100%)
Southwest Pasture	12 (<1%)	1,576 (56%)	1,249 (44%)	2,836 (100%)

¹Areas classified as Recent Burn are areas that burned in the 2012 Kinyon Road Fire and have not been reevaluated for vegetation community classification.

Two Ecological Site Inventory (ESI) sites exist within the South Crows Nest Allotment (one site each in the Northeast and Southeast pastures) and were read in 2006 (Map 4). Both ESI sites burned in 2006, 2007, 2010, and 2012. A rangeland health assessment (RHA) of the South Crows Nest Allotment was completed in 2005 but an evaluation to determine if the allotment was meeting the Idaho Standards for Rangeland Health was not completed. The field data for the 2005 RHA was completed in 2002 at seven sites with two sites in each of the Northeast, Northwest and Southwest Pastures and one site in the Southeast Pasture. Due to differences in sampling locations and methodology (e.g. number of transects per site and number of points per transect) among the 2002 and 2003 Production data, 2006 ESI data and the 2012 sage-grouse Habitat Assessment Framework (HAF) data, statistical tests cannot be used to analyze vegetative cover across years. However, the data can be used to describe general similarities or differences in vegetation between years or locations within the allotment.

Map 4: Vegetation, Ecological Site Inventory (ESI) & Production and/or Cover Plot

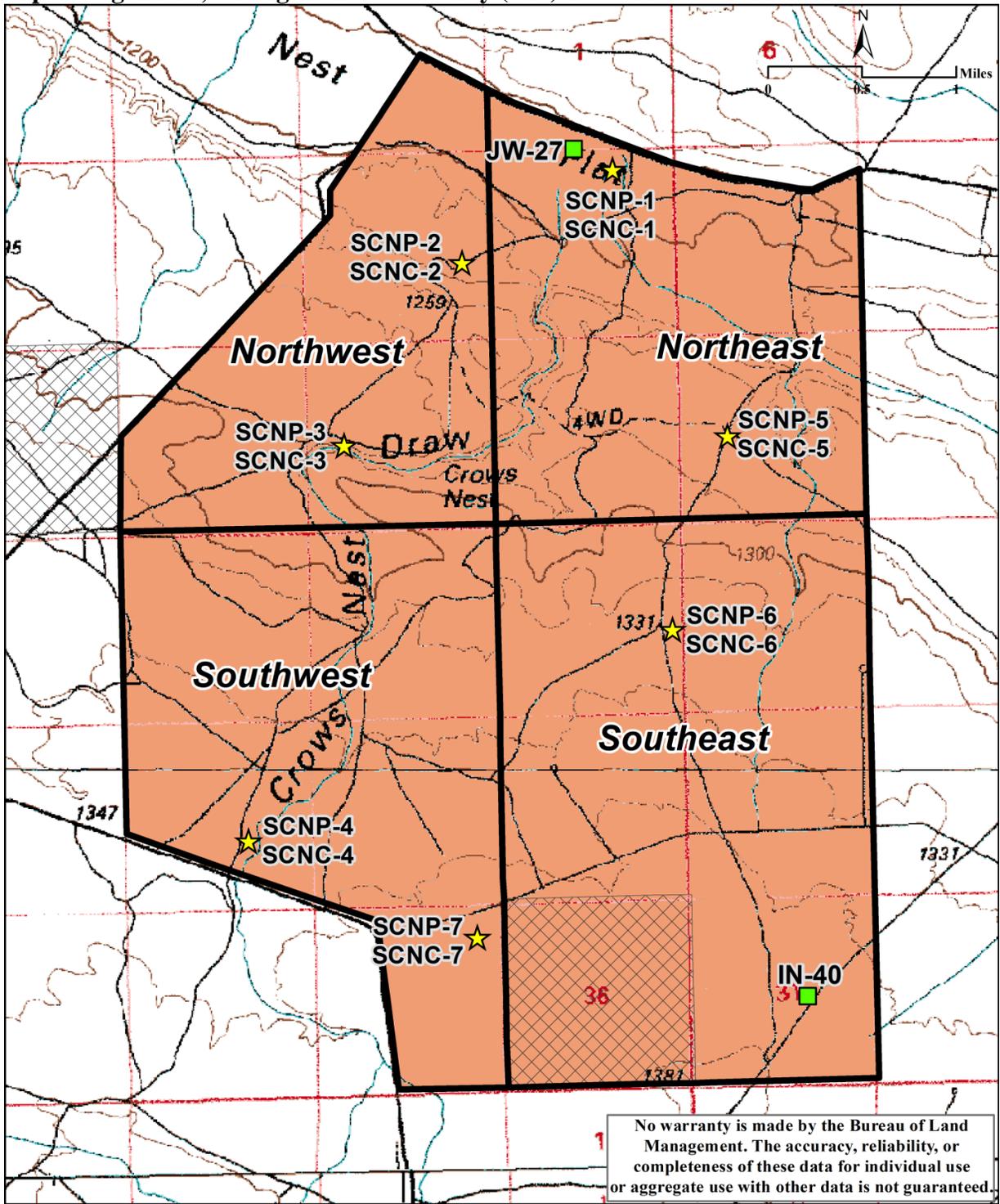


Table 8: Summary of 2002, 2003 and 2006 Production Data (Total Dry Weight in lbs/acre)

Vegetation Type	Species	Pasture Site ID (Year Read)									
		NE	SE	NE	NW	NW	SW	NE	SE	SE	SW
		JW-27 (2006)	IN-40 (2006)	SCNP-1 (2003)	SCNP-2 (2003)	SCNP-3 (2003)	SCNP-4 (2003)	SCNP-5 (2003)	SCNP-6 (2002)	SCNP-6 (2003)	SCNP-7 (2003)
Perennial Grasses	Sandberg bluegrass	32.2	75.6	39.0	108.0	64.0	58.0	63.0	28.0	81.0	47.0
	Crested wheatgrass	369.3	0	697.0	118.0	446.0	0	131.0	549.0	235.0	188.0
	Squirreltail	0	38.4	0	27.0	0	64.0	19.0	5.0	0	9.0
	Thurber's needlegrass	0	35.3	0	0	0	300.0	0	0	0	65.0
	Bluebunch wheatgrass	0	0	0	0	0	0	34.0	123.0	63.0	0
	Great Basin wildrye	8.5	0	0	0	0	0	0	0	0	0
Annual Grasses	Cheatgrass	21.8	0	13.0	27.0	10.0	9.0	3.0	0	0	0
Perennial Forbs	Alfalfa	0	0	0	0	0	0	0	18.0	0	0
	Sagebrush phlox		25.1	0	0	0	0	0	0	0	0
	Long-leaf phlox	0	0.6	5.0	4.0	3.0	12.0	2.0	18.0	7.0	14.0
	Spiny phlox	3.4	5.6	0	0	0	0	0	0	0	2.0
	Tansymustard	0	0	0	0	0	0	0	3.0	0	0
	Clasping pepperweed	0	0	0	0	3.0	0	3.0	0	0	0
	Russian thistle	0	0	0	0	21.0	0	0	0	0	0
	Tumblemustard	12.2	0	0	0	0	0	0	0	0	0
Shrubs	Fourwing saltbrush	0	0	0	0	0	0	0	0	50.0	0
	Wyoming Big sagebrush	73.2	259.6	299.0	107.0	5.0	54.0	98.0	20.0	54.0	48.0
TOTAL		520.6	440.2	1053.0	391.0	552.0	497.0	353.0	759.0	490.0	373.0

Upland Trend Data

There are no trend monitoring sites established in the South Crows Nest Allotment, therefore there is no trend data available to include in the RHA.

Grazing Resumption Data

Monitoring data collected in areas of the South Crows Nest Allotment that burned in the Kinyon Road Fire of 2012 indicate that resumption of grazing was appropriate in August, 2013 (Tables 9 and 10 and Photos 1, 2, 3 and 4).

The Emergency Stabilization and Burned Area Rehabilitation (ES&BAR) Plan for the Kinyon Road Fire stated that resumption of grazing could occur when:

- 1) Recovered herbaceous vegetation is providing sufficient ground cover to protect the site from accelerated erosion and expansion/conversion to annual grasses and noxious weeds. The amount of bare mineral soil (lacking cover of plants, litter, or biological soil crust) is within 10% of what would be expected for early seral stages of the ecological sites found within the burned area. Recommended study methods include line-point intercept or step point cover methods and photo points.
- 2) A qualitative visual assessment of the following would also be considered:
 - Plant vigor (perennial plants)
 - Precipitation information during the non-growing (winter) and growing (spring through early summer) seasons
 - Competition with invasive annual plants and noxious weed species
 - Seed production
- 3) An evaluation of collected monitoring data is completed documenting that reintroducing grazing to the area would not cause a downward trend in vegetation recovery.

The Ecological Site Description (ID# R011XY001ID) does not describe the percent bare ground that would be expected for early seral status. Bare ground is expected to be about 30-40% on sites in the Reference State (State 1). Data collected in 2013 data showed percent bare ground at 32% in the NW Pasture, 37% in the NE Pasture, 40% in the SE Pasture and 45% in the SW Pasture (Table 9 and 10); therefore, the ES&BAR plan objective for bare ground has been met.

Table 9: 2013 Grazing Resumption Monitoring Data Summary

Pasture	Site ID	% Cover	% Bare Ground	% Perennial Grasses	% Forbs	% Litter	% Annuals	% Shrubs	% Producing Seed Heads
NW	SNNW_1t	*68%	32%	30%	0%	18%	3%	1%	82%
NE	JW-27	*63%	37%	50%	0%	13%	0%	0%	88%
SE	IN-40	*60%	40%	28%	1%	14%	7%	0%	78%
SW	SNSW_1t	*55%	45%	36%	1%	4%	5%	0%	100%

*Percent ground cover does not include biotic crust, rock, gravel etc.

Table 10: 2013 Cover and Bare Ground Summary

Pasture	Site ID	Before/After Fire	% Bare Ground	% Cover	% of Early Seral Cover
ESD	Loamy 8-12	Before	**30 – 40%	**60 – 70%	N/A
NW	SNNW_1t	After	32%	68%	97-113
NE	JW-27	After	37%	63%	90-105
SE	IN-40	After	40%	60%	86-100
SW	SNSW_1t	After	45%	55%	79-92

**Numbers shown are for sites in the Reference State (State 1), as described in the Ecological Site Description. No data is available for Early-Seral status at this time.

Photo 1: Northwest Pasture - Resumption of Grazing Photo, August, 2013



Photo 2: Northeast Pasture - Resumption of Grazing Photo, August, 2013



Photo 3: Southeast Pasture - Resumption of Grazing Photo, August, 2013



Photo 4: Southwest Pasture - Resumption of Grazing Photo, August, 2013



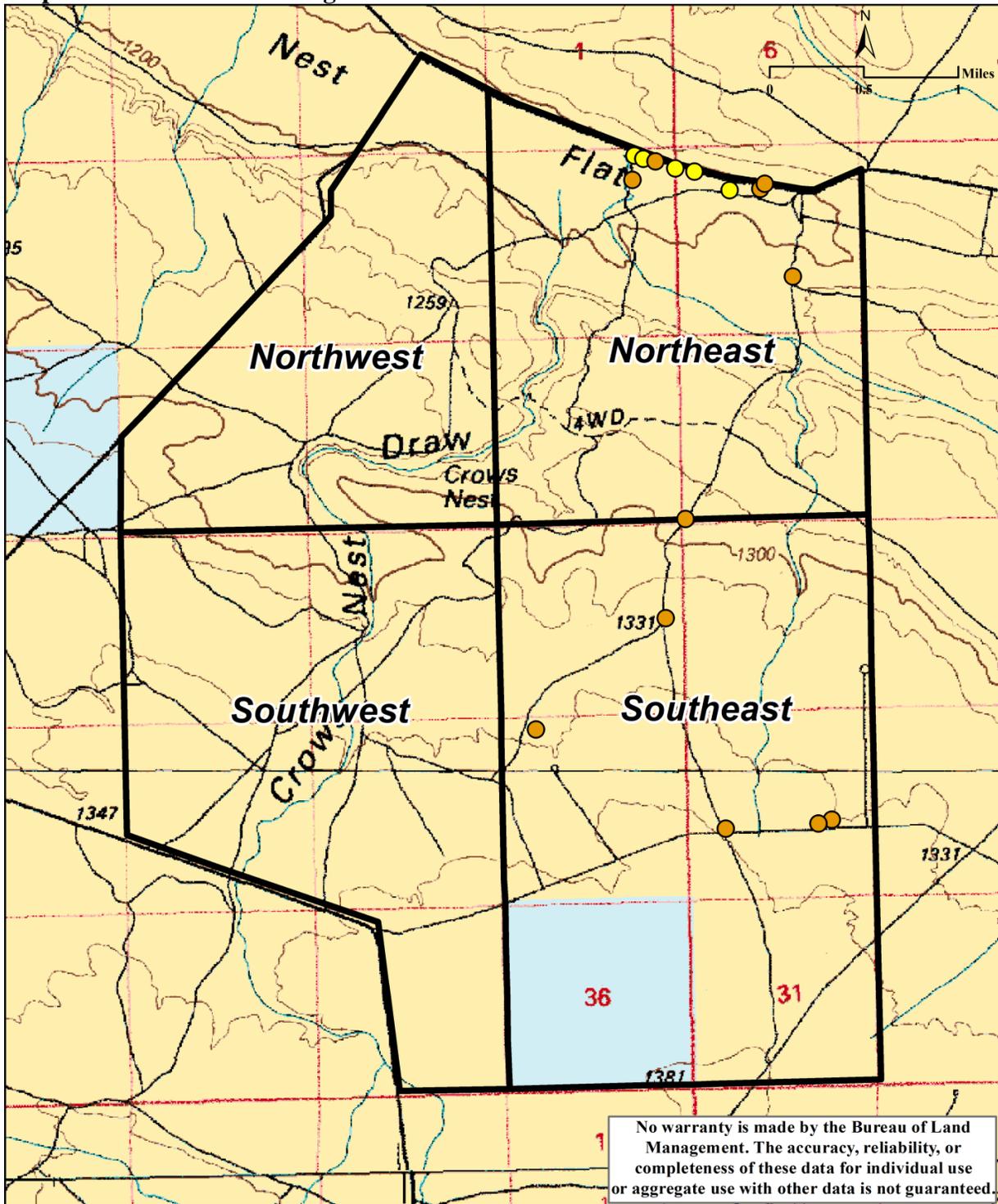
Noxious Weeds

The State of Idaho has listed 65 plant species as noxious weeds. Two noxious weeds (rush skeletonweed (*Chondrilla juncea*) and Russian knapweed (*Acroptilon repens*)) are known to occur within the South Crow's Nest Allotment (Map 5). There are six known rush skeletonweed and five known Russian knapweed occurrences within the Northeast Pasture and five known rush skeletonweed occurrences within the Southeast Pasture. These occurrences were chemically treated in 2005.

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 herbicides.

Map 5: Noxious Weed Management



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 South Crows Nest Allotment due to variances in the land type and geographical area. Of the eight Idaho Standards for Rangeland Health, the following three standards are applicable to the South Crows Nest Allotment:

- **Standard 1** – Watersheds provide for the proper infiltration, retention, and release of water appropriate to soil type, 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 8** – Habitats are suitable to maintain viable populations of threatened and endangered, sensitive, and other special status species.

**Standards 2, 3, 4, 6, and 7 do not apply to the South Crows Nest Allotment*

Table 11: Applicable Standards by Pasture

Standard	Pastures
1	All Pastures (Northwest, Northeast, Southwest, Southeast)
2	Not applicable
3	Not applicable
4	Not applicable
5	All Pastures (Northwest, Northeast, Southwest, Southeast)
6	Not applicable
7	Not applicable
8	All Pastures (Northwest, Northeast, Southwest, Southeast)

An interdisciplinary team (IDT) conducted IIRH field evaluations at five random sites representative of the plant communities within the South Crows Nest Allotment during June, 2012. Three sites were located in crested wheatgrass seedings, with one site in each of the Northeast, Northwest and Southwest Pastures. Two sites were located in the Southeast Pasture as the pasture contains areas of both native and seeded non-native plant species. Map 6 shows the location of the 2012 evaluation sites. Indicators of rangeland health were used to evaluate three rangeland health attributes: soil and site stability, hydrologic function and biotic integrity (Idaho BLM, 2010). The Interpreting Indicators of Rangeland Health evaluation sheets were completed at each evaluation site. Photographs were taken of the evaluation sites and general field notes were composed. The field notes included information not captured by the evaluation sheet (e.g. plant species list, wildlife sign, recreation impacts, and condition of range infrastructure, etc.) if they were found at the site. Of the four sites at which IIRH evaluations were conducted, three were sage-grouse Habitat Assessment Framework (HAF) sites and one was an Ecological Site Inventory (ESI) site.

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 IDT conducted IIRH field evaluations, the HAF sites were visited first. If 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. When the IDT determined that none of the pre-determined sites were representative of the vegetation community, a new location was selected that was representative of the vegetation community.

Seventeen indicators of rangeland health (Table 12) were used to evaluate three rangeland health attributes (Table 12): 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 four sites in following the line point intercept method as described in the sage-grouse HAF (BLM 2010) protocol. 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 site, the IDT examined other areas of the pastures to ensure evaluation sites were representative of the pasture and vegetation community. Data collected at evaluation sites were compared to the Natural Resource Conservation Service's (NRCS) ecological site description (ESD) reference sheet for the soil type and potential vegetation in the South Crows Nest Allotment. The ESD reference sheet describes the expected condition of the ecological site in reference state. All IIRH sites within the allotment occurred in the Loamy 8-12" Wyoming Big Sagebrush/Bluebunch wheatgrass/Thurber's needlegrass ecological site. The ESD reference sheet describes the expected condition of the ecological site in state 1, phase A of the reference state.

The Loamy 8-12" Wyoming big sagebrush/bluebunch wheatgrass/Thurber's needlegrass (R011XY001ID) reference phase plant community is expected to have Wyoming big sagebrush in the overstory with bluebunch wheatgrass dominating the understory. Thurber's needlegrass should be the subdominant grass. Other significant species included in the ESD are Sandberg bluegrass, squirreltail, and arrowleaf balsamroot. There can be a variety of other grasses, forbs, and shrubs in minor amounts. The natural fire frequency should be 50-70 years.

Map 6: Interpreting Indicators of Rangeland Health (IIRH) sites and Sage-grouse Habitat Assessment Framework (HAF) sites

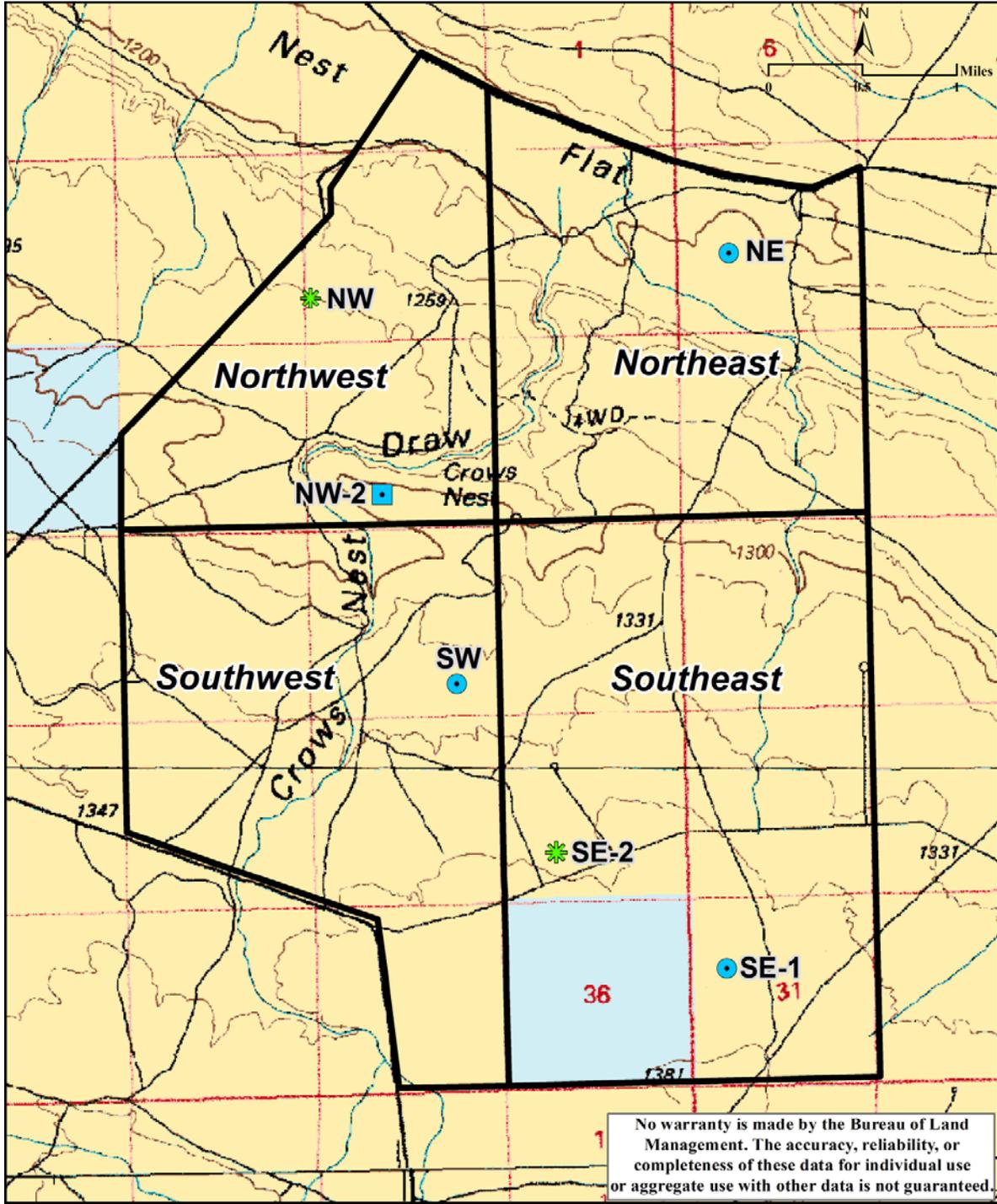


Table 12 shows indicator rating for each site in the South Crows Nest Allotment.

Table 12: Summary of 17 Rangeland Health Indicators

Indicators	Attributes	Degree of Departure from Reference Sheet				
		Extreme to Total	Moderate to Extreme	Moderate	Slight to Moderate	None to Slight
1. Rills	S, H					NW, NE, SW, SE_1, SE_2
2. Water-flow Patterns	S, H				NE	NW, SW, SE_1, SE_2
3. Pedestals and/or terracettes	S, H					NW, NE, SW, SE_1, SE_2
4. Bare ground	S, H					NW, NE, SW, SE_1, SE_2
5. Gullies	S, H					NW, NE, SW, SE_1, SE_2
6. Wind-scoured, blowouts, and/or deposition areas	S					NW, NE, SW, SE_1, SE_2
7. Litter movement	S					NW, NE, SW, SE_1, SE_2
8. Soil surface resistance to erosion	S, H, B					NW, NE, SW, SE_1, SE_2
9. Soil surface loss or degradation	S, H, B					NW, NE, SW, SE_1, SE_2
10. Plant community composition and distribution relative to infiltration	H					NW, NE, SW, SE_1, SE_2
11. Compaction layer	S, H, B				NE	NW, SW, SE_1, SE_2
12. Functional/structural groups	B			SE_2	NW, SW	NE, SE_1
13. Plant mortality/decadence	B					NW, NE, SW, SE_1, SE_2
14. Litter amount	H, B			SW, SE_2	NW, SE_1	NE

Indicators	Attributes	Degree of Departure from Reference Sheet				
		Extreme to Total	Moderate to Extreme	Moderate	Slight to Moderate	None to Slight
15. Annual production	B					NW, NE, SW, SE_1, SE_2
16. Invasive plants	B			NW, SW, SE_1	NE, SE_2	
17. Reproductive capability of perennial plants	B					NW, NE, SW, SE_1, SE_2

S = Soil & Site Stability, H = Hydrologic Function, B = Biotic Integrity

NE = Northeast Pasture NW = Northwest Pasture, SE_1 = Southeast Pasture site 1, SE_2 = Southeast Pasture site 2, SW = Southwest Pasture

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 4 identifies which indicators are related to each of the three attributes. The IDT 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 13.

Table 13: South Crows Nest Allotment 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					NW, NE, SW, SE_1, SE_2
Hydrologic Function					NW, NE, SW, SE_1, SE_2
Biotic Integrity				NW, SW, SE_1, SE_2	NE

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

The Loamy 8-12” Wyoming Big Sagebrush/Bluebunch wheatgrass/Thurber’s needlegrass ecological site description (ESD) (R011XY001ID; USDA and NRCS, 2013a) is applicable to evaluate all four pastures within the South Crows Nest Allotment. The reference sheet, updated in 2014, indicates that bare ground should range from 5 to 20 percent, litter cover should range from 30 to 40 percent, and the soil stability test value should range from 4 to 6.

The Kinyon Road Fire of 2012 burned the entire allotment after the most recent HAF and IIRH monitoring efforts in May and June of 2012. Therefore, IIRH assessment and HAF site data are included and provides an overview of immediate pre-fire conditions and this is relevant because a site’s pre-fire vegetation and resistance and/or resilience to disturbance can serve as a predictor of the post-fire vegetative community (Miller et al. 2013). In addition, the decision not to incorporate additional seeding activities post-fire is based, in part, on the vegetation communities present before a fire occurs.

Wildfire has affected the South Crows Nest Allotment on numerous occasions over the past 30 years and especially during the last decade. The fire frequency (Map 3; Table 7) is highest in the Northeast, Southeast and eastern part of the Northwest Pastures and has created a landscape that is largely devoid of shrubs and dominated by seeded grasses. Just after the last IIRH assessment was completed, the 2012 Kinyon Road Fire burned the entire allotment and removed remaining islands of Wyoming big sagebrush and seedlings that had established from aerial treatment efforts completed after the most recent fires. The last drill seeding occurred in the Southwest Pasture after the 2006 Sailor Cap fire while most other drill seeding took place in 1979 and 1994. The 2012 Kinyon Road fire rehabilitation plan did not prescribe any seeding of the burned area within the allotment post-fire.

Multiple soil series exist within the South Crows Nest Allotment and typically consist of silt loam soils that cover much of the rhyolite and basalt flats that make up the majority of the Jarbidge Field Office landscape. Most of the allotment gradually decreases in elevation towards the north with the most relevant topographic changes present along the northern allotment boundary where slopes greater than 20 percent are present along Crows Nest Flat. The slopes are dissected by two larger drainages, one of which is Crows Nest Draw that drains runoff from numerous small, shallow ephemeral draws from across the pastures. Soils are generally moderately deep, restricted by an underlying weakly cemented hardpan and are further limited by moderately slow permeability, reduced rooting depth and low available soil water capacity, especially when precipitation is below average during the growing season.

The Soil Survey Geographic (SSURGO) database (NRCS 2012) shows that 92 percent of the allotment has a moderate wind erosion hazard and 8 percent has a severe wind erosion hazard. The same database indicates that water erosion hazard is rated high on 82 percent of the allotment and medium on 18 percent. The Northwest and Northeast Pastures are most susceptible to severe wind and high water erosion hazards.

Northwest Pasture

Wildfire in 1979, 1983, 1994, 2006, and 2007 affected this site prior to monitoring and in 2012 after monitoring was completed. IIRH Site NW is located in the Northwest Pasture within a crested wheatgrass seeding. The IDT felt that SCNC-3 was representative of the pasture and IIRH Site NW; therefore, cover data was not collected at the IIRH site. The cover data at SCNC-3 was collected in 2004 (Table 14). Crested wheatgrass was the dominant perennial bunchgrass recorded at 27 percent cover and Sandberg bluegrass was recorded at 10 percent cover. Shrubs were not recorded along the transect. Biotic crust was recorded as 2 percent cover and bare ground as 25 percent cover.

Litter was rated as “slightly more” than expected and therefore, the indicator for litter was rated as a slight to moderate departure from reference condition.

During the 2012 IIRH evaluation, field notes indicated that pedestals were present and the soil pit showed a “good A horizon.” A soil stability test (Pellant et al., 2005) was completed at the site during the IIRH evaluation and the soil stability value averaged 5.6 (soil stability range should be 4 to 6), indicating a high resistance to erosion.

All indicators related to the Soil and Site Stability attribute were rated none to slight. All indicators related to the Hydrologic Function attribute other than Litter Amount were rated none to slight. The overall rating for both Soil and Site Stability and Hydrologic Function was none to slight.

Photo 5: Northwest Pasture Site NW - Soil Profile



On August 5, 2013, post-fire grazing resumption monitoring (Tables 9 and 10) was conducted to evaluate conditions following the 2012 Kinyon Road Fire. Previously, this utilization site (SNNW-1T) was affected by fires in 2006, 2007 and 2010. The grazing resumption data shows crested wheatgrass as 17 percent cover, Sandberg bluegrass as 13 percent and cheatgrass as 3 percent. Biotic crust was recorded as 13 percent cover, bare ground as 32 percent and litter (in contact with soil) as 18 percent. Based on an evaluation of the data collected, monitoring results met the established ES&BAR objectives and indicated that resumption of grazing was appropriate within this pasture.

Northeast Pasture

Wildfire affected this site in 1979, 2006, 2007 and 2010 prior to monitoring and in 2012 after monitoring was completed. IIRH Site NE is located in the Northeast Pasture within a crested wheatgrass seeding. The HAF data collected in 2012 shows Sandberg bluegrass as 29 percent cover and crested wheatgrass as 13 percent cover. Shrub cover was shown as 10 percent; however, this data was collected prior to the Kinyon Road Fire of 2012. Litter was recorded at 1 percent cover, biotic crust as 2 percent cover and bare ground as 26 percent cover. The total forb component (annual and perennial) was recorded as 4.5 percent cover.

Litter was noted as being “slightly more” than expected and therefore, the indicator for litter was rated as a slight to moderate departure from reference condition.

During the 2012 IIRH evaluation, field notes indicated that water flow patterns were healed and not active and pedestals were present but “did not appear to be active.” The IIRH evaluation

states that compaction layers “appeared to be limited to small inclusions” and additional notes note the “first few holes that were dug appeared to have a restrictive layer; however, as the IDT moved around the pasture, no compaction layers were found.” Therefore, the indicator for compaction layer was rated as a slight to moderate departure from the reference condition. A soil stability test (Pellant et al., 2005) was completed at the site during the IIRH evaluation and the soil stability value averaged 5.6 (soil stability range should be 4 to 6), indicating a high resistance to erosion.

All indicators related to the Soil and Site Stability attribute other than Compaction Layer were rated none to slight. All indicators related to the Hydrologic Function attribute other than Compaction Layer were rated none to slight. The overall rating for both Soil and Site Stability and Hydrologic Function was none to slight.

Photo 6: Northeast Pasture Site NE - Soil Profile



On July 30, 2013, post-fire grazing resumption monitoring (Tables 9 and 10) was conducted to evaluate conditions following the 2012 Kinyon Road Fire. Previously, this utilization site (JW-27) was affected by fires in 2006, 2007, and 2010. The grazing resumption data shows crested wheatgrass as 20 percent cover, Sandberg bluegrass as 23 percent and cheatgrass as 0 percent. Biotic crust was recorded as 0 percent cover, bare ground as 37 percent and litter (in contact with soil) as 13 percent. Based on an evaluation of the data collected, monitoring results met the established ES&BAR objectives and indicated that resumption of grazing was appropriate within this pasture.

Southeast Pasture

Wildfire affected this site in 2006, 2007 and 2010 prior to monitoring and in 2012 after monitoring was completed. IIRH Site SE_1 is located in the Southeast Pasture within a sagebrush “strip” that was aerially seeded following a wildfire. HAF data collected in 2012 shows Sandberg bluegrass as 36 percent cover and Thurber’s needlegrass as 11 percent cover. Shrub cover was shown as 3 percent; however, this data was collected prior to the Kinyon Road Fire of 2012. Litter was recorded at 5 percent cover, biotic crust as 0 percent cover and bare ground as 16 percent cover. The total forb component (annual and perennial) was recorded as 5.5 percent cover.

Litter was noted as “higher than expected” and therefore, the indicator for litter was rated as a slight to moderate departure from reference condition.

During the 2012 IIRH evaluation, field notes indicated some pedestals were present and were “possibly due to fire” and “scouring may have been right after the fire.” A soil stability test (Pellant et al., 2005) was completed at the site during the IIRH evaluation and the soil stability value averaged 5.1 (soil stability range should be 4 to 6), indicating a high resistance to erosion.

All indicators related to the Soil and Site Stability attribute were rated none to slight. All indicators related to the Hydrologic Function attribute other than Litter Amount were rated none to slight. The overall rating for both Soil and Site Stability and Hydrologic Function was none to slight.

Photo 7: Southeast Pasture Site SE_1 - Soil Profile



IIRH Site SE_2 is located in the Southeast Pasture in a crested wheatgrass seeding. The IDT chose to evaluate this site for additional information in the pasture; however, no cover data was collected.

Litter was noted as “higher than expected” and therefore, the indicator for litter was rated as a moderate departure from reference condition

During the 2012 IIRH evaluation, field notes indicated that “two small sites of active pedestalling” were present. A soil stability test (Pellant et al., 2005) was completed at the site during the IIRH evaluation and the soil stability value averaged 4.8 (soil stability range should be 4 to 6), indicating a high resistance to erosion.

All indicators related to the Soil and Site Stability attribute were rated none to slight. All indicators related to the Hydrologic Function attribute other than Litter Amount were rated none to slight. The overall rating for both Soil and Site Stability and Hydrologic Function was none to slight.

Photo 8: Southeast Pasture Site SE_2 - Soil Profile



On August 5, 2013, post-fire grazing resumption monitoring (Tables 9 and 10) was conducted to evaluate conditions following the 2012 Kinyon Road Fire. Previously, this 2006 ESI site (IN-40) was affected by fires in 2006, 2007 and 2010. The grazing resumption data shows crested wheatgrass as 1 percent cover, Sandberg bluegrass as 24 percent and cheatgrass as 7 percent. Biotic crust was recorded as 8 percent cover, bare ground as 40 percent and litter (in contact with soil) as 13 percent. Based on an evaluation of the data collected, monitoring results met the

established ES&BAR objectives and indicated that resumption of grazing was appropriate within this pasture.

Southwest Pasture

Wildfire in 1984, 2006, 2007 and 2010 affected this site prior to monitoring and in 2012 after monitoring was completed. IIRH Site SW is located in the Southwest Pasture within a Sandberg bluegrass and crested wheatgrass community. Sandberg bluegrass comprises 41 percent of cover and crested wheatgrass comprises 14 percent of cover. Shrub cover was shown as 6 percent; however, this data was collected prior to the Kinyon Road Fire of 2012. Litter was recorded at 10 percent cover, biotic crust as 0 percent cover and bare ground as 15 percent cover. The total forb component (annual and perennial) was recorded as 3.5 percent cover.

Litter was noted as high and therefore, the indicator for litter was rated as a moderate departure from reference condition.

During the 2012 IIRH evaluation, field notes indicated the presence of “pedestals from fire” were present and one gully was observed but was old and mostly healed. A soil stability test (Pellant et al., 2005) was completed at the site during the IIRH evaluation and the soil stability value averaged 5.0 (soil stability range should be 4 to 6), indicating a high resistance to erosion.

All indicators related to the Soil and Site Stability attribute were rated none to slight. All indicators related to the Hydrologic Function attribute other than Litter Amount were rated none to slight. The overall rating for both Soil and Site Stability and Hydrologic Function was none to slight.

Photo 9: Southwest Pasture Site SW - Soil Profile



On August 5, 2013, post-fire grazing resumption monitoring (Tables 9 and 10) was conducted to evaluate conditions after the 2012 Kinyon Road Fire. Previously, this utilization site (SNSW-1T) was affected by fires in 1979, 1983, 1985, 2006, 2007 and 2012. The grazing resumption data shows crested wheatgrass as 16 percent cover, Sandberg bluegrass as 20 percent and cheatgrass as 5 percent. Biotic crust was recorded as 1 percent cover, bare ground as 45 percent and litter (in contact with soil) as 1 percent. Based on an evaluation of the data collected, monitoring results met the established ES&BAR objectives and indicated that resumption of grazing was appropriate within this pasture.

Evaluation of Standard 1 – Northwest, Northeast, Southeast and Southwest Pastures:

Wildfire has affected the South Crows Nest Allotment on numerous occasions in the years prior to the IIRH monitoring efforts completed in 2012. Shortly after the monitoring was completed, the 2012 Kinyon Road Fire burned the entire allotment and removed the remaining Wyoming big sagebrush. Increased fire frequency has removed sagebrush throughout the allotment, which can affect the soil, hydrologic, and biotic function. A large emphasis now falls upon the functionality of the remaining vegetation to provide for infiltration, soil stability, ground cover and associated nutrient and energy exchange. With every fire, wind erosion has removed valuable soils and cumulatively contributes to soil surface loss that has been observed and documented over time (South Crows Nest Rehab Plan and EA, 1979; Klott, personal communication, 2014). Plant communities within all four pastures have been modified due to drill and aerial seedings that have taken place throughout these pastures since the 1960s.

Wyoming big sagebrush has been aerially seeded in the pastures in 2006, 2007 and 2011. However, the 2012 Kinyon Road Fire would likely have eliminated any seedlings that may have been present. Recovery of sagebrush is not expected to occur without a seed source and there was no sagebrush planted following the 2012 Kinyon Road Fire. The lack of shrub cover is apparent in all of the plant communities in the pastures. Shrubs function to catch snow and thereby increase infiltration and sagebrush roots can redistribute small amounts (less than 0.3 inches) of water in the soil profile up to 1.5 meters in depth (Ryel et al., 2003). Although shrubs are generally lacking, the HAF data (Table 18) shows rabbitbrush present at 11 percent cover in the Northwest Pasture.

During the 2012 IIRH evaluation, pedestals were noted as being present and due to wildfire and litter was noted as slightly higher than expected in the Northwest Pasture. In the Northeast Pasture, there were pedestals present due to wildfire but not active and a compaction layer noted as a “small inclusion but not present throughout the pasture.” The IDT evaluated two sites in the Southeast Pasture. At Site SE_1, pedestals were noted as being present and due to wildfire and at Site SE_2, two small sites of active pedstalling were observed. At both sites, litter was noted as higher than expected by the IDT. In the Southwest Pasture, pedestals were noted as being present and due to wildfire, one gully was observed and noted to be “old and mostly healed” and litter was higher than expected. The soil stability tests for the four sites ranged from 4.8 to 5.6 (soil stability range should be 4 to 6), indicating a high resistance to erosion; in addition, the topography within the pastures is relatively flat. No rills, water-flow patterns, terracettes, wind-scoured/blowouts/deposition areas litter movement were observed. Overall, the Soil and Site Stability and Hydrologic Function attributes were rated as a none to slight departure from the reference condition for the Northwest, Northeast, Southeast and Southwest Pastures.

The 2013 grazing resumption data (Table 16) showed an overall appropriate component of deep-rooted perennial species in the Northwest, Northeast and Southwest Pastures. In the Southeast Pasture, reduced component of deep-rooted perennial species and a higher component of shallow-rooted grasses was observed. The amount of litter found within the pastures was between 1 and 17 percent cover, is within the range shown in the ESD and is providing cover for site protection and replenishing nutrients. Cheatgrass was present as between 0 and 7 percent cover and bare ground was between 32 and 45 percent cover. Biotic crusts were present as between 0 and 13 percent cover.

Evaluation Finding – Northwest, Northeast, Southeast and Southwest Pastures are:

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

Rationale for Evaluation Finding – Northwest, Northeast, Southeast and Southwest Pastures:

There is a component of biotic crust and litter present and both provide protection to the soil surface from erosion; in addition, the topography is relatively flat, reducing the risk for accelerated soil erosion. The soil stability test results (between 4.8 and 5.6) also indicated a high resistance to erosion. Although pedestals were observed within all four pastures, overall they were noted as not being active and were due to wildfire.

Deep-rooted perennial bunchgrasses and shallow-rooted grasses are both present within the plant communities and are as expected for areas that have burned by wildfire multiple times and have been reseeded and/or allowed to recover naturally. The 2013 grazing resumption data indicates that percent cover of perennial grass species varied slightly across the seeded plant communities (Table 16) but the species present are appropriately productive, are capable of reproduction and are providing soil cover and competition to invasive species.

Perennial forbs and shrubs were absent from the seeded plant communities; however, perennial grasses appeared vigorous and were producing seed heads at all sites, suggesting that the absence of shrub cover is not negatively affecting infiltration to the point of reducing plant vigor or reproductive capability. Deep-rooted perennial bunchgrasses can help support nutrient cycling and energy flow due to their above and below ground structure. Shallow-rooted grasses generally have a shorter active growth period, smaller root systems and relatively lower potential to capture and store carbon below ground.

The combination of the lack of rills, gullies, flow patterns, etc., the presence of stable soils, the overall presence of large statured, deep rooted perennial bunchgrasses and the low percent of cheatgrass present all allow the vegetative communities within the four pastures to function to maintain life form diversity, production, native animal habitat, nutrient cycling, energy flow and the hydrologic cycle. Therefore, the Northwest, Northeast, Southeast and Southwest Pastures of the South Crows Nest Allotment are meeting Standard 1.

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.

 X Standard Doesn't Apply

All streams within the South Crows Nest Allotment are classified as ephemeral (National Hydrography Data: USGS 2014). Ephemeral streams only flow in direct response to precipitation and are above the water table throughout the year (BLM 1998). Riparian vegetation, springs, or wetlands are not present within the allotment. Therefore, Standard 2 does not apply to the South Crows Nest Allotment.

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.

 X Standard Doesn't Apply

All streams within the South Crows Nest Allotment are classified as ephemeral (National Hydrography Data: USGS 2014). Ephemeral streams only flow in direct response to precipitation and are above the water table throughout the year (BLM 1998). Riparian

vegetation, springs, or wetlands are not present within the allotment. Therefore, Standard 3 does not apply to the South Crows Nest Allotment.

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.

X Standard Doesn't Apply

Although vegetation cover data collected during IIRH monitoring includes native plant species (Table 7), the JFO IDT determined the allotment should be assessed as a seeded community rather than a native plant community due to the majority of the allotment being seeded following wildfires.

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

Plant communities in all four pastures of the South Crows Nest Allotment have been modified and are therefore being evaluated under Standard 5. Thirteen different wildfires have occurred within the allotment since 1979 and various drill and aerial seeding efforts have been undertaken to rehabilitate the burned areas. Six of the thirteen fires have occurred since 2000, including the most recent Kinyon Road Fire of 2012 that burned the whole allotment. Records indicate that many areas of the allotment have been drill seeded and aurally seeded with a variety of native and non-native species following 2006, 2007 and 2011 wildfires. The allotment is dominated by non-native plant communities, as shown by the vegetation cover data collected in 2012 (Table 14).

Indicators for Rangeland Health were assessed at four locations, three of which were HAF sites and one site that was chosen at random. Vegetative cover data was collected at four HAF sites in 2012 and that cover data is summarized in Table 14. Vegetative cover data was collected at multiple layers (Cooperative Extension Service et al., 1999); however, Table 14 displays only the top cover layer to allow comparison of cover data to ESD reference sheet values.

Sandberg bluegrass comprises the highest average percent of cover at the sites, followed by crested wheatgrass and Wyoming big sagebrush. However, due to the Kinyon Road Fire of 2012, Wyoming big sagebrush is no longer a component within the allotment. Percent bare ground ranged from 15-26 percent. Total litter, including standing litter and litter in contact with the soil, ranged from 10-18 percent.

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

Pasture		NW	NE	SE	SW	NW
IIRH Site ID		NW	NE	SE	SW	-
Vegetation Class	Species	ESI SCNC3 (2004)*	HAF NE (2012)	HAF SE_1 (2012)	HAF SW (2012)	HAF NW_2 (2012)
Perennial Grasses	Sandberg bluegrass	10%	29%	36%	41%	40.5%
	Crested wheatgrass	27%	13%	0%	14%	1%
	Bluebunch wheatgrass	0%	0%	4%	0%	0%
	Squirreltail	0%	0.5%	2%	1%	0.5%
	Basin wildrye	0%	1%	0%	0%	0%
	Thurber's needlegrass	0%	0%	11%	0%	0%
Annual Grasses	Cheatgrass	2%	5%	7%	7%	4%
Perennial Forbs	Sagebrush phlox	0%	4%	0%	0%	0%
	Long-leaf phlox	0%	0.5%	5%	3%	2%
	Speckled-pod milkvetch	0%	0.5%	0%	0%	0%
	Shaggy fleabane	0%	0%	0%	0%	0.5%
Annual Forbs	Redstem stork's bill	0%	0%	0%	0%	1%
	Epilobium spp.	0%	0%	0.5%	0.5%	0.5%
	Maiden blue-eyed Mary	2%	0%	0%	0%	0%
	Curvseed butterwort	10%	0%	0%	0%	0%
	Russian thistle	1%	0%	0%	0%	0%
	Clasping pepperweed	3%	0%	0%	0%	0%
	Yellow salsify	0%	0.5%	0%	0%	0.5%
Shrubs	Wyoming big sagebrush	0%	*10%	*3%	*6%	0%
	Rabbit brush	0%	0%	0.5%	0%	11%
Vegetation Total		31%	63%	67%	61%	63%
Other Cover	Biotic Crust	3%	2%	0%	0%	0.5%
	Bare Ground	27%	26%	16%	15%	23%
	Litter in contact with soil	39%	1%	5%	10%	5%
	Litter standing	0%	9%	13%	5%	10%

*The IDT felt that SCNC-3 (Table 15) was representative of the pasture and IIRH Site NW; therefore, no cover data was collected at the IIRH site in 2012.

Table 15: Additional Vegetative Cover Data (Percent Cover - Top Layer Only)

Cover Data Monitoring Site Per Pasture		NE	NW	SW	NE	SE	SW
Vegetation Class	Species	SCNC1 (2002)	SCNC2 (2002)	SCNC4 (2002)	SCNC5 (2002)	SCNC6 (2002)	SCNC7 (2002)
Perennial Grasses	Squirreltail	0%	3%	5%	1%	0%	1%
	Sandberg bluegrass	3%	15%	15%	15%	12%	12%
	Thurber's needlegrass	0%	0%	14%	3%	2%	2%
	Crested wheatgrass	14%	11%	0%	9%	18%	16%
Annual Grasses	Cheatgrass	3%	6%	4%	1%	0%	4%
	Sixweeks fescue	0%	6%	0%	1%	0%	0%
Perennial Forbs	Spiny phlox	0%	0%	1%	0%	0%	0%
	Longleaf phlox	0%	0%	4%	0%	2%	4%
Annual Forbs	Curvseed butterwort	6%	2%	0%	1%	0%	0%
	Maiden blue-eyed Mary	0%	0%	0%	0%	0%	0%
	Russian thistle	0%	0%	0%	0%	0%	0%
	Alfalfa	0%	0%	0%	0%	2%	1%
	Tumblemustard	1%	0%	0%	0%	0%	0%
	Clasping pepperweed	0%	0%	0%	0%	0%	0%
Shrubs	Fourwing saltbrush	0%	0%	0%	5%	1%	1%
	Wyoming big sagebrush	4%	11%	16%	5%	7%	2%
Vegetation Total		31%	54%	59%	41%	44%	43%
Other Cover	Bare Ground	27%	9%	14%	26%	26%	17%
	Biotic Crust	3%	8%	15%	7%	1%	17%
	Litter in Contact with Soil	39%	26%	11%	23%	29%	22%
	Litter Standing	0%	3%	1%	2%	0%	1%
	Rock or Gravel	0%	0%	0%	1%	0%	0%
Grand Total		100%	100%	100%	100%	100%	100%

Grazing resumption data is calculated as percent cover based on a 75 point cover transect and is detailed in Table 16. This table provides post-fire information for the Kinyon Road Fire of 2012, which is the most recent wildfire event to occur on the South Crows Nest Allotment and affected all four pastures. The majority of the allotment is lacking shrubs due to repeated wildfires. Shrubs were essentially removed from the burned areas, which would be expected following wildfire. Many areas within the allotment were subsequently seeded with a native-like seed mix, including Wyoming big sagebrush. Grazing resumption monitoring data (Tables 9, 10 and 15) collected in 2013 indicates recovery is occurring.

Table 16: Grazing Resumption Cover Data (Top Layer Only) – July/August, 2013

Grazing Resumption Monitoring Site		Pasture			
		NW	NE	SE	SW
		SNNW_1T	JW-27	IN-40	SNSW_1T
Vegetation Class	Species	Percent Cover			
Perennial Grasses	Sandberg bluegrass	13%	23%	24%	20%
	Crested wheatgrass	17%	20%	1%	16%
	Squirreltail	0%	0%	1%	0%
	Basin wildrye	0%	7%	0%	0%
	Thurber's needlegrass	0%	0%	1%	0%
	Western wheatgrass	0%	0%	1%	0%
Annual Grasses	Cheatgrass	3%	0%	7%	5%
Perennial Forbs	Sagebrush phlox	0%	0%	1%	0%
Annual Forbs	Yellow salsify	0%	0%	0%	1%
Shrubs	Rubber rabbitbrush	1%	0%	0%	0%
Vegetation Total		34%	50%	36%	42%
Other Cover	Biotic Crust	13%	0%	8%	1%
	Bare Ground	32%	37%	40%	45%
	Litter in contact with soil	17%	13%	13%	1%
	Litter standing	1%	0%	1%	3%
	Rock/Gravel	1%	0%	0%	6%

Northwest Pasture

IIRH Site NW (Photo 10) is located in the Northwest Pasture within a crested wheatgrass seeding. The IDT felt that SCNC-3 was representative of the pasture and IIRH Site NW; therefore, cover data was not collected at the IIRH site. The cover data at SCNC-3 was collected in 2004 (Table 15). Crested wheatgrass was the dominant perennial bunchgrass recorded at 27 percent cover and Sandberg bluegrass was recorded at 10 percent cover. Shrub cover was shown as 0 percent cover, biotic crust as 2 percent cover and bare ground as 25 percent cover. A soil stability test (Pellant et al., 2005) was completed at the site during the IIRH evaluation and the soil stability value averaged 5.6 (soil stability range should be 4 to 6), indicating a high resistance to erosion.

In the 2012 IIRH evaluation, field notes and cover data indicate that shrubs are lacking at the site and the number of forb species is reduced; therefore, the functional/structural group indicator was rated a slight to moderate departure from the reference condition.

The 2004 cover data showed litter at 18 percent cover. However, during the 2012 IIRH evaluation, the indicator for litter amount was rated as a slight to moderate departure from the reference condition due to “slightly more” amount of litter observed at the site.

Cheatgrass was recorded at 2 percent and curvseed butterwort was recorded at 10 percent percent of cover in 2004. Cheatgrass and rush skeletonweed were noted during IIRH to be present in the pasture and cheatgrass was found “in large patches”; therefore, the indicator for invasive plants was rated as a moderate departure from reference condition.

All indicators related to the Biotic Integrity attribute other than Functional/Structural Groups, Litter Amount and Invasive Plants were rated none to slight. The overall Biotic Integrity attribute was rated as a slight to moderate departure from the reference condition due to the lack of shrubs, forbs being reduced, and the presence of cheatgrass and rush skeletonweed in the pasture.

Photo 10: IIRH Site NW - June 28, 2012



In the Northwest Pasture, 2013 grazing resumption data shows crested wheatgrass as 17 percent cover, Sandberg bluegrass as 13 percent and cheatgrass as 3 percent. Biotic crust was recorded as 13 percent cover, bare ground as 32 percent and litter (in contact with soil) as 18 percent. Based on an evaluation of the data collected, monitoring results met the established ES&BAR objectives and indicated that resumption of grazing was appropriate within this pasture.

Northeast Pasture

IIRH Site NE (Photo 11) is located in the Northeast Pasture within a crested wheatgrass seeding. The HAF data collected in 2012 shows Sandberg bluegrass as 29 percent cover and crested wheatgrass as 13 percent cover. Shrub cover was shown as 10 percent; however, this data was collected prior to the Kinyon Road Fire of 2012. Litter was recorded at 1 percent cover, biotic crust as 2 percent cover and bare ground as 26 percent cover. The total forb component (annual and perennial) was recorded as 4.5 percent cover. A soil stability test (Pellant et al., 2005) was completed at the site during the IIRH evaluation and the soil stability value averaged 5.6 (soil stability range should be 4 to 6), indicating a high resistance to erosion.

In the 2012 IIRH evaluation, field notes mention the number of forb species is reduced; however, the functional/structural group indicator was rated as a none to slight departure from the reference condition.

Cheatgrass was recorded at 5 percent cover. Cheatgrass and rush skeletonweed were noted during the IIRH monitoring to be present in the pasture but only in disturbed areas; therefore, the indicator for invasive plants was rated slight to moderate.

The IIRH evaluation states that compaction layers “appeared to be limited to small inclusions” and additional notes note the “first few holes that were dug appeared to have a restrictive layer; however, as the IDT moved around the pasture, no compaction layer was found.” The indicator for compaction layer was rated as a slight to moderate departure from the reference condition.

All indicators related to the Biotic Integrity attribute other than Compaction Layer and Invasive Plants were rated none to slight; therefore, the overall Biotic Integrity attribute was rated as a none to slight departure from the reference condition.

Photo 11: IIRH Site NE - June 28, 2012



In the Northeast Pasture, 2013 grazing resumption data shows crested wheatgrass as 20 percent cover, Sandberg bluegrass as 23 percent and cheatgrass as 0 percent. Biotic crust was recorded as 0 percent cover, bare ground as 37 percent and litter (in contact with soil) as 13 percent. Based on an evaluation of the data collected, monitoring results met the established ES&BAR objectives and indicated that resumption of grazing was appropriate within this pasture.

Southeast Pasture

SE_1

IIRH Site SE_1 (Photo 12) is located in the Southeast Pasture within a sagebrush “strip” that was aerially seeded following a wildfire. HAF data collected in 2012 shows Sandberg bluegrass as 36 percent cover and Thurber’s needlegrass as 11 percent cover. Shrub cover was shown as 3 percent; however, this data was collected prior to the Kinyon Road Fire of 2012. Litter was recorded at 5 percent cover, biotic crust as 0 percent cover and bare ground as 16 percent cover. The total forb component (annual and perennial) was recorded as 5.5 percent cover. A soil stability test (Pellant et al., 2005) was completed at the site during the IIRH evaluation and the soil stability value averaged 5.1 (soil stability range should be 4 to 6), indicating a high resistance to erosion.

In the 2012 IIRH evaluation, field notes mention that shrubs are reduced; however, the functional/structural group indicator was rated as a none to slight departure from the reference condition.

Cheatgrass was recorded at 7 percent cover. Cheatgrass and rush skeletonweed were noted during the IIRH monitoring to be scattered throughout the pasture; therefore, the indicator for invasive plants was rated moderate.

The 2012 HAF data showed litter at 5 percent cover (top layer only). However, the 2012 IIRH evaluation used all layers of cover, which was 34 percent. Therefore, the indicator for litter amount was rated as a slight to moderate departure from the reference condition due to being “slightly higher than expected.”

All indicators related to the Biotic Integrity attribute other than Litter Amount and Invasive Plants were rated none to slight; therefore, the overall Biotic Integrity attribute was rated as a none to slight departure from the reference condition.

Photo 12: IIRH Site SE_1 - June 28, 2012



SE_2

IIRH Site SE_2 (Photo 13) is located in the Southeast Pasture in a crested wheatgrass seeding. The IDT chose to evaluate this site for additional information in the pasture; however, no cover data was collected.

A soil stability test (Pellant et al., 2005) was completed at the site during the IIRH evaluation and the soil stability value averaged 4.8 (soil stability range should be 4 to 6), indicating a high resistance to erosion.

In the 2012 IIRH evaluation, field notes mention that shrubs are not present and forbs are limited and less diverse than described in the reference condition; therefore, the functional/structural group indicator was rated as a moderate departure.

Cheatgrass and rush skeletonweed were noted during the IIRH monitoring to be present in the pasture and rush skeletonweed "is slightly more common along the road"; therefore, the indicator for invasive plants was rated slight to moderate.

The IDT used the 2012 HAF data taken at SE_1 for the litter component, which was 5 percent cover (top layer only). However, the 2012 IIRH evaluation used all layers of cover, which was 34 percent. Therefore, the indicator for litter amount was rated as a moderate departure from the reference condition due to being "higher litter than expected."

All indicators related to the Biotic Integrity attribute other than Functional/Structural Groups, Litter Amount and Invasive Plants were rated none to slight; the overall Biotic Integrity attribute was rated as a slight to moderate departure from the reference condition.

Photo 13: IIRH Site SE_2 - June 28, 2012



In the Southeast Pasture, 2013 grazing resumption data shows crested wheatgrass as 1 percent cover, Sandberg bluegrass as 24 percent and cheatgrass as 7 percent. Biotic crust was recorded as 8 percent cover, bare ground as 40 percent and litter (in contact with soil) as 13 percent. Based on an evaluation of the data collected, monitoring results met the established ES&BAR objectives and indicated that resumption of grazing was appropriate within this pasture.

Southwest Pasture

IIRH Site SW (Photo 14) is located in the Southwest Pasture within a Sandberg bluegrass and crested wheatgrass community. Sandberg bluegrass comprises 41 percent of cover and crested wheatgrass comprises 14 percent of cover. Shrub cover was shown as 6 percent; however, this data was collected prior to the Kinyon Road Fire of 2012. Litter was recorded at 10 percent cover, biotic crust as 0 percent cover and bare ground as 15 percent cover. The total forb component (annual and perennial) was recorded as 3.5 percent cover. A soil stability test (Pellant et al., 2005) was completed at the site during the IIRH evaluation and the soil stability value averaged 5.0 (soil stability range should be 4 to 6), indicating a high resistance to erosion.

In the 2012 IIRH evaluation, field notes and cover data indicate that shrubs are lacking at the site and the number of forb species is reduced; therefore, the functional/structural group indicator was rated a slight to moderate departure from the reference condition.

The 2012 HAF data showed litter at 10 percent cover (top layer only). However, the 2012 IIRH evaluation used all layers of cover, which was 35 percent. Therefore, the indicator for litter amount was rated as a moderate departure from the reference condition due to being “higher than expected.”

Cheatgrass was recorded at 7 percent cover and additionally as “being more abundant in areas where crested wheatgrass is lacking.” Cheatgrass, Russian knapweed and rush skeletonweed were noted during the IIRH monitoring to be present in the pasture; therefore, the indicator for invasive plants was rated moderate.

All indicators related to the Biotic Integrity attribute other than Functional/Structural Groups, Litter Amount and Invasive Plants were rated none to slight. The overall Biotic Integrity attribute was rated as a slight to moderate departure from the reference condition due to the lack of shrubs, forbs being reduced, and the presence of cheatgrass, Russian knapweed and rush skeletonweed in the pasture.

Photo 14: IIRH Site SW - June 28, 2012



In the Southwest Pasture, 2013 grazing resumption data shows crested wheatgrass as 16 percent cover, Sandberg bluegrass as 20 percent and cheatgrass as 5 percent. Biotic crust was recorded as 1 percent cover, bare ground as 45 percent and litter (in contact with soil) as 1 percent. Based on an evaluation of the data collected, monitoring results met the established ES&BAR objectives and indicated that resumption of grazing was appropriate within this pasture.

Evaluation of Standard 5 - Northwest, Northeast, and Southwest Pastures:

Plant communities within the Northwest, Northeast and Southwest Pastures have been modified. Drill and aerial seedings have taken place throughout these pastures since the 1960s. The majority of the pastures were drill seeded following the 2006 Sailor Cap Fire, 2007 Murphy Complex Fire and 2011 Long Butte Fire. No reseeding was deemed necessary after the 2012 Kinyon Road Fire.

The 2013 grazing resumption monitoring data (Table 16) showed the seeded plant communities within the Northwest, Northeast and Southwest Pastures contained between 13-23 percent cover Sandberg bluegrass, between 16-20 percent cover crested wheatgrass and cheatgrass was recorded between 0-5 percent cover. Shrubs were recorded as 0 percent cover, bare ground ranged from 32-45 percent and biotic crust ranged from 0-13 percent.

The 2012 cover data (Table 14) reflects between 29-41 percent Sandberg bluegrass, between 1-14 percent crested wheatgrass and between 4-7 percent cheatgrass. Forbs were present as a minor component within the three pastures and Wyoming big sagebrush was present as 0-10 percent, prior to the 2012 Kinyon Road Fire.

During the 2012 IIRH evaluation, the IDT rated the functional/structural group indicator at a slight to moderate departure for the Northwest and Southwest Pastures and at a none to slight departure for the Northeast Pasture. These ratings were based on field observations documenting the presence of deep-rooted perennial bunchgrasses, shallow rooted grasses, and perennial forbs. Deep-rooted perennial bunchgrasses can help support nutrient cycling and energy flow due to their above and below ground structure. Shallow-rooted grasses generally have a shorter active growth period, smaller root systems, and relatively lower potential to capture and store carbon below ground. The perennial species present within the seeded areas are appropriately productive and are capable of reproduction and recruitment of new seedlings and are providing soil cover and competition to invasive species.

The 2012 IIRH field notes also noted that cheatgrass ranged from being scattered throughout some sites to being present in large patches in other areas. Rush skeletonweed was noted as being present and more common along the road and in disturbed areas and field notes state that Russian knapweed was observed in the Southwest Pasture. Rush skeletonweed has been identified and inventoried and was chemically treated in 2005; updated information is not currently available.

The overall rating for the Biotic Integrity attribute was rated as a slight to moderate departure from the reference condition for the Northwest and Southwest Pastures and a none to slight departure from the reference condition for the Northeast Pasture.

Evaluation Finding - Northwest, Northeast and Southwest Pastures are:

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

Rationale for Evaluation Finding - Northwest, Northeast and Southwest Pastures:

Diversity of the perennial species within the Northwest, Northeast and Southwest Pastures is as expected for areas that have burned by wildfire multiple times and have been reseeded and/or allowed to recover naturally. Deep-rooted perennial bunchgrasses are the dominant functional/structural group within most areas of the seeded plant communities. Perennial species are productive and capable of reproduction and recruitment of new seedlings. The 2013 grazing resumption data indicates that abundance and diversity of perennial grass species varies slightly across the seeded plant communities of the Northwest, Northeast and Southwest Pastures (Table 16) but species present within the pastures are appropriately productive and are capable of reproduction. Shrubs were absent from the seeded plant communities and perennial forbs were present in trace amounts.

The litter amount indicator rating deviated from the reference condition found in the ESD. The presence of seeded species can result in higher biomass production, resulting in more litter than is described in the ESD reference sheet, especially in seedlings. 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 ranged from being scattered throughout some sites to being present in large patches in other areas. Rush skeletonweed was noted as being present and more common along the road and in disturbed areas and one site containing Russian knapweed was identified. Invasive species such as cheatgrass and rush skeletonweed 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 of invasive or noxious plant species.

Wyoming big sagebrush has been aerially seeded in the three pastures in 2006, 2007 and 2011. However, the 2012 Kinyon Road Fire would likely have eliminated any seedlings that may have been present. Recovery of sagebrush is not expected to occur without a seed source and there was no sagebrush planted following the 2012 Kinyon Road Fire. The lack of shrub cover is apparent in all of the plant communities in the pastures. Shrubs function to catch snow and thereby increase infiltration and Sagebrush roots can redistribute small amounts (less than 0.3 inches) of water in the soil profile up to 1.5 meters in depth (Ryel et al., 2003). Although shrubs are generally lacking, the HAF data (Table 18) shows rabbitbrush present at 11 percent cover in the Northwest Pasture.

The combination of large statured, deep rooted perennial bunchgrasses and the presence of shallow rooted, perennial grass species allows the seeded vegetation communities within the Northwest, Northeast and Southwest Pastures Allotment to function to maintain life form diversity, production, native animal habitat, nutrient cycling, energy flow, and the hydrologic cycle. With the exception of recurring fire, current management is expected to provide for maintenance of seeded and native vegetation, native animal habitat, and ecological processes (nutrient cycling, hydrologic cycling, and energy flow) within the seeded plant communities. Therefore, the Northwest, Northeast and Southwest Pastures of the South Crows Nest Allotment are meeting Standard 5.

Evaluation of Standard 5 - Southeast Pasture:

Plant communities within the Southeast Pasture have been modified. Drill and aerial seedings have taken place throughout this pasture since the 1960s. The majority of the pasture was drill seeded following the 2006 Sailor Cap Fire, 2007 Murphy Complex Fire and 2011 Long Butte Fire. No reseeding was deemed necessary after the 2012 Kinyon Road Fire.

The 2013 grazing resumption monitoring data (Table 16) showed the seeded plant communities within the Southeast Pasture contained 24 percent cover Sandberg bluegrass, and crested wheatgrass, squirreltail, Thurber's needlegrass and western wheatgrass were recorded as 1 percent cover (each species). Cheatgrass was recorded as 7 percent cover. Shrubs were recorded as 0 percent cover, bare ground as 40 percent and biotic crust as 8 percent.

The 2012 cover data (Table 14) reflects 36 percent Sandberg bluegrass, 11 percent Thurber's needlegrass, 4 percent bluebunch wheatgrass and 2 percent squirreltail. Cheatgrass was recorded as 7 percent. Forbs were present as a minor component within the pasture and Wyoming big sagebrush was present as 3 percent, prior to the 2012 Kinyon Road Fire.

During the 2012 IIRH evaluation, the IDT evaluated two sites. Site SE_1 is located in the Southeast Pasture within a sagebrush "strip" that was aeri ally seeded following a wildfire. The field notes mention that shrubs are reduced; however, the functional/structural group indicator was rated as a none to slight departure from the reference condition. Cheatgrass and rush skeletonweed were noted during the IIRH monitoring to be scattered throughout the pasture; therefore, the indicator for invasive plants was rated moderate. Litter was evaluated using all layers of cover, which was 34 percent; therefore, the indicator for litter amount was rated as a slight to moderate departure from the reference condition. All indicators related to the Biotic Integrity attribute other than Litter Amount and Invasive Plants were rated none to slight.

Site SE_2 is located in the Southeast Pasture in a crested wheatgrass seeding. The IDT chose to evaluate this site for additional information in the pasture; however, no cover data was collected. Field notes mention that shrubs are not present and forbs are limited and less diverse; therefore, the functional/structural group indicator was rated as a moderate departure from the reference condition. Cheatgrass and rush skeletonweed were noted during the IIRH monitoring to be present in the pasture. The departure for invasive plants was rated slight to moderate. All indicators related to the Biotic Integrity attribute other than Functional/Structural Groups, Litter Amount and Invasive Plants were rated none to slight.

Rush skeletonweed has been identified and inventoried and was chemically treated in 2005; updated information is not currently available.

The overall rating for the Biotic Integrity attribute was rated as a none to slight departure from the reference condition for Site SE_1 and as a slight to moderate departure from the reference condition for Site SE_2.

Evaluation Finding - Southeast Pasture is:

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

Rationale for Evaluation Finding – Southeast Pasture:

Diversity of the perennial species within the Southeast Pasture is as expected for areas that have burned by wildfire multiple times and have been reseeded and/or allowed to recover naturally. However, deep-rooted perennial bunchgrasses were not the dominant functional/structural group within the two sites evaluated. The seeded plant communities of the Southeast Pasture do not have adequate desirable perennial vegetation to provide structural diversity for habitat or nutrient cycling. Declines in deep-rooted perennial bunchgrasses can result in a modification of nutrient cycling and energy flow due to changes in the above ground structure.

The litter amount indicator rating deviated from the reference condition found in the ESD. The presence of seeded species can result in higher biomass production, resulting in more litter than is described in the ESD reference sheet, especially in seedlings. 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 was noted as being present scattered throughout the site, as well as being present in large patches. Rush skeletonweed was noted as being present and more common along the road and in disturbed areas; however, the field notes do not indicate that any other invasive species were present at the evaluation sites. Invasive species such as cheatgrass and rush skeletonweed can become a threat to biotic integrity following large scale disturbances such as wildfire, especially when adequate desirable perennial species and biological soil crusts are not present within the seeded plant communities to hinder further spread of invasive or noxious plant species.

Wyoming big sagebrush has been aerially seeded in the three pastures in 2006, 2007 and 2011. However, the 2012 Kinyon Road Fire would likely have eliminated any seedlings that may have been present. Recovery of sagebrush is not expected to occur without a seed source and there was no sagebrush planted following the 2012 Kinyon Road Fire.

The reduced relative dominance of deep-rooted perennial bunchgrasses and/or lack of shrub cover is apparent in many of the plant communities of the pastures. Shrubs function to catch snow and thereby increase infiltration. Sagebrush roots can redistribute small amounts (less than 0.3 inches) of water in the soil profile up to 1.5 meters in depth (Ryel et al., 2003). The absence of shrubs in combination with a low abundance of deep-rooted perennial bunchgrasses in these areas may be impacting the overall hydrologic cycle. The decline in large statured bunchgrasses and shrubs in combination with the presence of invasive annual plants in these pastures puts the plant communities at an increased risk for loss of diversity following large scale disturbances such as wildfire, and decreases the ability to maintain native animal habitat, nutrient cycling, energy flow, and the hydrologic cycle.

The plant communities within the Southeast Pasture are not functioning to maintain native animal habitat or life form diversity due to the low abundance of deep-rooted perennial bunchgrasses, the presence of invasive and noxious species and lack of shrubs. Therefore, the Southeast Pasture of the South Crows Nest Allotment is not 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 South Crows Nest 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.

 X Standard Doesn't Apply

No water quality assessments have been completed within the allotment and beneficial uses have not been designated by Idaho Department of Environmental Quality as no intermittent or perennial water bodies are present within the allotment (IDEQ, 2014), therefore Standard 7 does not apply to 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 JFO, special status 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 1,198 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.).

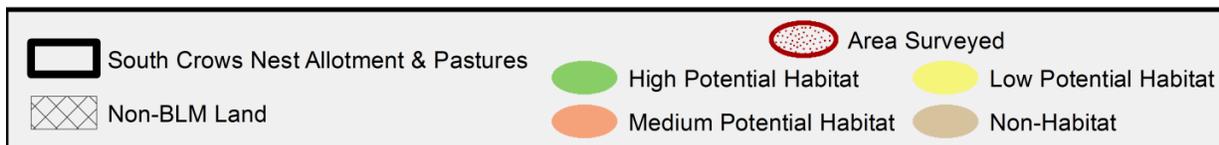
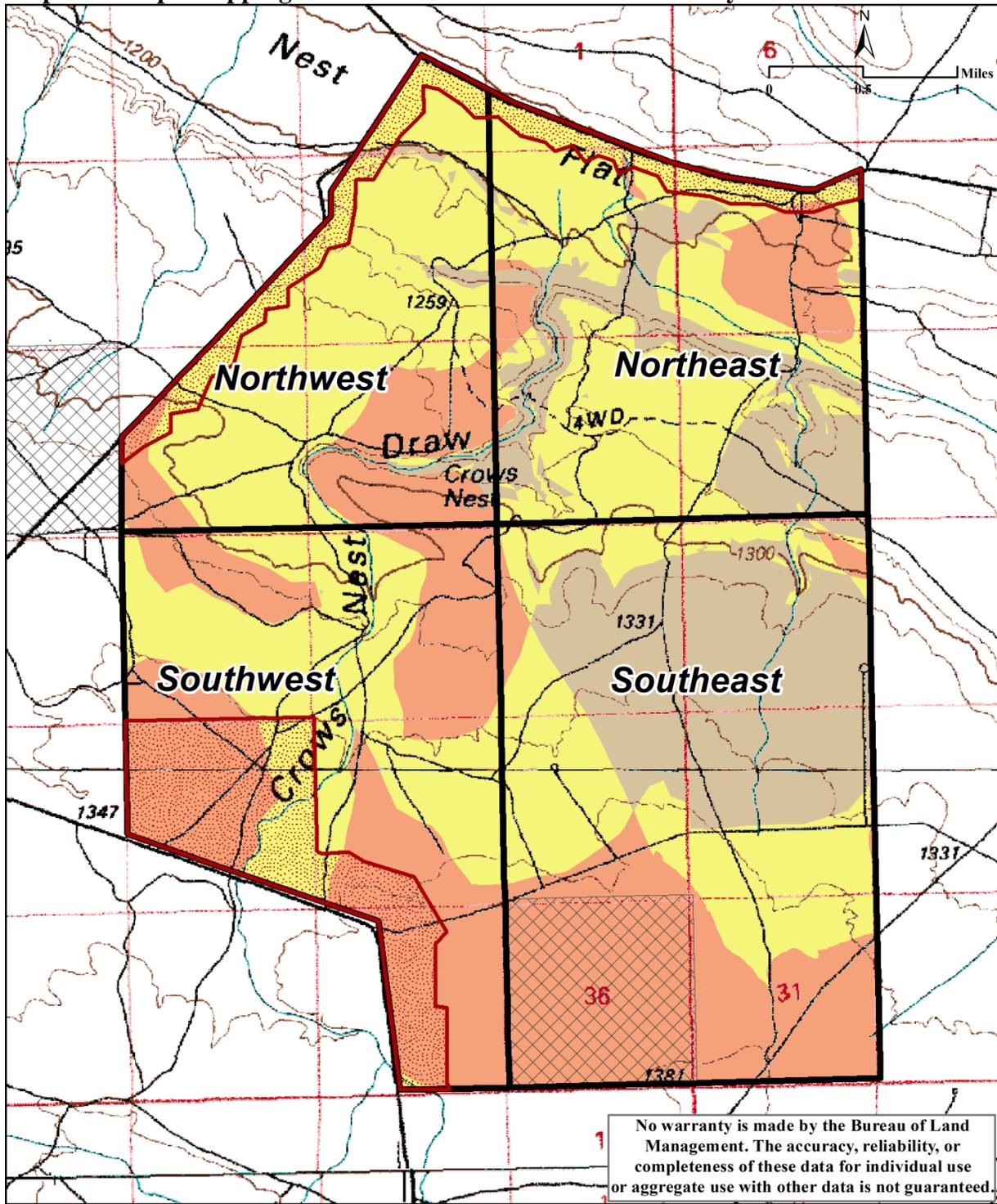
Slickspot peppergrass grows in the semiarid sagebrush-steppe ecosystem of southwestern Idaho. Interspersed within this habitat type, slickspot peppergrass can be found in visually distinct microsites known as slickspots (mini playas or natric sites) that act as small water basins and where the sodium and clay content is higher than adjacent, unoccupied habitat (Moseley, 1994).

The South Crows Nest Allotment contains 8,283 acres (79 percent of allotment) of potential slickspot peppergrass habitat (Map 7). 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 3,001 acres of medium potential, 5,281 acres of low potential, and 2,159 acres of non-habitat for slickspot peppergrass (Table 17). The nearest known occupied habitat for slickspot peppergrass is 12 miles to the west, on the west side of Clover Creek.

Table 17: Slickspot peppergrass potential habitat (acres)

Pasture	High	Medium	Low	Non-habitat
Northeast	0	303	1,447	702
Northwest	0	486	1,445	76
Southeast	0	640	1,126	1,381
Southwest	0	1,572	1,263	0

Map 7: Slickspot Peppergrass Potential Habitat and Areas Surveyed



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 South Crows Nest Allotment are discussed below.

There are no BLM sensitive or federally listed fish or aquatic invertebrates or their habitat within the allotment.

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 entire allotment has burned in wildfires and portions have burned multiple times essentially eliminating all sagebrush in the allotment. Following the Kinyon Road Fire of 2012 the BLM did not reseed sagebrush in the allotment. Without suitable sagebrush seed sources, recovery of

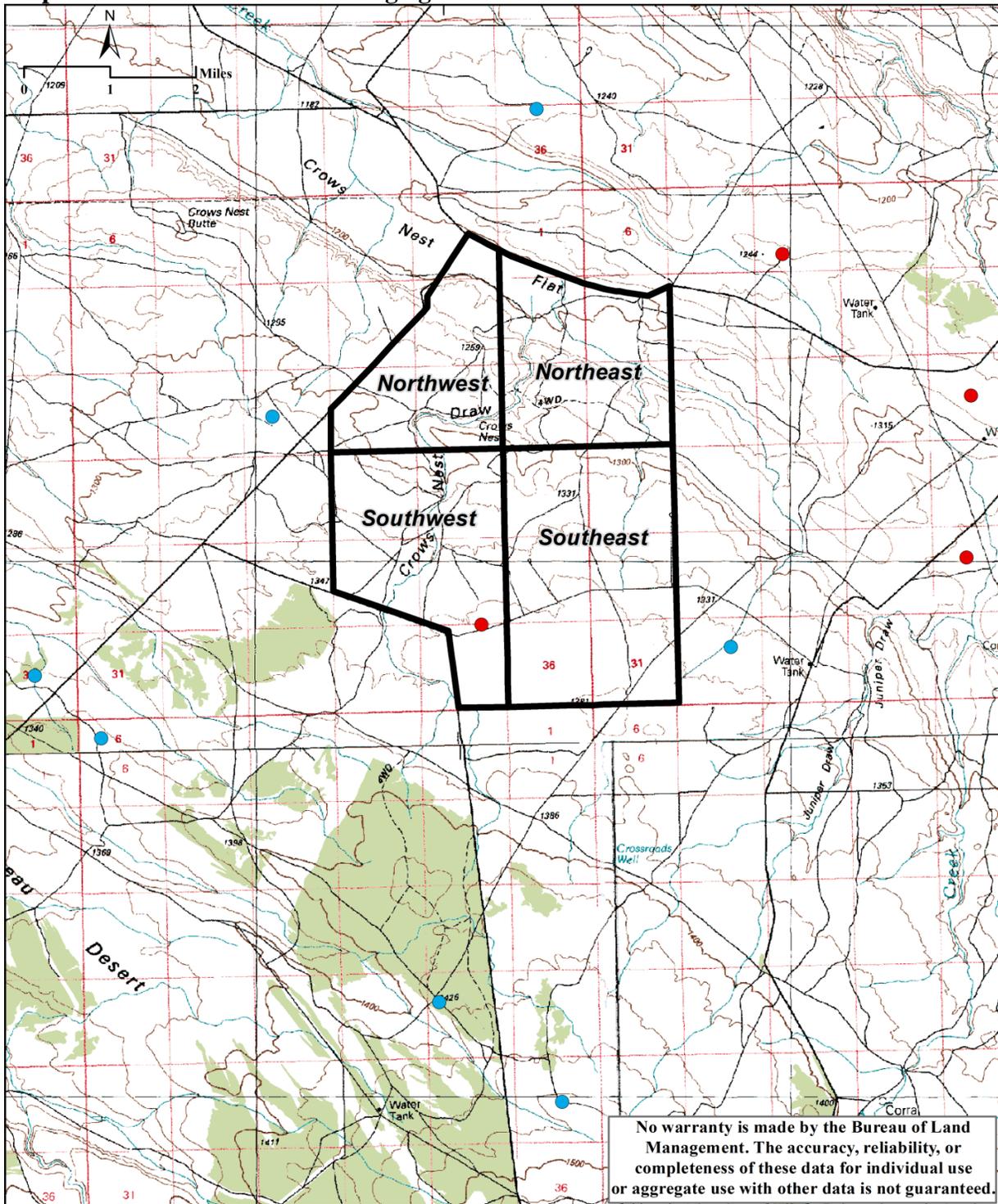
the sagebrush community needed for sage-grouse and other sagebrush dependent species is not expected to occur.

Wildland fire is expected to continue in the area.

Large areas of sagebrush occur southwest of the allotment in the Horse Butte and Juniper Ranch Allotments (Map 8).

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Map 8: Shrubland Habitat and Sage-grouse Leaks



 South Crows Nest Allotment & Pastures	 Shrubland	Management Status
 Non-BLM Land		 Undetermined
		 Unoccupied

The South Crows Nest Allotment contains 1 unoccupied sage-grouse lek. Within five miles there are 7 undetermined (due to a lack of recent surveys) and 4 unoccupied sage-grouse leks (Map 8). Leks are considered occupied if there has been documented sage-grouse activity within the past five years.

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 prior to the Kinyon Road Fire. Assessments were conducted at four HAF sites within the allotment including **NE**- Northeast Pasture, **NW_2**- Northwest Pasture, **SE_1**- Southeast Pasture, and **SW**- Southwest Pasture (Map 6).

No sage-grouse sign was observed during the assessments; however, sage-grouse droppings and feathers were observed during the IIRH field visit to HAF site NE. 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 18.

Table 18: Sage-grouse Habitat Assessment worksheet for nesting and early brood rearing habitat (arid site)

Habitat Indicator	Suitable Habitat	Marginal Habitat	Unsuitable Habitat
	15 – 25%	10 - < 15% or > 25%	< 10%
Average Sagebrush Canopy Cover			NE (0), NW_2 (0% sagebrush, 13% yellow rabbitbrush), SE_1 (0%), SW (0%)
	12 - 30"	10 -11" or >30"	< 10"
Average Sagebrush Height			NE (0%), NW_2 (0%), SE_1 (0%), SW (0%)
	Spreading	Mix of spreading and columnar	Columnar
Sagebrush Growth Form			NE, NW_2, SE_1, SW
	≥ 7"	5 - < 7"	< 5"
Average Grass Height		NE(5.9"), SE_1(5.4"), SW(6.1")	NW_2(2.6")
	≥ 10%	5 - < 10%	< 5%
Average Perennial Grass Canopy Cover	NE (54%), NW_2 (51%), SE_1 (63%), SW (59%)		
	≥ 5%	3 - < 5%	< 3%
Average Forb Canopy Cover	NE (9%), NW_2 (6%), SE_1 (12.5%), SW (7%)		
	Forbs common with at least a few preferred species common	Forbs common, but only 1 or 2 preferred species present	Forbs rare to sparsely present
Preferred Forb Abundance and Diversity	NE, NW_2, SE_1, SW		

Habitat Indicator	Suitable Habitat	Marginal Habitat	Unsuitable Habitat
Overall Site Evaluation			NE, NW_2, SE_1, SW
Pasture Evaluation			Northeast, Northwest, Southeast, Southwest

The Northeast Pasture contains one HAF site. The entire pasture has burned and does not contain any areas mapped as sagebrush making it unsuitable for sage-grouse. HAF site NE is mapped as recent burn and will likely return as a Sandberg bluegrass vegetation community. Attributes at HAF site NE were rated suitable for all grass and forb habitat indicators except for grass height (marginal). Six forb species were observed with the most common being longleaf phlox (*Phlox longifolia*) and sagebrush phlox (*Phlox aculeata*). Cheatgrass was observed at 5.5 percent cover (all layers).

The Northwest Pasture contains one HAF site. The entire pasture has burned and does not contain any areas mapped as sagebrush making it unsuitable for sage-grouse. HAF site NW_2 is mapped as recent burn and will likely return as a Rabbitbrush/ Sandberg bluegrass vegetation community. Attributes at HAF site NW_2 were rated suitable for all grass and forb habitat indicators except for grass height (unsuitable). Nine forb species were observed with the most common being longleaf phlox, sagebrush phlox, shaggy fleabane (*Erigeron pumilus*), and salsify (*Tragopogon dubius*). Cheatgrass was observed at 4 percent cover (all layers).

The Southeast Pasture contains one HAF site. The entire pasture has burned and does not contain any areas mapped as sagebrush making it unsuitable for sage-grouse. HAF site SE_1 is mapped as recent burn and will likely return as a Sandberg bluegrass vegetation community. Attributes at HAF site SE_1 were rated suitable for all grass and forb habitat indicators except for grass height (marginal). Eight forb species were observed with the only common forb being longleaf phlox. Cheatgrass was observed at 10.5 percent cover (all layers).

The Southwest Pasture contains one HAF site. The entire pasture has burned and does not contain any areas mapped as sagebrush making it unsuitable for sage-grouse. HAF site SW is mapped as recent burn and will likely return as a Sandberg bluegrass vegetation community. Attributes at HAF site SW were rated suitable for all grass and forb habitat indicators except for grass height (marginal). Nine forb species were observed with the most common being longleaf phlox, and Nevada onion (*Allium nevadense*). Cheatgrass was observed at 7 percent cover (all layers).

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

Late Brood Rearing Habitat

No late brood rearing habitat is present in the allotment. The allotment does not contain areas where moisture collects to maintain forbs throughout the summer.

Winter Habitat

The allotment is unsuitable for wintering sage-grouse since 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 nest (Nest F26) in the allotment (Table 19). The nest is located in a juniper skeleton in Crows Nest Draw in the Northwest Pasture. Wildfires have killed all the junipers in the draw but the burned skeletons still support raptor nests.

Table 19: 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
F26	--	--	--	--	--	2	1	A	--	--	--	--	I	S	S	S	I	3	A

¹Surveys were not conducted in years indicated by dashes (--). 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. For years when the nest was occupied by a Swainson’s hawk an S was recorded.

Juniper skeletons along Crows Nest Draw provide suitable nesting habitat in the Northeast (1 dead junipers) and Southwest (<6 dead junipers) Pastures. No trees are present in the remaining pastures. The allotment is 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 sagebrush in the allotment making it unsuitable for Brewer's sparrow nesting.

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 sagebrush in the allotment making it unsuitable for Loggerhead shrike nesting. Some of the remaining juniper skeletons may provide nesting habitat for a few loggerhead shrikes in the Crows Nest Draw area.

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 sagebrush in the allotment making it unsuitable for sagebrush sparrow nesting.

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 Landré, 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% of its winter diet (Green and Flinders, 1980). Grasses and forbs make up more of the diet in the late spring into early summer.

Without sagebrush the allotment is unsuitable for pygmy rabbits.

Piute ground squirrel (*Uroditellus 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 allotment to perennial grasslands. Cheatgrass was noted as being present scattered throughout the pastures, as well as being present in large patches. Cheatgrass communities can support ground squirrel populations, but populations in such areas are more susceptible to drought and therefore are less stable than those in shrub and perennial grass mosaics (Yensen et al., 1992; Van Horne et al., 1997). Overall, the allotment provides marginal habitat 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 not present in the allotment. Potential roosting habitat lies along the cliffs associated with Clover Creek which is 6 miles to the west (outside the allotment). Spotted bats may forage over the allotment. No perennial water sources are present in the allotment.

Evaluation of Standard 8

There are no known BLM sensitive or federally listed plants within the South Crows Nest Allotment. Approximately 4,521 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 3,001 acres of medium potential and 5,281 acres of low potential habitat for slickspot peppergrass. The nearest known occupied habitat for slickspot peppergrass is 12 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.

Habitat for BLM sensitive wildlife species occurs within the allotment. Overall habitat ratings for each species by pasture are shown in Table 20.

Table 20: Overall habitat suitability for BLM sensitive wildlife species by pasture

Species Name and Type of Habitat	Northeast	Northwest	Southeast	Southwest
Sage-grouse (nesting & early brood rearing)	U	U	U	U
(late brood rearing)	U	U	U	U
(winter)	U	U	U	U
Ferruginous hawk (nesting)	U	S	U	S
(foraging)	M	M	M	M
Brewer's sparrow (nesting)	U	U	U	U
Sagebrush sparrow (nesting)	U	U	U	U
Loggerhead shrike (nesting)	U	U	U	U
Pygmy rabbit (year round)	U	U	U	U
Piute ground squirrel (year round)	M	M	M	M
Spotted bat (roosting)	U	U	U	U
(foraging)	M	M	M	M

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 habitat is unsuitable since wildfires have eliminated sagebrush in the allotment. Following the Kinyon Road Fire of 2012 the BLM did not reseed sagebrush. Without suitable sagebrush seed sources, recovery of the sagebrush community needed for sage-grouse and other sagebrush dependent species is not expected to occur.

Juniper skeletons along Crows Nest Draw provide suitable nesting habitat for ferruginous hawks in the Northwest and Southwest Pastures. No trees are present in the remaining pastures. The allotment contain 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.

Wildfires have converted shrub-steppe habitats in the allotment to perennial grassland. Cheatgrass was noted as being present scattered throughout the site, as well as being present in large patches. Over time cheatgrass can limit native perennial and annual forbs and increase fine fuels making wildfires more likely. Cheatgrass communities can support ground squirrel populations but populations in such areas are more susceptible to drought and therefore are less stable than those in shrub and perennial grass mosaics (Yensen et al., 1992; Van Horne et al., 1997). Overall, the allotment provides marginal habitat for Piute ground squirrels.

Spotted bat roosting habitat is not found in the allotment. The allotment is marginal for spotted bat foraging since there are limited habitat features that would attract bats to this allotment.

Evaluation Finding - Northwest, Northeast, Southeast, and Southwest Pastures are:

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

Rationale for Evaluation Finding

The entire South Crows Nest Allotment has burned at least three times over the last twenty years and some portions of the allotment have burned up to six times in that same time period. These fires have essentially eliminated all sagebrush in the allotment. Following the most recent fire, the Kinyon Road Fire of 2012, the BLM did not reseed sagebrush in the allotment. Without suitable sagebrush seed sources, recovery of the sagebrush community needed for sage-grouse and other sagebrush dependent species is not expected to occur. In addition, cheatgrass was noted as being present scattered throughout the pastures, as well as being present in large patches. Over time, cheatgrass can limit native perennial and annual forbs and increase fine fuels making wildfires more likely. Wildland fires are expected to continue in the area. Therefore, the Northwest, Northeast, Southeast and Southwest Pastures of the South Crows Nest Allotment are not meeting Standard 8.

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APPENDIX A: PROCESS FOR GENERATING SAGE-GROUSE HABITAT ASSESSMENT FRAMEWORK SAMPLE SITES

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 hymenoides</i>	Indian ricegrass	Native	NE
<i>Achnatherum thurberianum</i>	Thurber's needlegrass	Native	SE_1, SW
<i>Agropyron cristatum</i>	Crested wheatgrass	Exotic, Seeded	NE, NW, NW_2, SE_2, SW
<i>Elymus elymoides</i>	Squirreltail	Native	NE, NW, SE_1, SE_2, SW
<i>Leymus cinereus</i>	Basin wildrye	Native	NE, SW
<i>Pascopyrum smithii</i>	Western wheatgrass	Native	SE_1
<i>Poa secunda</i>	Sandberg bluegrass	Native	NE, NW, NW_2, SE_1, SE_2, SW
<i>Pseudoroegneria spicata</i>	Bluebunch wheatgrass	Native, Seeded	NE, SE_1, SE_2
Annual Grasses			
<i>Bromus tectorum</i>	Cheatgrass	Exotic, Invasive	NE, NW, NW_2, SE_1, SW
<i>Vulpia microstachys</i>	Small fescue	Native	NE
Perennial Forbs			
<i>Allium nevadense</i>	Nevada onion	Native	SW
<i>Astragalus atratus</i>	Mourning milkvetch	Native	SW
<i>Astragalus lentiginosus</i>	Freckled milkvetch	Native	NE, NW, SE_1, SW
<i>Astragalus purshii</i>	Woollypod milkvetch	Native	NE, NW, SE_1
<i>Castilleja angustifolia</i>	Northwestern Indian paintbrush	Native	SE_1
<i>Crepis acuminata</i>	Tapertip hawkbeard	Native, Sage-grouse Preferred	NW, NW_2, SE_1, SW
<i>Delphinium andersonii</i>	Anderson's larkspur	Native	NW_2
<i>Erigeron pumilus</i>	Shaggy fleabane	Native, Sage-grouse Preferred	NW_2, SW
<i>Kochia prostrata</i>	Forage kochia	Exotic	SE_1
<i>Linanthus pungens</i>	Granite prickly phlox	Native	SW
<i>Machaeranthera canescens</i>	Hoary tansyaster	Native	NE, NW, NW_2, SE_1, SW
<i>Phlox aculeata</i>	Sagebrush phlox	Native, Sage-grouse Preferred	NE, NW, NW_2, SE_1, SE_2, SW
<i>Phlox hoodii</i>	Spiny phlox	Native, Sage-grouse Preferred	NE, NW, SE_1, SW
<i>Phlox longifolia</i>	Longleaf phlox	Native, Sage-grouse Preferred	NE, NW_2, SE_1, SW
<i>Tragopogon dubius</i>	Yellow salsify	Exotic, Sage-grouse Preferred	NE, NW, NW_2, SE_1, SE_2, SW
<i>Zigadenus venenosus</i>	Meadow deathcamas	Native	NW, SE_1, SW
Annual Forbs			
<i>Agoseris glauca</i>	Pale agoseris	Native, Sage-grouse Preferred	SW
<i>Agoseris heterophylla</i>	Annual agoseris	Native, Sage-grouse Preferred	NW_2
<i>Alyssum desertorum</i>	Desert madwort	Exotic	NW
<i>Ceratocephala testiculatus</i>	Curvseed butterwort	Exotic	NW
<i>Epilobium brachycarpum</i>	Tall annual willowherb	Native, Sage-grouse Preferred	NE, NW_2, SE_1, SW
<i>Erodium cicutarium</i>	Redstem stork's bill	Exotic	NW_2
<i>Halogeton glomeratus</i>	Saltlover	Exotic	NW, SW

Scientific Name	Common Name	Species Type	Site(s) where species occurred
<i>Lactuca serriola</i>	Prickly lettuce	Exotic, Sage-grouse Preferred	NE, NW, NW_2, SE_1, SW
<i>Lepidium perfoliatum</i>	Clasping pepperweed	Exotic	NW, NW_2, SW
<i>Salsola kali</i>	Russian thistle	Exotic	NE, NW
<i>Sisymbrium altissimum</i>	Tall tumbled mustard	Exotic	NW_2, SW
Noxious Weeds			
<i>Acroptilon repens</i>	Russian knapweed	Exotic, Invasive	SW
<i>Chondrilla juncea</i>	Rush skeletonweed	Exotic, Invasive	NE, NW, SE_2
<i>Onopordum acanthium</i>	Scotch thistle	Exotic, Invasive	SW
Shrubs			
<i>Artemisia tridentata ssp. wyomingensis</i>	Wyoming big sagebrush	Native	NE, NW, SE_1, SE_2, SW
<i>Atriplex canescens</i>	Fourwing saltbush	Native, Seeded	NE
<i>Chrysothamnus viscidiflorus</i>	Yellow rabbitbrush	Native	NW, NW_2, SE_1, SW
<i>Ericameria nauseosa</i>	Rubber rabbitbrush	Native	NE, NW_2, SE_1, SE_2, SW

This list does not include all plants that can be found in the South Crows Nest Allotment and is not exhaustive. Scientific and common names were derived from the USDA NRSC Plant Database (USDA and NRCS, 2013b).