

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

RANGELAND HEALTH ASSESSMENT AND EVALUATION REPORT

KINYON ALLOTMENT #01046

October 16, 2015

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ALLOTMENT INFORMATION

Field Office: Jarbidge Field Office (JFO)

Name of Permittee: Joe Kinyon

Allotment Name/Number: Kinyon Allotment (#01046)

Date of Field Assessment: May 7, 8, 2014

Stream Miles on Public Land (miles): 0

Table 1. Kinyon Allotment acres

Total Acres	BLM Acres	State Acres	Private Acres	Other Acres
18,978	17,710	640	628	0

Table 2. Assessment participants

Name	Position
Kate Crane	TFD Fisheries Biologist
Jim Klott	JFO Wildlife Biologist
Michael Haney	JFO Wildlife Biologist and Botanist
Krystle Wengreen	JFO Wild Horse and Burro Specialist
Dan Strickler	JFO Rangeland Management Specialist
Bonnie Ross	TFD GIS Specialist

CURRENT PERMITTED LIVESTOCK GRAZING USE

Total Active Use: 881 Animal Unit Months (AUMs)

Livestock Type: Cattle

Livestock Numbers:

122 Cattle

150 Cattle

8 Horses

Season of Use:

04/01 to 07/15

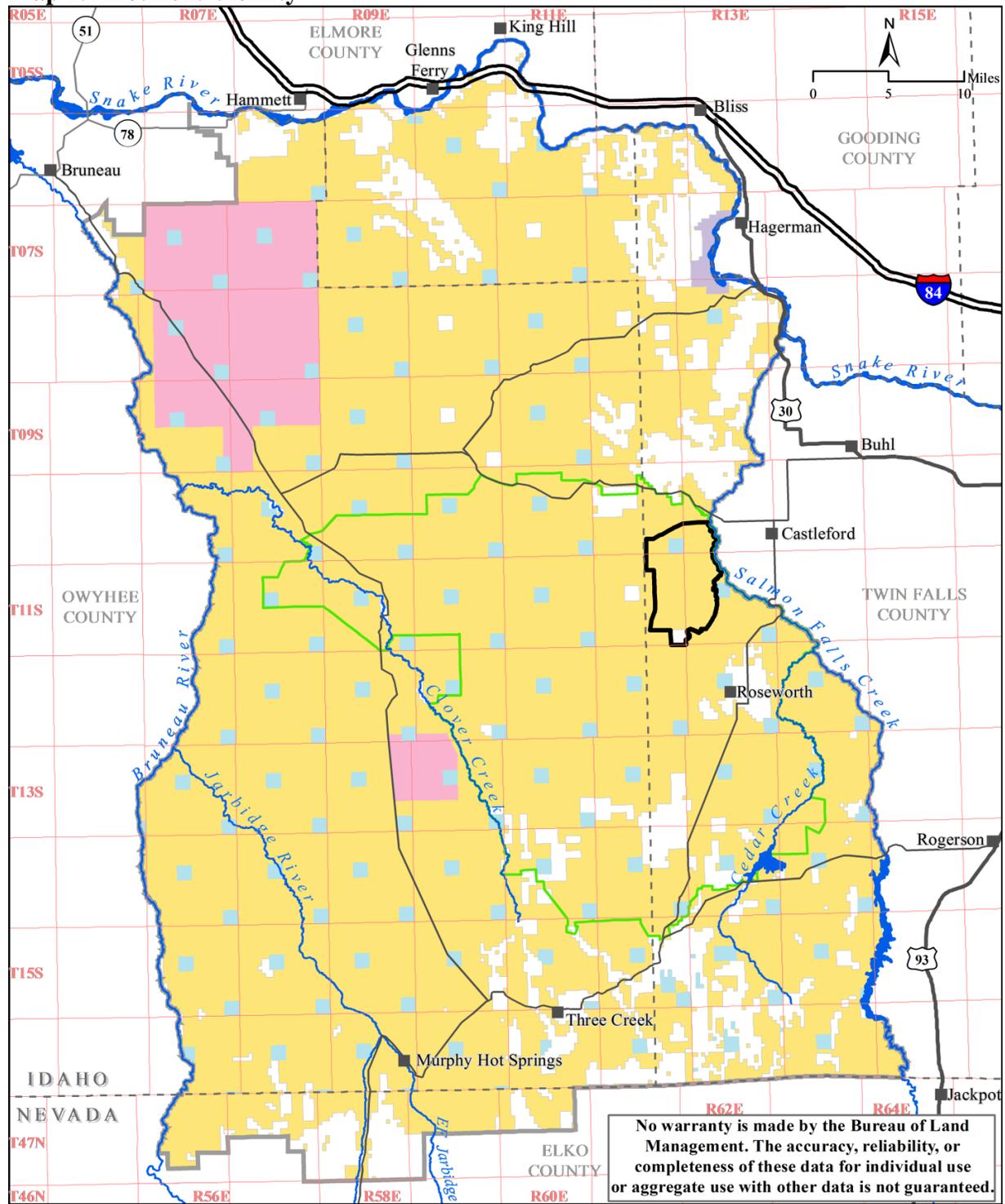
11/20 to 02/07

04/01 to 11/30

Current Land Use Plan: 1987 Jarbidge Resource Management Plan (RMP)

Current Stocking Level: 20.1 Acres/AUM

Map 1. Allotment Vicinity



ALLOTMENT PROFILE

The Kinyon Allotment is located approximately 4 miles west of Castleford, Idaho (Map 1). The elevation ranges from approximately 3,800 feet to 4,400 feet.

Climate

Climatic conditions in south central Idaho are characterized by low humidity, clear skies, large diurnal variation in temperature, and wind patterns reflecting the westerly direction of the prevailing storm track. Annual rainfall in the Kinyon Allotment ranges from 8 to 12 inches. The bulk of the moisture typically falls as rain and snow from 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 to 12 inch precipitation zone approximately eight miles west of the Kinyon Allotment. 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, ad 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

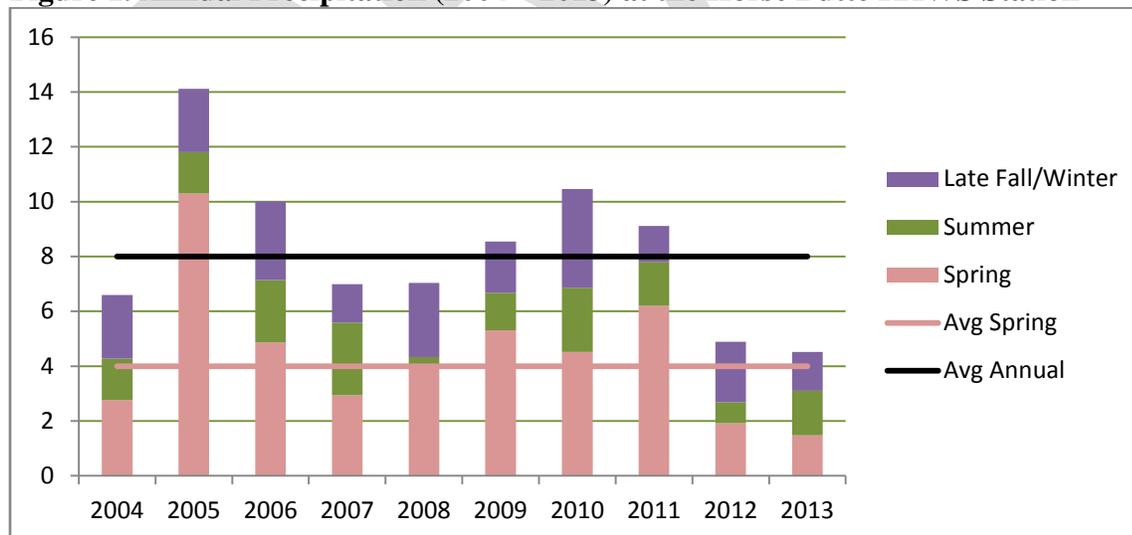
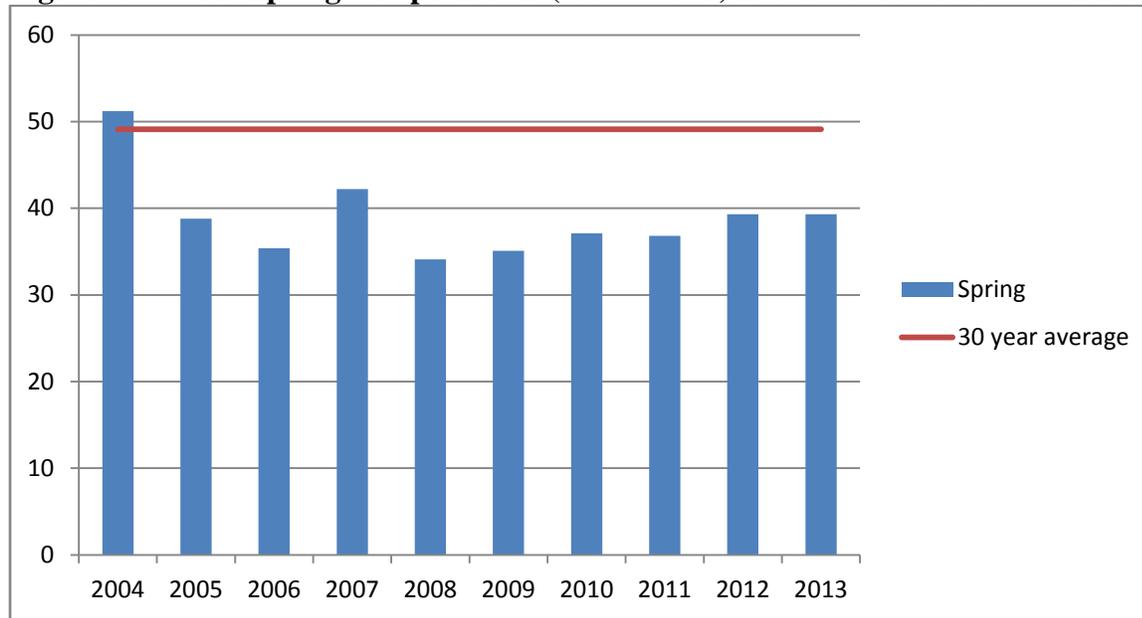


Figure 2. Annual Spring Temperatures (2004 – 2013) at the Horse Butte RAWS Station



Grazing Management

The Kinyon Allotment is divided into five pastures, the Northeast, Northwest, Southeast, South, and Southwest (Table 3). Most of the allotment/pasture boundaries are completely fenced; however, some natural barriers (i.e. rim rocks, etc.) are used as pasture/allotment boundaries along the eastern border of the allotment adjacent to Salmon Falls Creek and Devil Creek. Livestock water is available throughout the allotment in pipeline-fed water troughs (Map 2). Livestock grazing is permitted in the allotment from April 1 to February 7, with a permitted active use of 881 AUMs and 305 exchange-of-use AUMs. The exchange-of-use AUMs are attached to private and state lands fenced into the allotment. Historically the season of use within the allotment was approximately year-round and cattle were rotated through the pastures, with no formal grazing rotation.

Table 3. Acreage by pasture and ownership

Pasture Name	Public	State	Private	Total*
Northeast	2,960	0	0	2,960
Northwest	4,235	640	0	4,875
Southeast	3,272	0	0	3,272
South	4,592	0	0	4,592
Southwest	2,581	0	0	2,581
Allotment Total[^]	17,640	640	0	18,280

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

[^]An additional 70 acres administered by the BLM occur within the Kinyon Allotment; however, these acres are within the canyon and do not occur within any pasture. The 628 acres of private are within the Kinyon Allotment boundary, but are not within a pasture.

Currently, the Kinyon Allotment is subject to Chief U. S. District Judge B. Lynn Winmill’s Decision and Order of February 26, 2009. Under the Order, the Bureau of Land Management

(BLM) is directed to adjust livestock grazing to maintain and enhance sage-grouse, pygmy rabbit, and slickspot peppergrass habitat. A deferred rotation system was initiated in 2009 in response to the Court Order. Within the deferred rotation, an emphasis has been placed on pastures or areas containing key sage-grouse nesting habitat. The livestock grazing schedule and rotation is outlined each year in an Annual Grazing Agreement. Wildfires have greatly influenced the grazing rotation within the allotment since 2005. The Southwest and Southeast Pastures previously contained the majority of greater sage-grouse (*Centrocercus urophasianus*; sage-grouse) habitat and were deferred until after June 5 each year. However, recent wildfires have removed nearly all of the sage-grouse habitat throughout the Southeast and Southwest Pastures.

Actual use is not required by the current grazing permit in the Kinyon Allotment, therefore actual use by pasture from 2004 through 2013 is not available. The number of AUMs billed for the entire allotment is shown in Table 4 for 2004 through 2013, which also includes exchange-of-use AUMs. Since the 2009 Court Order, use in the allotment has closely followed the grazing schedule outlined in the Annual Grazing Agreements; therefore the scheduled use is shown in Table 6. Percent utilization by pasture is shown in Table 5 for 2004 through 2008 and Table 6 for 2009 through 2013. Utilization has been measured on bluebunch wheatgrass (*Pseudoroegneria spicata*), squirreltail (*Elymus elymoides*), Thurber's needlegrass (*Achnatherum thurberianum*), Sandberg bluegrass (*Poa secunda*), and crested wheatgrass (*Agropyron cristatum*). Utilization data was collected by the Height-Weight Method (Cooperative Extension Service et al., 1999). Locations of key utilization sites are shown on Map 2.

Up until 2004, when a Federal District Court order disallowed Temporary Non-Renewable (TNR) authorizations, TNR had been authorized 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 between 1997 and 2003, which is 524 AUMs, when forage is available. All billed use values shown in Tables 4 and 6 that exceed the active use are TNR AUMs. Since 2004, billed use, including active use and TNR, has averaged approximately 901 AUMs.

Table 4. AUMs billed for Kinyon Allotment from 2004 through 2013

Year^	AUMS billed	Exchange of Use AUMs Billed
2004	965	109
2005	1258	94
2006	643	95
2007	643	95
2008	1331	166
2009	688*	143
2010	947	254
2011	894	306
2012	884	307
2013	756	296

^ Scheduled Use by pasture is not available for 2004 through 2008.

*There is a discrepancy between the bill and the annual grazing agreement, the actual AUMs billed is shown above, although it is lower than the scheduled AUMs shown in Table 3.

Table 5. Percent Utilization by Pasture from 2004 through 2008

Pasture	Grazing Year	Percent Utilization				
		Bluebunch wheatgrass	Squirreltail	Thurber's needlegrass	Sandberg bluegrass	Crested wheatgrass
Northeast	2004	-	-	-	-	-
	2005	-	-	-	-	21%
	2006	-	-	-	-	-
	2007	1%	-	-	-	2%
	2008	30%	-	-	-	23%
Northwest	2004	-	-	-	-	-
	2005	-	-	-	-	-
	2006	-	-	-	-	-
	2007	7%	-	-	-	-
	2008	53%	-	-	-	-
Southeast	2004	-	21%	44%	-	62%
	2005	-	-	-	-	42%
	2006	-	-	-	16%	36%
	2007	14%	-	-	6%	30%
	2008	1%	-	-	-	13%
South	2004	-	-	-	-	-
	2005	-	-	-	-	-
	2006	-	-	-	-	40%
	2007	-	-	-	13%	22%
	2008	-	-	-	4%	5%
Southwest	2004	-	27%	51%	-	48%
	2005	-	-	-	-	-
	2006	-	-	-	-	-
	2007	4%	-	-	2%	-
	2008	4%	-	-	15%	-

-Utilization data not recorded, or species is not present or is not a key species for utilization monitoring.

Table 6. Scheduled Grazing Use and Percent Utilization by Pasture for 2009 through 2013

Pasture	Grazing Year	Scheduled Use			Percent Utilization			
		Number of Cattle	Season of Use	AUMs Billed^	Bluebunch wheatgrass	Squirreltail	Sandberg bluegrass	Crested wheatgrass
Northeast	2009	100	01/01-02/28	194	13%	-	-	13%
	2010	100	03/01-04/30	201	-	-	-	12%
	2011	100	03/01-05/31	303	-	-	-	14%

Pasture	Grazing Year	Scheduled Use			Percent Utilization			
		Number of Cattle	Season of Use	AUMs Billed^	Bluebunch wheatgrass	Squirreltail	Sandberg bluegrass	Crested wheatgrass
	2012	100 40	05/01-07/12 07/13-02/28	1000	-	-	-	-
	2013	63	03/01-06/30	253	-	-	-	41%
Northwest	2009	100 100	08/01-10/15 11/15-12/31	405	29%	-	-	-
	2010	100 100	05/01-07/31; 02/01-02/28	395	-	-	-	-
	2011	100	06/01-09/14	349	12%	-	-	-
	2012	40	07/13-02/28	760	-	-	-	-
	2013	100	07/01-10/31	503	5%	-	-	-
Southeast	2009	100	06/21-07/31	135	13%	-	0%	-
	2010	0	Rested	0	-	-	-	-
	2011	100	09/15-10/31	155	-	-	-	3%
	2012	0	Closed due to wildfire	0	-	-	-	-
	2013	0	Closed due to wildfire	0	-	-	-	-
South	2009	100	03/01-06/20	368	-	-	0%	25%
	2010	100	11/01-01/31	303	-	-	-	-
	2011	100	11/01-02/28	395	-	-	-	-
	2012	100	03/01-04/30	201	-	-	-	-
	2013	100	11/01-02/28	296	-	-	-	19%
Southwest	2009	0	Rested	0	3%	1%	-	-
	2010	100	08/01-10/31	303	-	-	-	-

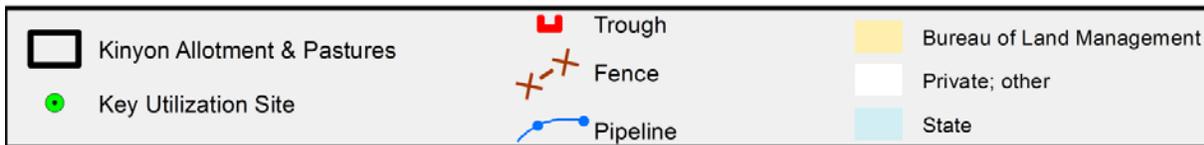
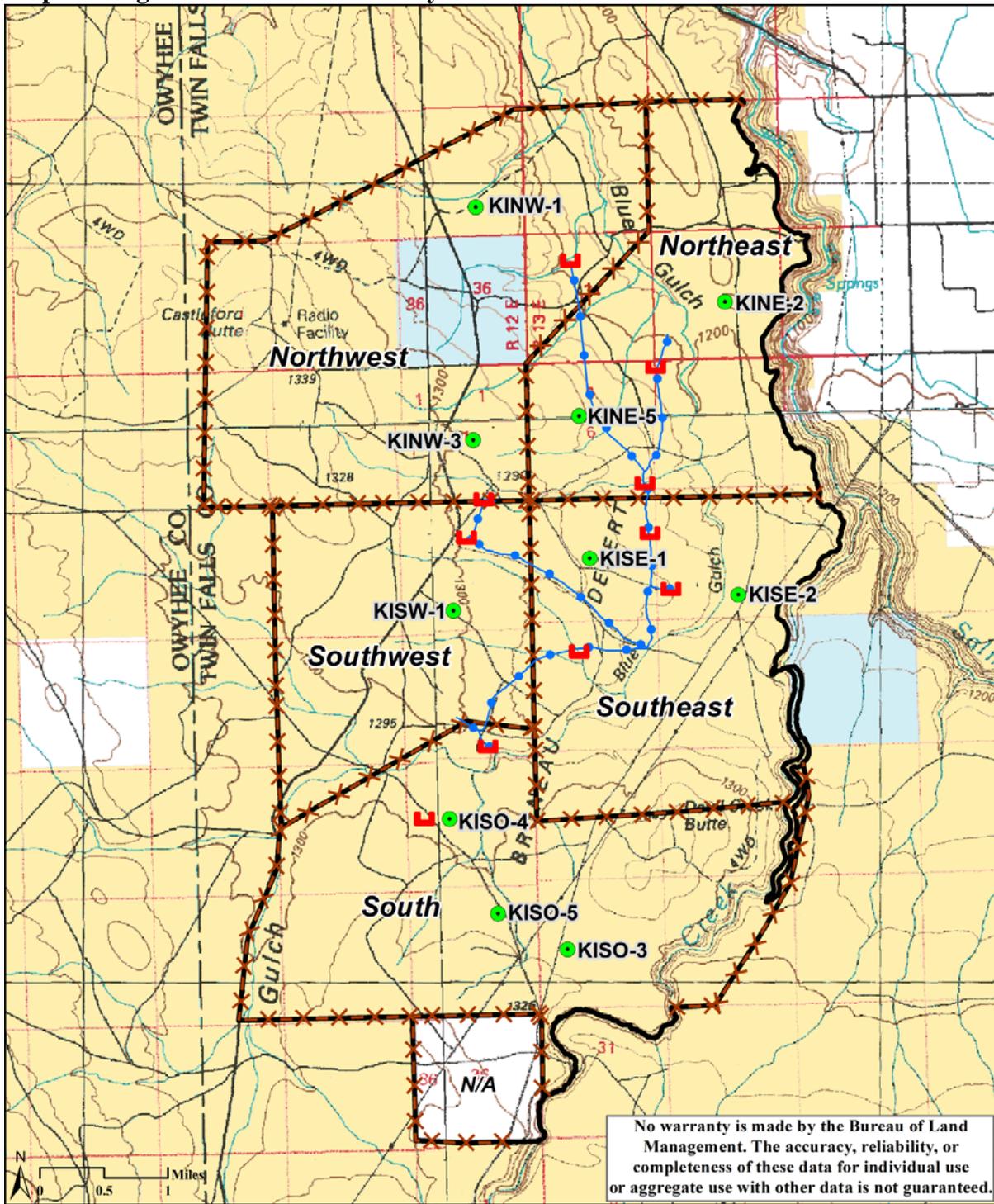
Pasture	Grazing Year	Scheduled Use			Percent Utilization			
		Number of Cattle	Season of Use	AUMs Billed^	Bluebunch wheatgrass	Squirreltail	Sandberg bluegrass	Crested wheatgrass
	2011	0	Closed due to wildfire	0	-	-	-	-
	2012	0	Closed due to wildfire	0	-	-	-	-
	2013	0	Closed due to wildfire	0	-	-	-	-

-Utilization data not recorded, or species is not present or is not a key species for utilization monitoring.

^ Includes Exchange of Use AUMs, see Table 1 for specific amount billed annually.

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Map 2. Range Infrastructures and Key Utilization Sites



Vegetation

Vegetation in the Kinyon 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).

Currently, the allotment is predominantly vegetated with a mixture of perennial grass species, with a reduced brush component. The allotment historically has been a shrub steppe plant community but has been greatly affected by wildfires over the last twenty years. Nearly the entire allotment (98%) has burned at least once over the last twenty years, and portions of some pastures have burned two to four times in the last twenty years (Table 7, Map 3). As a result of the many wildfires and subsequent rehabilitation efforts, plant communities within the allotment have been modified from their native state.

In the 1960s and 1970s, portions of the allotment, mainly in the Northwest and Southwest Pastures, were seeded with crested wheatgrass to reduce sagebrush cover and provide forage for livestock use. Many of these seeded areas were sprayed, and subsequently drill seeded. Following the 1975 Blue Gulch Fire, approximately 1,600 acres were seeded to crested wheatgrass in the Northeast and Southeast Pastures. The 1995 Blue Gulch Fire burned 3,500 acres mainly in the South Pasture, with a small portion in the Southwest Pasture and was subsequently drill seeded with crested wheatgrass. The burned areas were also aerially seeded with Wyoming sagebrush, yellow sweetclover (*Melilotus officinalis*), and Ladak alfalfa (*Medicago sativa*).

The 2005 Clover Fire burned over 9,500 acres within the Kinyon Allotment and just over 8,000 acres were drill seeded within all five pastures. The drill seed mix included Secar Snake River wheatgrass (*Elymus wawawaiensis*), which was recorded as bluebunch wheatgrass, Sandberg bluegrass, squirreltail, Sainfoin (*Onobrychis* Mill.), Lewis flax (*Linum lewisii*), and Ladak alfalfa. The burned areas were also aerially seeded with Wyoming sagebrush.

In 2006 the Blue Fire burned approximately 1,000 acres in the South Pasture of the Kinyon Allotment. Approximately 450 acres of the burned area was aerially seeded with Wyoming sagebrush.

The 2007 Murphy Complex Fire (also known as the Elk Mountain Fire), burned just over 3,800 acres in the Northwest and Southwest Pastures of the Kinyon Allotment. The majority of the

acres burned were drill seeded following the 2005 Clover Fire, so the areas were only aerially seeded with Wyoming sagebrush.

The 2010 Long Butte Fire burned approximately 3,800 acres of the Kinyon Allotment within the Northwest, Southwest, Southeast, and South Pastures. Approximately 1,500 acres were drill seeded with Anatone bluebunch wheatgrass (*Elymus wawawaiensis*), Secar Snake River wheatgrass, Basin wildrye (*Leymus cinereus*), squirreltail, Siberian wheatgrass (*Agropyron fragile*), globemallow (*Sphaeralcea munroan*), Lewis flax, and alfalfa. The entire burned area was aerially seeded with Wyoming big sagebrush.

The 2012 Kinyon Road Fire burned approximately 14,000 acres of the Kinyon Allotment, which is almost 80 percent of the entire allotment. The only unburned portions were in the northern end of the allotment in the Northeast and Northwest Pastures. Approximately 1,500 acres within the Northwest, Northeast, Southwest, and Southeast Pastures were drill seeded with Anatone bluebunch wheatgrass, Sherman big bluegrass (*Poa ampla*), squirreltail, sainfoin, yarrow, and alfalfa. Approximately 2,400 acres were aerially seeded with Wymoing sagebrush.

Table 7. Fire Frequency by Pasture from 1993 to 2013

Pasture*	Number of Times Burned from 1993 to 2013	Acres Of Pasture	Percentage of Pasture
Northeast (2,960 Acres)	0	316	11%
	1	2127	72%
	2	517	17%
Northwest (4,235 Acres)	0	0	0%
	1	1647	39%
	2	71	2%
	3	1953	46%
	4	564	13%
Southeast (3,272 Acres)	0	10	3%
	1	1908	58%
	2	852	26%
	3	929	28%
South (4,592 Acres)	0	0	0%
	1	220	5%
	2	2869	62%
	3	1462	32%
	4	42	<1%
Southwest (2,581 Acres)	0	0	0%
	1	275	11%
	2	633	24%
	3	832	32%
	4	842	33%

*70 acres is within the canyon and therefore is not included in any of the pastures.

Map 3. Fire Frequency

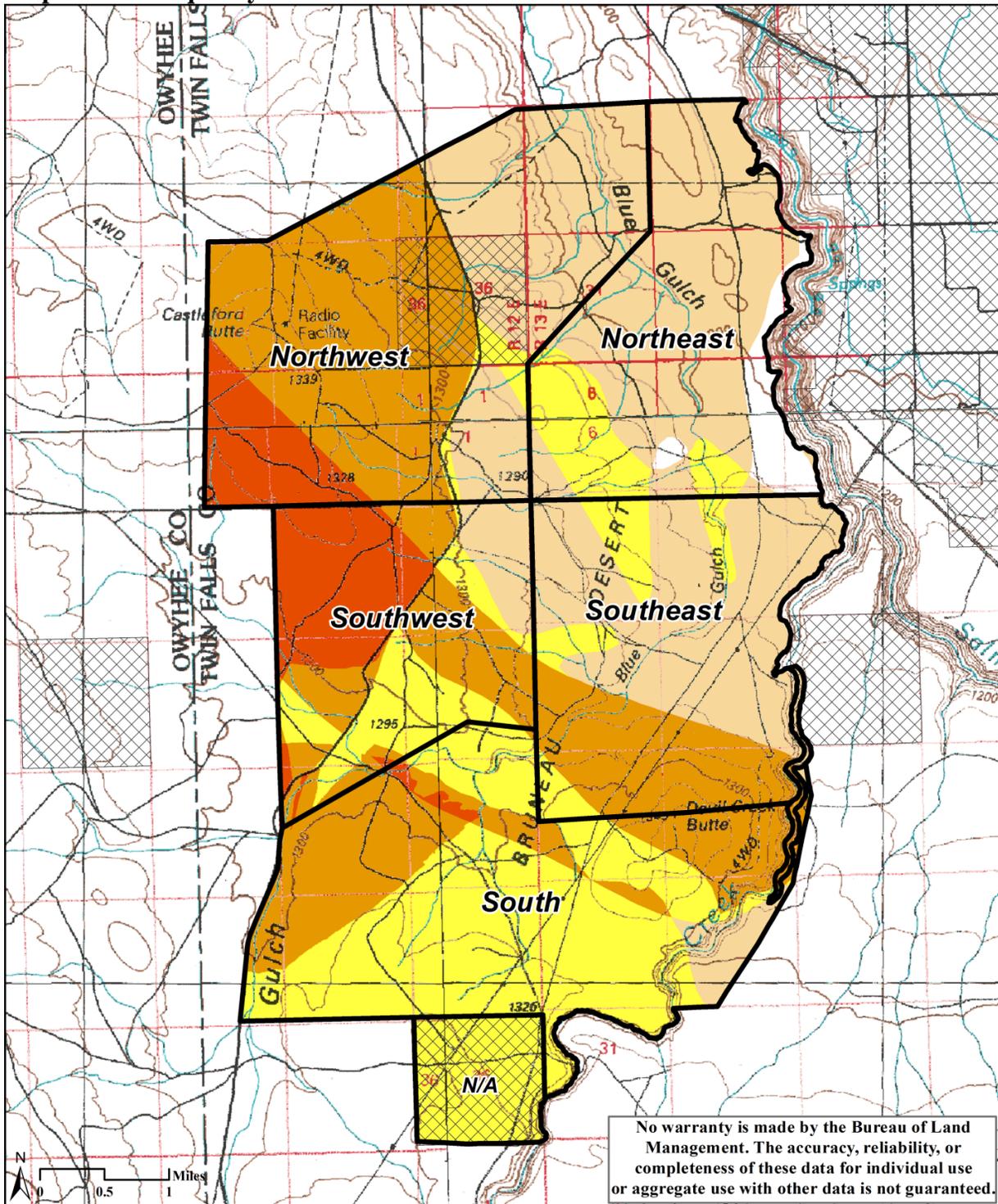


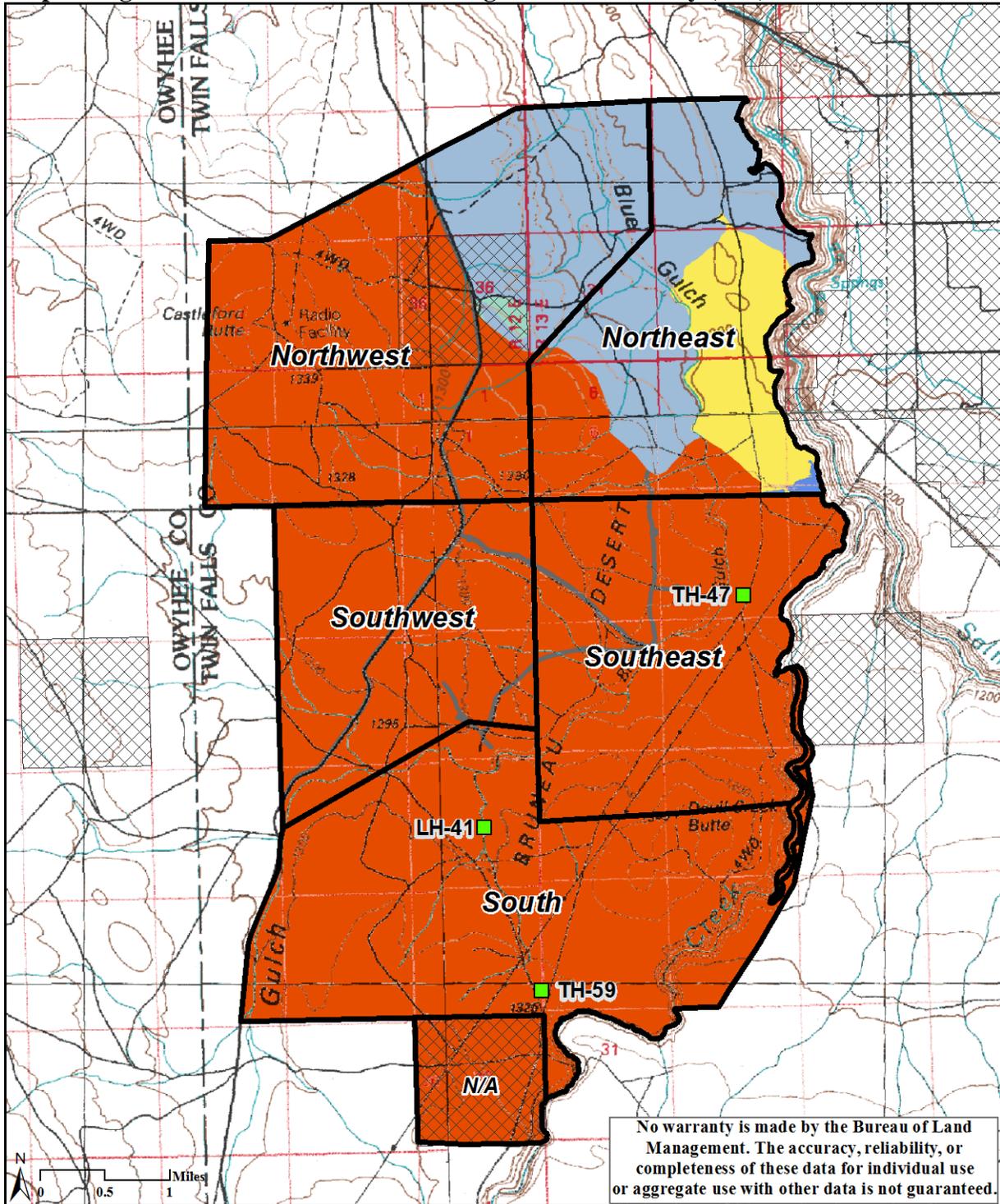
Table 8. Vegetation communities* in acres and percentage by pasture

Pasture	Annual	Bluegrass	Crested Wheatgrass	WY Sage/Thurbers	WY Sage/Bluegrass	Barren	Recent Burn [^]
Northeast (2,960 Acres)	1 (<1%)	1442 (48%)	883 (30%)	28 (<1%)	0 (0%)	1 (<1%)	655 (22%)
Northwest (4,235 Acres)	0 (0%)	1304 (31%)	0 (0%)	0 (0%)	2 (<1%)	6 (<1%)	2922 (69%)
Southeast (3,272 Acres)	0 (0%)	0 (0%)	0 (0%)	1 (<1%)	0 (0%)	22 (<1%)	3250 (99%)
South (4,592 Acres)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	2 (<1%)	4590 (99%)
Southwest (2,581 Acres)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	22 (<1%)	2559 (99%)

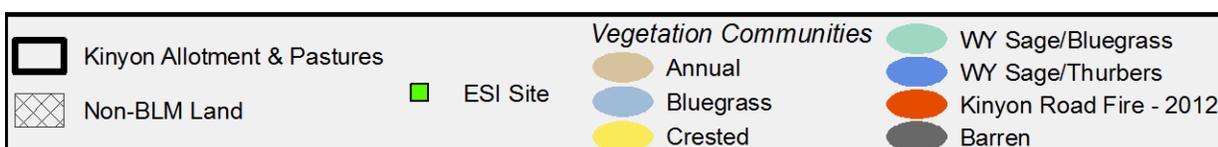
* Vegetation community is listed by dominate cover species. Numerous other plant species, both native and non-native, are present in the communities.

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

Map 4. Vegetation Communities and Ecological Site Inventory (ESI) Sites



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



There are three ESI sites in the Kinyon Allotment (TH-47, LH-41, TH-59) (Map 4). Although site LH-41 was read in 2006, the data is missing and cannot be located, so this site is not included in this document and will not be discussed. Of the ESI sites that were read in 2006 (TH-47, TH-59), the production information collected is no longer current for these sites and one of the sites (TH-47) was drill seeded in 2012 following the Kinyon Road Fire. Shrubs were present at both of the ESI sites in 2006, however due to the 2012 Kinyon Road Fire shrubs no longer occur at any of the sites. Production data collected in 2006 is shown in Table 9 for the ESI site (TH-59) that was not drill seeded following the 2012 Kinyon Road Fire. Data collected at ESI site TH-47 is not included, because data collected in 2006 is no longer current as a result of the recent drill seeding in 2012. Cover data taken at the ESI site TH-59 will be discussed in Standard 5 of this document.

In 2004, an interdisciplinary (ID) team conducted Interpreting Indicators of Rangeland Health (IRRH) field evaluations in the Kinyon Allotment, but an evaluation to determine if the allotment was meeting the Idaho Standards for Rangeland Health was not completed. Production and cover data were recorded at nine sites within the Kinyon Allotment in 2002 and 2003 for the 2004 IRRH field evaluations. The 2002 and 2003 data is not included in this document but is available for review at the Jarbidge Field Office. Since the data was collected in 2002 and 2003 several wildfires have burned within the allotment and the vast majority of the allotment has been drill seeded; therefore, the data is no longer current.

Trend plots have not been established in this allotment. Due to differences in sampling locations and methodology (e.g. number of transects per site and number of points per transect) among the 2002, 2003 (Step Point Method, TR 1734-4) data, the 2006 ESI data, 2012 and 2013 Habitat Assessment Framework (HAF) data and the 2014 (Step Point Method, TR 1734-4) 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.

Table 9. Summary of 2006 ESI Production Data (Total Dry Weight in Pounds Per Acre)

Vegetation Class	Species	Loamy 8-12 ARTRW8/PSSP- ACTH7 ESD	Site ID
			2006-TH-59
			South Pasture
Perennial Grasses	Squirreltail	25-45	2.7
	Sandberg bluegrass	25-45	49.8
	Thurber's needlegrass	8-180	-
	Bluebunch wheatgrass	100-225	-
	Thickspike wheatgrass	0-45	-
	Crested wheatgrass	-	223.9
Annual Grasses	Cheatgrass	-	164.1
Perennial Forbs	Longleaf phlox	0-5	-
	Mourning milkvetch	0-5	-
	Tall annual willowherb	-	-
	Purple milkvetch	0-5	-
	Lupine	0-5	-

Vegetation Class	Species	Loamy 8-12 ARTRW8/PSSP- ACTH7 ESD	Site ID
			2006-TH-59
			South Pasture
Annual Forbs	Tall tumbled mustard	-	7.0
Shrubs	Yellow rabbitbrush	0-10	-
	Wyoming big sagebrush	100-225	11.0
TOTAL		400-900	458.5

Noxious Weeds

The State of Idaho has listed 65 plant species as noxious weeds. Three are known to occur in the Kinyon Allotment: diffuse knapweed (*Centaurea diffusa*), rush skeleton weed (*Chondrilla juncea*), and scotch thistle (*Onopordum acanthium*). There are seven known diffuse knapweed occurrences in the allotment, all within the Southwest Pasture. There are fourteen known rush skeleton occurrences in the allotment. Rush skeleton occurs in all of the pastures except for the Northeast Pasture. It is most prevalent in the South Pasture with eight occurrences. Scotch thistle has only been found once in the South Pasture, with one known occurrence. All of the known occurrences of all three noxious weeds within the allotment were treated within chemicals between 2006 and 2008. Treatment goals are to reduce noxious weeds to where they will not have a significant economic or environmental impact and/or to eradicate them completely. The BLM also works to prevent the establishment of new species and infestations in areas where they presently do not occur. Noxious weeds were not documented at any of the monitoring/study sites evaluated in this analysis.

Many of the known noxious weed infestations are found and treated through the TFD Emergency Stabilization and Rehabilitation (ESR) program. Approved ESR plans allow three year funding for weed control and play a vital part in the success or failure of newly seeded areas. Weed personnel grid the burned areas and treat noxious weed infestations in order to allow the desired vegetation time to reestablish. Crews also treat road corridors throughout the field office which helps prevent the spread of weeds from vehicles transporting weed seeds to new areas or sites recovering from wildfire. Types of weed treatments done in the TFD include biological and mechanical control methods, as well as the use of herbicides.

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 Kinyon Allotment due to variances in the land type and geographical area. Of the eight Idaho Standards for Rangeland Health, the following four standards are applicable to the Kinyon 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 7** - Surface and ground water on public land comply with the Idaho Water Quality Standards.
- **Standard 8** – Habitats are suitable to maintain viable populations of threatened and endangered, sensitive, and other special status species.

**Standards 2, 3, 4, and 6 do not apply to the Kinyon Allotment*

Table 10. Applicable Standards by Pasture

Standard	Pastures
1	All Pastures
2	Not Applicable
3	Not Applicable
4	Not Applicable
5	All Pastures
6	Not Applicable
7	Southeast, South
8	All Pastures

An interdisciplinary (ID) team conducted IIRH field evaluations at five sites representative of the Kinyon Allotment during May of 2014. Map 6 shows the location of the 2014 IIRH evaluation sites. Two of the five sites at which IIRH evaluations were conducted were HAF sites, one was an ESI site, and two were utilization key sites. The sites were chosen based on vegetation that was representative of the pasture.

HAF sites were randomly generated through a GIS process (Appendix A). Key utilization sites were selected in representative areas based on the presence of key forage species, distance from livestock water, and accessibility of the area to livestock grazing. When the ID Team conducted IIRH field evaluations, the HAF sites were visited first. If the 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 ID Team

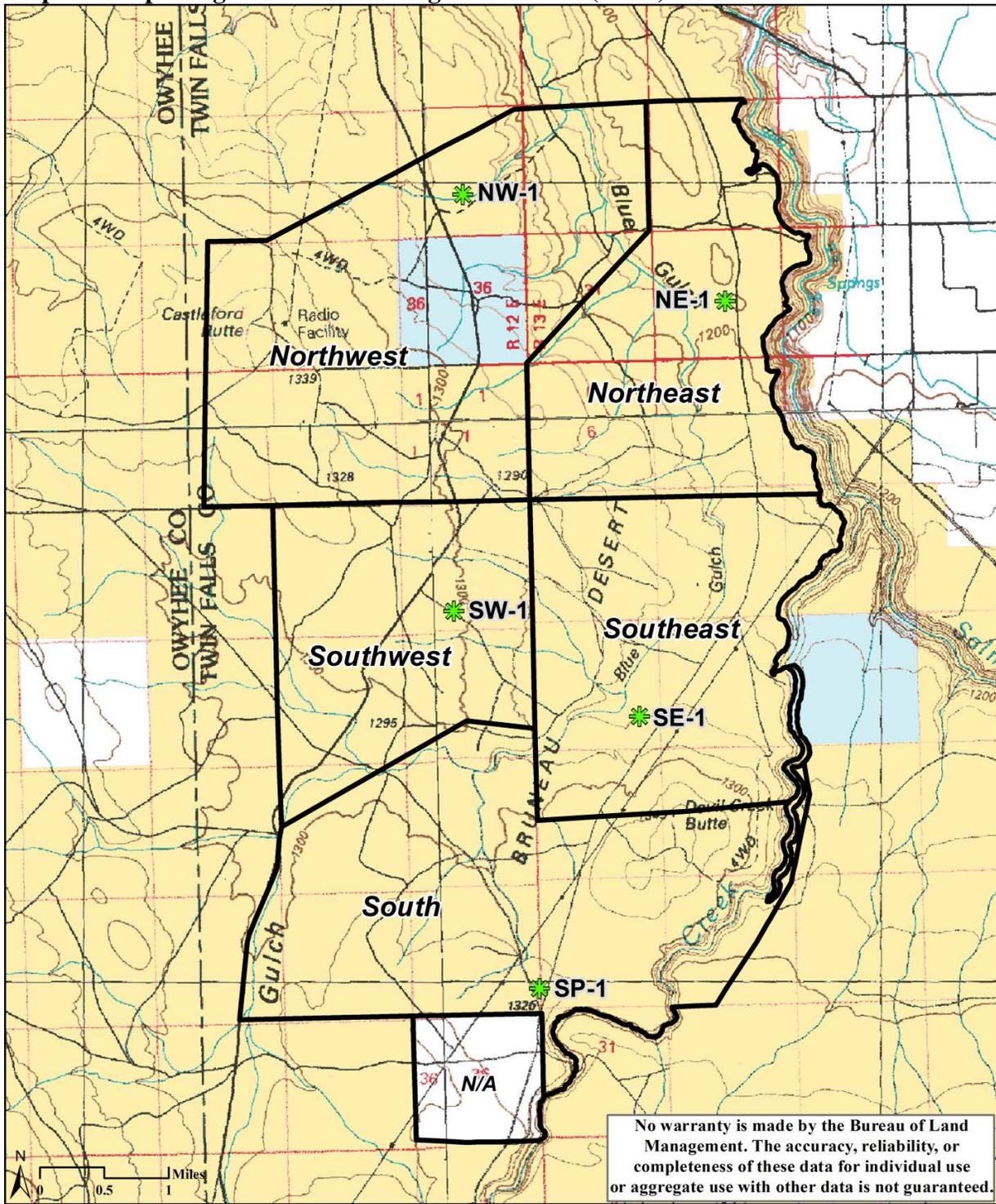
determined that none of the pre-determined sites were representative of the vegetation community, a new location was selected that was representative of the vegetation community.

Indicators of rangeland health (Table 11) 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.

Transects to determine vegetative cover were recorded at all five of the IIRH evaluation sites. Vegetative cover data was recorded by the ID Team using the Step Point Method (TR 1734-4).

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Map 6. Interpreting Indicators of Rangeland Health (IIRH) Sites



In addition to evaluating rangeland health indicators at each of the five IIRH sites, the ID Team also examined other areas to ensure evaluation sites were representative of the vegetation communities throughout the allotment. Data collected at the evaluation sites were compared to the Natural Resource Conservation Service’s (NRCS) ESD reference sheet for the soil types and potential vegetation communities in the Kinyon Allotment. All sites were located in Loamy 8-12 ARTRW8/PSSP-ACTH7 (Wyoming big sagebrush/bluebunch wheatgrass-Thurber’s needlegrass) ecological site. The ESD reference sheet #R011XY001ID describes the expected plant community in Reference State 1, Phase A. The reference phase plant community is expected to have an overstory of Wyoming big sagebrush (*Artemisia tridentata* ssp. *wyomingensis*) with bluebunch wheatgrass and Thurber’s needlegrass dominating the understory. Sandberg bluegrass, squirreltail, thickspike wheatgrass (*Elymus lanceolatus*), arrowleaf balsamroot (*Balsamorhiza sagittata*), and taper-tip hawksbeard (*Crepis acuminata*) are sub-dominant species. A large variety of other grasses, forbs, and shrubs occur in minor amounts. Natural fire frequency should be 50-70 years.

Indicator ratings for each site in the Kinyon Allotment are shown in Table 11. Rangeland health attributes ratings are shown in Table 12.

Table 11. Summary of 17 Rangeland Health Indicators

Indicators	Attributes	Degree of Departure from Reference Sheet				
	S = Soil & Site Stability H=Hydrologic Function B = Biotic Integrity	Extreme to Total	Moderate to Extreme	Moderate	Slight to Moderate	None to Slight
1. Rills	S, H					NE_1, NW_1, SE_1, SP_1, SW_1
2. Water-flow Patterns	S, H				SE_1	NE_1, NW_1, SP_1, SW_1
3. Pedestals and/or terracettes	S, H				SE_1	NE_1, NW_1, SP_1, SW_1
4. Bare ground	S, H					NE_1, NW_1, SE_1, SP_1, SW_1
5. Gullies	S, H					NE_1, NW_1, SE_1, SP_1, SW_1

Indicators	Attributes	Degree of Departure from Reference Sheet				
	S = Soil & Site Stability H=Hydrologic Function B = Biotic Integrity	Extreme to Total	Moderate to Extreme	Moderate	Slight to Moderate	None to Slight
6. Wind-scoured, blowouts, and/or deposition areas	S					NE_1, NW_1, SE_1, SP_1, SW_1
7. Litter movement	S					NE_1, NW_1, SE_1, SP_1, SW_1
8. Soil surface resistance to erosion	S, H, B			NE_1, SE_1, SP_1, SW_1		NW_1
9. Soil surface loss or degradation	S, H, B					NE_1, NW_1, SE_1, SP_1, SW_1
10. Plant community composition and distribution relative to infiltration	H				NE_1, SE_1, SP_1, SW_1	NW_1
11. Compaction layer	S, H, B					NE_1, NW_1, SE_1, SP_1, SW_1
12. Functional/structural groups	B		NE_1	SE_1, SP_1, SW_1	NW_1	
13. Plant mortality/decadence	B					NE_1, NW_1, SE_1, SP_1, SW_1
14. Litter amount	H, B				NE_1	NW_1, SE_1, SP_1, SW_1
15. Annual production	B					NE_1, NW_1, SE_1, SP_1, SW_1

Indicators	Attributes	Degree of Departure from Reference Sheet				
	S = Soil & Site Stability H=Hydrologic Function B = Biotic Integrity	Extreme to Total	Moderate to Extreme	Moderate	Slight to Moderate	None to Slight
16. Invasive plants	B			NW_1, SP_1	NE_1	SE_1, SW_1
17. Reproductive capability of perennial plants	B					NE_1, NW_1, SE_1, SP_1, SW_1

NE_1 = Northeast Pasture
SE_1 = Southeast Pasture
SW_1 = Southwest Pasture

NW_1 = Northwest Pasture
SP_1 = South 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 11 identifies which indicators are related to each of the three attributes. The ID team arrived at attribute departure ratings by considering the preponderance of evidence of departure for the group of indicators related to each attribute. Indicators showing departure from reference conditions may be weighted more heavily, based upon the effect of the departure on ecological function of the site being evaluated. The degree of departure ratings for each of the three attributes of rangeland health are shown in Table 12.

Table 12. 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				NE_1, SE_1, SP_1, SW_1	NW_1
Hydrologic Function				NE_1, SE_1, SP_1, SW_1	NW_1
Biotic Integrity			NE_1	SE_1,SW_1 , SP_1	NW_1

NE_1 = Northeast Pasture
SE_1 = Southeast Pasture
SW_1 = Southwest Pasture

NW_1 = Northwest Pasture
SP_1 = South Pasture

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

All five IIRH sites were evaluated using the ESD (R011XY001ID) reference sheet for the Loamy 8-12" Wyoming big sagebrush/bluebunch wheatgrass/Thurber's needlegrass ecological site (USDA and NRCS, 2013a). The reference sheet for the ESD indicates that bare ground should range from 30 to 40 percent, litter cover should range from 5 to 10 percent, and soil stability test values should range from 4 to 6 (Scale of 1 to 6; Pellant et al., 2005).

While the ESD indicates that litter cover should range from 5 to 10 percent, data collected within the allotment shows that litter values were higher in some pastures. A soil stability test (Pellant et al., 2005) was completed at three IIRH sites in the allotment; with an average soil stability of 3.4, showing an overall reduced soil surface resistance to erosion within the allotment.

Multiple soil series exist within the Kinyon Allotment and are typically silt loams. The majority of the allotment is relatively flat. The Soil Survey Geographic (SSURGO) Database (NRCS 2012) shows that 17,297 acres of the allotment have a moderate wind erosion factor, and the remaining 413 acres have no data available. SSURGO data further indicates that 15,410 acres of the allotment have a high erosion factor for water erosion, 1,887 acres have a medium erosion factor for water erosion, and the remaining 413 acres have no data available.

Although the soil survey shows potential for both wind and water erosion in this area, only one pasture was noted to have active erosion or soil loss noted during the 2013 IIRH field visits. Adequate soil cover is present throughout most of the allotment to reduce potential erosion. Abundant perennial vegetation is present to provide protection for site stability throughout the majority of the allotment (Table 13).

Table 13. Percent ground cover (top layer) at IIRH sites

Vegetation Class	IIRH Site NE_1	IIRH Site NW_1	IIRH Site SE_1	IIRH Site SP_1	IIRH Site SW_1
	Northeast Pasture	Northwest Pasture	Southeast Pasture	South Pasture	Southwest Pasture
Perennial Grasses	64%	74%	50%	43%	58%
Annual Grasses	0%	4%	0%	0%	0%
Annual Forbs	0%	4%	0%	1%	0%
Biological Soil Crust	0%	6%	0%	0%	0%
Bare Ground	14%	4%	38%	39%	36%
Litter	20%	8%	7%	17%	6%
Rock	2%	0%	5%	0%	0%
TOTAL	100%	100%	100%	100%	100%

Northeast Pasture

IIRH Site NE_1 (Loamy 8-12 ARTRW8/PSSP-ACTH7)

The IIRH site NE_1, which is a utilization key site (KINE_2), was burned in the 1975 Blue Gulch Fire and 2005 Clover Fire. The HAF site NE2 within this pasture was visited by the ID Team and determined to not be representative of this pasture, thus the utilization key site was chosen to be the IIRH evaluation site. IIRH site NE_1 was seeded to crested wheatgrass following the 1975 Blue Gulch Fire and currently crested wheatgrass is the dominant deep-rooted grass species (12% cover) and Sandberg bluegrass is the dominant shallow-rooted grass species (52% cover), with 14 percent bare ground at the site (Table 13). The site is located on a south facing aspect with generally flat topography.

The soil stability test (Pellant et al., 2005) completed at the site in the South Pasture was determined to be representative of this site as well, and resulted in a soil stability value of 3.2, which resulted in a moderate departure rating.

The indicator for plant community composition and distribution relative to infiltration was rated as slight to moderate departure due to the loss of shrubs within the pasture. The indicator for litter amount was rated as a slight to moderate departure from the reference condition due to a slight increase in the amount of litter found at the site; however, litter was as a result of perennial grasses found at the site.

All other indicators related to the Soil and Site Stability were rated none to slight departure from the reference condition. Therefore, the Soil and Site Stability attribute was rated as slight to moderate departure. All other indicators related to Hydrologic Function were rated none to slight departure from the reference condition. Therefore, the Hydrologic Function attribute was rated as slight to moderate departure.

Northwest Pasture

IIRH Site NW_1 (Loamy 8-12 ARTRW8/PSSP-ACTH7)

The IIRH site NW_1, which is a HAF site (NW2), was burned in the 2005 Clover Fire. IIRH site NW_1 was seeded with a native seed mix following the 2005 Clover Fire and currently bluebunch wheatgrass is the dominant deep-rooted grass species (56% cover) and Sandberg bluegrass is the dominant shallow-rooted grass species (16% cover), with 4 percent bare ground at the site (Table 13). Biological soil crusts are present throughout the site; with 6 percent cover for top layer and 26 percent cover for all layers. The soil stability test (Pellant et al., 2005) completed at the site resulted in a soil stability value of 4.1 indicating adequate soil surface resistance to erosion (Photo 1). The topography of the site is flat to gently sloped, with a south aspect.

Photo 1. Soil Profile at IIRH site NW_1 on May 7, 2014



All indicators related to the Soil and Site Stability and Hydrologic Function attributes were rated none to slight departure from the reference condition. Therefore, the Soil and Site Stability and Hydrologic Function attributes were each rated as none to slight departure.

Southeast Pasture

IIRH Site SE_1 (Loamy 8-12 ARTRW8/PSSP-ACTH7)

The IIRH site SE_1, which is a HAF site (SE2), was burned in the 2005 Clover Fire, 2010 Long Butte Fire, and 2012 Kinyon Road Fire. Following the 2005 Clover Fire and the 2010 Long Butte Fire, the site was drilled seeded with a native seed mix and currently bluebunch wheatgrass is the dominant deep-rooted grass species (21% cover) and Sandberg bluegrass is the dominant shallow-rooted grass species (28% cover), with 38 percent bare ground at the site (Table 13). The soil stability test (Pellant et al., 2005) completed at the site resulted in a soil stability value of 2.9 (Photo 2). The topography of the site is mostly flat with a north aspect.

Photo 2. Soil Profile at IIRH site SE_1 on May 8, 2014



The water flow patterns indicator was rated slight to moderate departure from the reference condition at the site because patterns were observed in the plant interspaces, although they were short and not connected. The pedestals and/or terracettes indicator was rated as a slight to moderate departure from the reference condition at the site due to past inactive pedestals and a few active pedestals being observed at the site. While some water flow patterns and pedestals were observed, they were noted as inactive for the most part, and as expected because the site burned in 2012 and was drilled seeded following the fire. The indicator for soil surface resistance to erosion was rated as a moderate departure from reference condition, due to a soil test number of 2.9, indicating reduced soil surface resistance to erosion. The indicator for plant community composition and distribution relative to infiltration was rated as slight to moderate departure due to the loss of shrubs within the pasture.

All other indicators related to the Soil and Site Stability and Hydrologic Function attributes were rated none to slight departure from the reference condition. Therefore, the Soil and Site Stability and Hydrologic Function attributes were each rated as slight to moderate departure.

South Pasture

IIRH Site SP_1 (Loamy 8-12 ARTRW8/PSSP-ACTH7)

The IIRH site SP_1, which is an ESI site (TH-59), was burned in the 1995 Blue Gulch Fire and 2012 Kinyon Road Fire. Following the 1995 Blue Gulch Fire, the site was drill seeded with crested wheatgrass which is the dominant deep-rooted grass species (16% cover) while Sandberg bluegrass is the dominant shallow-rooted grass species (27% cover), and with 39 percent bare

ground at the site (Table 13). The soil stability test (Pellant et al., 2005) completed at the site resulted in a soil stability value of 3.2 (Photo 3). The site is of relatively flat topography, with a south/southeast aspect.

Photo 3. Soil Profile at IIRH site SP_1 on May 8, 2014



The indicator for soil surface resistance to erosion was rated as a moderate departure from reference condition, due to a soil test number of 3.2, indicating reduced soil surface resistance to erosion. The indicator for plant community composition and distribution relative to infiltration was rated as slight to moderate departure due to the loss of shrubs within the pasture.

All other indicators related to the Soil and Site Stability attribute were rated none to slight departure from the reference condition. Therefore, the Soil and Site Stability attribute was rated as a slight to moderate departure. All other indicators related to Hydrologic Function were rated none to slight departure from the reference condition. Therefore, the Hydrologic Function attribute was rated as slight to moderate departure.

Southwest Pasture

IIRH Site SW_1 (Loamy 8-12 ARTRW8/PSSP-ACTH7)

The IIRH site SW_1, which is a utilization key site (KISW_1), was burned in the 2005 Clover Fire, 2010 Long Butte Fire, and 2012 Kinyon Road Fire. Following the 2005 Clover Fire the site was drilled seeded with a native seed mix and currently bluebunch wheatgrass is the dominant deep-rooted grass species (26% cover) and Sandberg bluegrass is the dominant shallow-rooted grass species (32% cover), with 36 percent bare ground at the site (Table 13). The topography of

the site is mostly flat with a southeast aspect.

The soil stability test (Pellant et al., 2005) completed at the IIRH site SE_1, which was determined to be representative of this pasture, resulted in a soil stability value of 2.9, which resulted in a moderate departure rating. The indicator for plant community composition and distribution relative to infiltration was rated as slight to moderate departure due to the loss of shrubs within the pasture.

All other indicators related to the Soil and Site Stability attribute were rated none to slight departure from the reference condition. Therefore, the Soil and Site Stability attribute was rated as a slight to moderate departure. All other indicators related to Hydrologic Function were rated none to slight departure from the reference condition. Therefore, the Hydrologic Function attribute was rated as slight to moderate departure.

Allotment Summary for Standard 1 (Watersheds):

Attributes of rangeland health related to Standard 1 for Soil and Site Stability were rated as slight to moderate departure at four of the five sites (NE_1, SP_1, SW_1), and rated as a none to slight departure at one site (NW_1). Attributes of rangeland health related to Hydrologic Function were rated as none to slight departure from the reference condition at one of the five sites (NW_1) and slight to moderate departure at four of the sites (NE_1, SE_1, SP_1, SW_1).

The indicators for pedestals and/or terracettes and water-flow patterns was rated as a slight to moderate departure at site SE_1 due to some slight evidence of active pedestal formation and water flow patterns as well as historic evidence. Four of the sites (NE_1, SE_1, SP_1, SW_1) were rated as a moderate departure for the soil surface resistance to erosion indicator due lower soil test numbers. Four of the sites (NE_1, SE_1, SP_1, SW_1) were rated as slight to moderate for the plant community composition and distribution relative to infiltration indicator due to the lack of shrubs throughout the pastures. Meanwhile, the litter amount indicator was rated slight to moderate departure at site NE_1 and none to slight at the other four sites.

Evaluation of Standard 1

Signs of accelerated erosion were recorded at one of the sites (IIRH Site SE_1). Both water flow patterns and pedestalling were noted at the site. Water flow patterns were short, not connected to each other, and appeared stable. Pedestalling was also observed in the water flow patterns. Some active pedestalling was observed, although most pedestals appeared inactive. Historic pedestals, mainly on Sandberg bluegrass, were noted in all of the pastures, however, the indicator was rated none to slight at four of the five sites because the pedestals were inactive. While some historic water flow patterns and pedestals were observed, they were noted as inactive and were expected because the allotment burned in 2005, 2007, 2010, and 2012.

Shrubs have been removed from much of the allotment due to wildfire, which has changed the overall composition of the plant community. In some areas of the allotment some seedlings were present, but overall the entire allotment is generally lacking shrub cover. Shrubs are important to range sites as they trap snow which can increase infiltration. The ID Team noted that there were deep-rooted perennial grasses present to distribute water deep into the soil profile. But because shrubs were generally lacking the indicator for plant community composition and distribution

relative to infiltration was rated slight to moderate at four of the IIRH sites, and none to slight at the other. Perennial grass species appeared vigorous and were producing seed heads at all sites, suggesting that the reduction of shrub cover is not negatively affecting infiltration to the point of reducing perennial grass vigor or reproductive capability.

The Hydrologic Function attribute was rated as a none to slight departure from the ESD reference sheet at one of the five sites (NW_1) while the the other four sites (NE_1, SE_1, SP_1, SW_1) were rated as a slight to moderate departure. The Soil and Site Stability attribute was rated as a slight to moderate departure at four of the five sites (NE_1, SE_1, SP_1, SW_1). At site NW_1 the Soil and Site Stability attribute was rated as a none to slight departure from reference condition.

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

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

Rationale for Evaluation Finding

Observations made by the JFO ID Team during 2014 IIRH, as well as cover data collected in the Northeast, Southwest, Southeast, and South Pastures of the Kinyon Allotment, indicate that perennial grasses are abundant to assist in site protection (Table 13). However, the soil stability test values were low in both soil tests performed within the pastures, indicating a reduced soil surface resistance to erosion. While the soil test values are lower than what is expected in the ESD, it is reasonable to expect reduced soil stability values in areas recovering from recent wildfires and drill seedings.

Biological soil crusts are lacking within the pastures and cover values recorded for bare ground (Table 13) are shown to be at the higher end of the expected range for the ESD. In addition, evidence of past soil loss in the form of pedestal formation was observed within all four pastures. Pedestals were noted to be minor and inactive in all but one pasture. It is reasonable to expect pedestalling on some perennial grasses such as Sandberg bluegrass following wildfire, and pedestals were no longer active in three of the four pastures; however, signs of accelerated erosion were recorded in the Southeast Pasture with both water flow patterns and pedestalling noted at the site.

Due to recent wildfires (2005, 2007, 2010, and 2012), shrubs are of lower abundance within the plant communities of the Northeast, Southwest, Southeast, and South Pastures of the Kinyon Allotment. Wildfire has essentially eliminated shrubs in these areas, although aerial seedings have taken place throughout the past few years and seedlings are establishing in some areas. Shrubs trap snow and have a taproot that penetrates deep into the soil profile; therefore, the lack of shrubs has the potential to affect infiltration and retention of soil moisture. Some shrub species, as well as abundant deep-rooted perennial bunchgrasses, are present to carry soil moisture deep into the soil profile. Perennial grasses appeared vigorous and were producing seedheads at all the sites within these pastures, suggesting that the reduction of shrub cover is not negatively affecting infiltration to the point of reducing plant vigor or reproductive capability.

Evaluation Finding – Northwest Pasture is:

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

Rationale for Evaluation Finding

Abundant perennial vegetation, as well as some biological soil crusts, is present within the Northwest Pasture of the Kinyon Allotment to provide protection for site stability. Additionally, bare ground is lower than expected throughout the pasture and topography is relatively flat.

Observations made by the JFO ID Team during 2014 IIRH, as well as cover data (Tables 13 and 14) collected in the Northwest Pasture of the Kinyon Allotment indicate that ground cover is sufficient for soil stability and is within the ranges expected in the ESD. Abundant perennial grasses (74% of cover) are present to provide soil protection and site stability (Table 13). Furthermore, the soil stability test value (4.1) within the Northwest Pasture was within the range expected within the ESD, indicating adequate soil surface resistance to erosion. In addition, no signs of soil loss, or active pedestal formation, were noted in the pasture. Moreover, other signs of accelerated erosion, such as active rills, water flow patterns, gullies, or other indications of soil erosion were not present within the pasture. Infiltration, retention, and release of water processes relative to soil, vegetation, climate and landform are providing for nutrient and hydrologic cycling and energy flow within the Northwest Pasture.

Due to recent wildfires (2005, 2007, and 2012), shrubs are of low abundance within the plant communities of the Northwest Pasture. Aerial seeding projects following the fires have resulted in the establishment of sagebrush in some areas. Shrubs trap snow and have a taproot that penetrates deep into the soil profile; therefore, the lack of shrubs has the potential to affect infiltration and retention of soil moisture. However, some shrub species, as well as abundant deep-rooted perennial bunchgrasses are present to carry soil moisture deep into the soil profile. In addition, perennial grasses appeared vigorous and were producing seedheads within the pasture, suggesting that the reduction of shrub cover is not negatively affecting infiltration to the point of reducing plant vigor or reproductive capability.

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.

- Standard Doesn't Apply

Salmon Falls Creek, a perennial stream, forms a portion of the eastern boundary of the allotment but livestock do not have access to the stream due to cliffs/rimrock. Devil Creek also flows along the eastern side of allotment. Livestock are able to access Devil Creek within the allotment, but access is restricted due to fencing and cliffs/rimrock. This reach of Devil Creek is dewatered for much of the year upstream of the allotment for the purpose of irrigating private lands. No riparian vegetation exists along the reach of Devil Creek within the allotment due to the

dewatering. The reach of Devil Creek within the Kinyon Allotment is functioning as an ephemeral stream. Standard 2 does not apply to the Kinyon 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

See rationale under Standard 2.

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 within the allotment includes native plant species, most of the vegetation communities in the Kinyon Allotment have been affected by seedings and are dominated by seeded native or non-native species. Therefore, the JFO ID Team determined that the allotment should be assessed as a seeded community rather than a native plant community.

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

Standard 5 applies to the entire Kinyon Allotment; each pasture in the allotment has burned in wildfire and has been subsequently altered to varying degrees by seedings. In the last twenty years, nearly the entire (98%) Kinyon Allotment has been burned by wildfire and the vegetation community has been subsequently altered by drill and aerial seedings. Some areas of the allotment have burned multiple times during this same time period. Significant wildfires in the allotment in the last twenty years include the 1995 Blue Gulch Fire, 2005 Clover Fire, 2006 Blue Fire, 2007 Murphy Complex Fire (Elk Mountain), 2010 Long Butte Fire, and the 2012 Kinyon Road Fire. Therefore, as a result of the many wildfires and subsequent rehabilitation efforts, plant communities within the allotment have been modified. The modifications have included seeding non-native and native perennial grasses and forbs as well as aerial seedings of sagebrush and forbs.

While only a small percentage of the allotment is currently mapped as a seeding (Map 4), more acres within each pasture have been seeded than what is shown on the vegetation community map. Some of the seeded areas may be mapped as native (bluegrass, etc.) rather than seeded because Sandberg bluegrass still comprises the dominant cover. The majority of the Kinyon

Allotment is mapped as recent burn, because those areas have not been reevaluated for vegetation community classification.

Indicators of Rangeland Health were evaluated at five sites within the allotment, one in each pasture, in accordance with TR 1724-6 Version 4. Table 9 summarizes the rangeland health indicators. The cover data from all five of the IIRH sites has been summarized below in Table 14. Bunchgrasses (specifically crested wheatgrass, Sandberg bluegrass, and bluebunch wheatgrass) comprise the highest percentage of cover within the allotment.

Table 14. Percent ground cover (top layer) at 2014 IIRH Sites

Vegetation Class	Species	IIRH Site NE_1	IIRH Site NW_1	IIRH Site SE_1	IIRH Site SP_1	IIRH Site SW_1
		Northeast Pasture	Northwest Pasture	Southeast Pasture	South Pasture	Southwest Pasture
Perennial Grasses	Sandberg's bluegrass	52%	16%	28%	27%	32%
	Crested wheatgrass	12%	2%	0%	16%	0%
	Bluebunch wheatgrass	0%	56%	21%	0%	26%
	Squirreltail	0%	0%	1%	0%	0%
Annual Grasses	Cheatgrass	0%	4%	0%	0%	0%
Annual Forbs	Curve seed butterwort	0%	4%	0%	1%	0%
Vegetation TOTAL		64%	82%	50%	44%	58%
Other Cover	Biological soil crust	0%	6%	0%	0%	0%
	Bare Ground	14%	4%	38%	39%	36%
	Litter standing	2%	2%	0%	0%	0%
	Litter in contact with soil	18%	6%	7%	17%	6%
	Rock	2%	0%	5%	0%	0%
Grand TOTAL		100%	100%	100%	100%	100%

* Other plant species not recorded during cover transects but observed at the evaluation site are listed in Appendix B.

Table 15. Percent ground cover (top layer) at ESI Site in South Pasture

Vegetation Class	Species	ESI Site 2006-TH-59
		South Pasture
Perennial Grasses	Sandberg's bluegrass	10.7%
	Crested wheatgrass	36%
Shrubs	Wyoming big sagebrush	0.7%

Vegetation Class	Species	ESI Site 2006-TH-59
		South Pasture
Annual Grasses	Cheatgrass	14%
Annual Forbs	Tall tumbled mustard	2.7%
Vegetation TOTAL		64.1%
Other Cover	Biological soil crust	2.7%
	Bare Ground	8.7%
	Litter standing	4.7%
	Litter in contact with soil	20%
	Rock	2%
Grand TOTAL		100%

Northeast Pasture

IIRH Site NE_1 (Loamy 8-12 ARTRW8/PSSP-ACTH7)

The IIRH site NE_1, which is a utilization key site (KINE_2), was burned in the 1975 Blue Gulch Fire and 2005 Clover Fire. The HAF site NE2 within this pasture was visited by the ID Team and determined to not be representative of this pasture, thus the utilization key site was chosen to be the IIRH evaluation site. IIRH site NE_1 was seeded to crested wheatgrass following the 1975 Blue Gulch Fire and crested wheatgrass is the dominant deep-rooted grass species (12% cover) and Sandberg bluegrass is the dominant shallow-rooted grass species (52% cover), with 14 percent bare ground at the site (Table 14). Other portions of the pasture were drill seeded with non-native and native seed mixes following the 1975 Blue Gulch Fire, 2005 Clover Fire, and 2012 Kinyon Road Fire. Shrubs, largely removed by wildfire in the entire allotment, are absent at this site, however, they are noted to occur within other areas of the pasture, most likely as a result of aerial seedings following wildfires. The forb component in the pasture is reduced due to wildfire; IIRH field notes describe forbs being low in diversity and abundance. The site is located on a south facing aspect with gently flat topography (Photo 4).

Photo 4. IIRH Site NE_1 showing vegetation and topography of the site on May 7, 2014



The soil stability test (Pellant et al., 2005) completed at the site in the South Pasture was determined to be representative of this site as well, and resulted in a soil stability value of 3.2. Therefore the indicator for soil surface loss or degradation was rated as a moderate departure.

The Functional/Structural group indicator was rated as moderate to extreme departure from reference condition due to the absence of shrubs and reduced abundance and diversity of forbs, as well as the dominance of a shallow rooted bunchgrass over deep rooted perennial bunchgrasses. The indicator for litter amount was rated as a slight to moderate departure from the reference condition due to a slight increase in the amount of litter found at the site; however litter was as a result of perennial grasses found at the site. Cheatgrass and curvseed butterwort were not recorded on the vegetative cover transect but both were observed at trace levels in some disturbed areas throughout the site. Therefore, the indicator for invasive plants was rated as a slight to moderate departure from reference condition.

All other indicators related to the Biotic Integrity attribute were rated none to slight departure from the reference condition. Therefore, due to the overall indicator ratings, the Biotic Integrity attribute was rated as a moderate departure.

Northwest Pasture

IIRH Site NW_1 (Loamy 8-12 ARTRW8/PSSP-ACTH7)

The IIRH site NW_1, which is a HAF site (NW2), was burned in the 2005 Clover Fire. IIRH site NW_1 was seeded with a native seed mix following the 2005 Clover Fire and currently bluebunch wheatgrass is the dominant deep-rooted grass species (56% cover) and Sandberg bluegrass is the dominant shallow-rooted grass species (16% cover), with 4 percent bare ground

at the site (Table 14). Other portions of the pasture were drill seeded with a native seed mix following the 2005 Clover Fire and the 2012 Kinyon Road Fire. Shrubs, largely removed by wildfire in the entire allotment, are present at this site; however, they are noted to occur in strips, most likely a result of aerial seedings. The forb component in the pasture is diverse, but overall abundance is moderate to low. Biological soil crusts are present throughout the site; with 6 percent cover for top layer cover (Table 14) and 26 percent cover for all layers. The soil stability test (Pellant et al., 2005) completed at the site resulted in a soil stability value of 4.1 indicating adequate soil surface resistance to erosion. The topography of the site is flat to gently sloped, with a south aspect (Photo 5).

The Functional/Structural group indicator was rated as slight to moderate departure from reference condition due to the reduction of shrubs as well as reduced abundance of forbs. Shrubs were present at the site, mainly seedlings from previous aerial seedings.

Cheatgrass and curvseed butterwort each comprised 4 percent of the vegetative cover and was described in field notes as being present scattered throughout the site, with cheatgrass cover higher near the main road. Therefore, the indicator for invasive plants was rated as a moderate departure from reference condition.

Photo 5. IIRH Site NW_1 showing vegetation and topography of the site on May 7, 2014



All other indicators related to the Biotic Integrity attribute were rated none to slight departure from the reference condition. Therefore, due to the overall indicator ratings, the Biotic Integrity attribute was rated as none to slight departure.

Southeast Pasture

IIRH Site SE_1 (Loamy 8-12 ARTRW8/PSSP-ACTH7)

The IIRH site SE_1, which is a HAF site (SE2), was burned in the 2005 Clover Fire, 2010 Long Butte Fire, and 2012 Kinyon Road Fire. Following the 2005 Clover Fire and the 2010 Long Butte Fire, the site was drilled seeded with a native seed mix and currently bluebunch wheatgrass is the dominant deep-rooted grass species (21% cover) and Sandberg bluegrass is the dominant shallow-rooted grass species (28% cover), with 38 percent bare ground at the site (Table 14). Other portions of the pasture were drill seeded with a native seed mix following the 2005 Clover Fire, the 2010 Long Butte Fire, and the 2012 Kinyon Road Fire. Shrubs, largely removed by wildfire in the entire allotment, are still lacking in the Southeast Pasture, however the forb component is noted to be diverse and abundant, but still reduced overall compared to reference condition. The topography of the site is mostly flat with a north aspect (Photo 6).

The indicator for soil surface loss or degradation was rated as a moderate departure from reference condition due to the soil test value resulting in a 2.9. The Functional/Structural group indicator was rated as moderate departure from reference condition due to the absence of shrubs as well as reduced abundance and diversity of forbs.

Photo 6. IIRH Site SE_1 showing vegetation and topography of the site on May 8, 2014



All other indicators related to the Biotic Integrity attribute were rated none to slight departure from the reference condition. Therefore, due to the overall indicator ratings, the Biotic Integrity attribute was rated as slight to moderate departure.

South Pasture

IIRH Site SP_1 (Loamy 8-12 ARTRW8/PSSP-ACTH7)

The IIRH site SP_1, which is an ESI site (TH-59), was burned in the 1995 Blue Gulch Fire and 2012 Kinyon Road Fire. Following the 1995 Blue Gulch Fire the site was drill seeded with crested wheatgrass and currently crested wheatgrass is the dominant deep-rooted grass species (16% cover) and Sandberg bluegrass is the dominant shallow-rooted grass species (27% cover), with 39 percent bare ground at the site (Table 14). Other portions of the pasture were also drill seeded with crested wheatgrass following the 1995 Blue Gulch Fire, and native seed mixes following the 2010 Long Butte Fire. Shrubs, largely removed by wildfire in the entire allotment, are still lacking in the South Pasture despite aerial seedings following recent wildfires. The forb component in the pasture is diverse, but overall abundance is low. The site is of relatively flat topography, with a south/southeast aspect (Photo 7).

The indicator for soil surface loss or degradation was rated as a moderate departure from reference condition due to the soil test value resulting in a 3.2. The Functional/Structural group indicator was rated as moderate departure from reference condition due to the absence of shrubs as well as reduced abundance of forbs. Curvseeded butterwort comprised 1 percent of the vegetative cover and was described in field notes as being scattered throughout the site and common in disturbed areas. Cheatgrass was not recorded on the vegetative transect; however, it is noted to be scattered throughout the site. Therefore, the indicator for invasive plants was rated as a moderate departure from reference condition.

Photo 7. IIRH Site SP_1 showing vegetation and topography of the pasture on May 8, 2014



All other indicators related to the Biotic Integrity attribute were rated none to slight departure from the reference condition. Therefore, due to the overall indicator ratings, the Biotic Integrity

attribute was rated as slight to moderate departure.

Southwest Pasture

IIRH Site SW_1 (Loamy 8-12 ARTRW8/PSSP-ACTH7)

IIRH site SW_1, which is a utilization key site (KISW_1), was burned in the 2005 Clover Fire, 2010 Long Butte Fire, and 2012 Kinyon Road Fire. Following the 2005 Clover Fire the site was drilled seeded with a native seed mix and currently bluebunch wheatgrass is the dominant deep-rooted grass species (26% cover) and Sandberg bluegrass is the dominant shallow-rooted grass species (32% cover), with 36 percent bare ground at the site (Table 14). Other portions of the pasture were drill seeded with a non-native seed mix following the 1995 Blue Gulch Fire and a native seed mix following the 2005 Clover Fire, the 2010 Long Butte Fire, and the 2012 Kinyon Road Fire. Shrubs, largely removed by wildfire in the entire allotment, are still lacking in the Southwest Pasture, however the forb component is noted to be diverse, but with low abundance. The soil stability test (Pellant et al., 2005) completed at the IIRH site SE_1, which was determined to be representative of this pasture, resulted in a soil stability value of 2.9. The topography of the site is mostly flat with a southeast aspect (Photo 8).

The Functional/Structural group indicator was rated as moderate departure from reference condition due to the absence of shrubs as well as reduced abundance of forbs.

Photo 8. IIRH Site SW_1 showing vegetation and topography of the pasture on May 7, 2014



All other indicators related to the Biotic Integrity attribute were rated none to slight departure from the reference condition. Therefore, due to the overall indicator ratings, the Biotic Integrity attribute was rated as slight to moderate departure.

Allotment Summary for Standard 5 (Seedings):

The Biotic Integrity attribute was rated none to slight at one of the IIRH sites (NW_1), slight to moderate at three IIRH sites (SE_1, SP_1, SW_1), and moderate at the fifth site (NE_1).

Three of the sites (SE_1, SP_1, and SW_1) were rated as a moderate departure for the functional/structural indicator, due to the absence of shrubs and reduced abundance/diversity of perennial forbs. The NW_1 site was rated as a slight to moderate departure for the functional/structural indicator due to the absence of shrubs and reduced abundance of forbs. The NE_1 site was rated a moderate to extreme departure for the functional/structural indicator due to the absence of shrubs, reduced abundance and diversity of forbs, and dominance of shallow rooted bunchgrasses. This information is summarized in Table 11. All of the sites were rated in the none to slight category for annual production and reproductive capability of perennial plants. Seeded species are present and reproducing in a manner expected for the site, and are within the normal range for annual production. The litter amount indicator was rated slight to moderate at site NE_1 and none to slight at the other four sites. The soil surface resistance to erosion was rated moderate at four of the IIRH sites (NE_1, SE_1, SP_1, SW_1) due to the soil test values being lower than that expected in the ESD.

Invasive plants were rated at slight to moderate departure at the NE_1 IIRH site and moderate departure at the NW_1 and SP_1 IIRH sites. Cheatgrass was recorded in one transect, however it was present at only trace levels at the three sites mentioned above.

Evaluation of Standard 5

The 2014 IIRH field notes, as well as cover data, indicate that some perennial forb species are present in areas of the allotment, but are less diverse and abundant than the reference condition. Shrubs are lacking throughout the entire allotment due to recent wildfires. The seeded plant communities have a high abundance of deep-rooted perennial bunchgrasses as well as Sandberg bluegrass that are providing soil cover and competition to invasive species, as documented in the 2014 IIRH cover data (Table 14). Perennial species that are present within the allotment are appropriately productive and are capable of reproduction and recruitment of new seedlings. Curveseed butterwort and cheatgrass were found in some disturbed areas and where also recorded within two cover transects. Overall, adequate desirable perennial species are present to hinder the further spread of cheatgrass or other invasive species.

Evaluation Finding – Northwest Pasture is:

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

Rationale for Evaluation Finding

Plant communities within the Northwest Pasture of the Kinyon Allotment have been modified. Following the 2005 Clover Fire approximately 85 percent of the Northwest Pasture was drill seeded with Secar Snake River wheatgrass, Sandberg bluegrass, squirreltail, Sainfoin, Lewis flax, and Ladak alfalfa. The burned areas were also aerially seeded with Wyoming sagebrush. The seeding from the 2005 Clover Fire within the Northwest Pasture is highly productive with bluebunch wheatgrass cover of 56 percent. Although many of the seeded species were not

recorded on the vegetative cover transect, numerous species were observed during the field evaluation (Appendix B). Several perennial forb species were present within the seeding but were found to be at lower levels than expected; however, due to the high amount of bluebunch wheatgrass cover, it may be difficult for perennial forbs to increase within the pasture. Therefore, the overall diversity of perennial species within the seeded areas of the pasture do not appear to be diminishing over time, as evidenced by the continued presence (2014 IIRH field notes, Table 14, and Appendix B) of both seeded and native plant species.

The ID Team rated the functional/structural group indicator at a slight to moderate departure based on field observations documenting the presence of deep-rooted perennial bunchgrasses, shallow rooted grasses, and perennial forbs. Although shrubs are lacking overall, seedlings were observed within the pasture. 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.

Curveseed butterwort and cheatgrass were both recorded at 4 percent of the vegetative cover along the transect and were noted to be scattered throughout the IIRH site. Due to the high cover of native and seeded species along with the cover of biological crusts (26% cover when measuring all layers), the risk of invasive species increasing within the pasture is low. No noxious weed species were noted within the pasture. Invasive species such as curveseed butterwort and cheatgrass 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 the spread or establishment of invasive or noxious plant species.

The current plant community lacks vertical structure due to wildfires removing the shrubs component that was present before the fires. Use by native wildlife dependent on sagebrush for their habitat (i.e. sage thrasher (*Oreoscoptes montanus*), sagebrush vole (*Lemmyscus curtatus*), sagebrush lizard (*Sceloporus graciosus*), least chipmunk (*Neotamius minimus*), and Vesper sparrow (*Pooecetes gramineus*) is limited at this time. As shrubs re-establish and mature, these animals should return to the area. In the meantime, the Secar bluebunch wheatgrass plant community provides habitat for grassland [Savannah sparrow (*Passerculus sandwichensis*), grasshopper sparrow (*Ammodramus savannarum*), and montane vole (*Microtus montanus*)] and generalist wildlife species [horned lark (*Eremophila alpestris*), Western meadowlark (*Sternella neglecta*), deer mouse (*Peromyscus maniculatus*), and coyote (*Canis latrans*)]. It also can provide seasonal forage for mule deer (*Odocoileus hemionus*), pronghorn (*Antilocapra americana*), and elk (*Cervus elaphus*).

The seeded vegetation communities within the Northwest Pasture of the Kinyon Allotment are functioning to maintain life form diversity, production, native animal habitat, nutrient cycling, energy flow, and the hydrologic cycle. 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 Pasture of the Kinyon Allotment is meeting Standard 5.

Evaluation Finding – Northeast, Southeast, South, and Southwest Pasture are:

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

Rationale for Evaluation Finding

Plant communities within the Northeast, Southeast, South, 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 1995 Blue Gulch Fire, 2005 Clover Fire, 2010 Long Butte Fire, and 2012 Kinyon Road Fire.

The Southeast and Southwest Pastures are similar in regards to recent fire history and subsequent drill seedings. Both pastures contain drill seedings from the 2005 Clover Fire, 2010 Long Butte Fire, and 2012 Kinyon Road Fire. In both pastures the dominant deep-rooted perennial bunchgrass is bluebunch wheatgrass and the dominant shallow-rooted bunchgrass is Sandberg bluegrass. Bare ground in both pastures was also similar with 38 percent in the Southeast Pasture and 36 percent in the Southwest Pasture. The perennial forb component within both pastures was described in field notes as diverse and abundant, although lower than expected when compared to the ESD. A lack of shrub cover is expected across the pastures due to recent wildfires; however, these areas were aerially seeded with Wyoming big sagebrush following the 2012 Kinyon Road Fire. Typically, sagebrush seedings are not highly visible until at least the third year. Both pastures were noted to be lacking shrubs and also for a reduced abundance of perennial forbs. Invasive species were not detected in the vegetative cover transects across the two pastures.

In both the Southeast and Southwest Pastures, the recent drill seedings from 2010 and 2012 have not had sufficient time to establish. The drill seedings from 2010 burned less than two years after planting. In addition, the field evaluations were conducted in early May of 2014 after only one full growing season of growth after the 2012 seeding. Due to the short time period between seeding and the IIRH field evaluation, it was difficult to evaluate the current plant communities within the Southeast and Southwest Pastures.

The Northeast and South Pastures are also similar in current vegetation communities. The Northeast Pasture was drill seeded with crested wheatgrass following the 1975 Blue Gulch Fire, and with native seed mixes following the 2005 Cover Fire and 2012 Kinyon Road Fire. The South Pasture was drill seeded with crested wheatgrass following the 1995 Blue Gulch Fire and a native seed mix following the 2010 Long Butte Fire. Sandberg bluegrass dominates overall vegetative cover at both IIRH evaluation sites within the two pastures at 52 percent of cover in the Northeast Pasture and 27 percent in the South Pasture. Crested wheatgrass is the dominant deep-rooted perennial bunchgrass at the evaluation sites in both pastures, at 12 percent of cover in the Northeast Pasture and 16 percent in the South Pasture.

Within the South Pasture, the IIRH evaluation was conducted at ESI site TH-59. Cover data was

collected at this site in 2006 and when compared to current cover data, it appears that crested wheatgrass is decreasing overtime (Table 15). In 2006, crested wheatgrass comprised 36 percent of cover; however, in 2014 it comprised 16 percent of cover. Sandberg bluegrass, a shallow-rooted bunchgrass, increased from 10.7 percent in 2006 to 27 percent in 2014. Although crested wheatgrass has decreased at the site, the amount of invasive annual grasses such as cheatgrass has also decreased, from 14 percent in 2006 to 0 percent in 2014.

Perennial forbs within both the Northeast and South Pastures are described as being low in diversity and abundance, and shrub cover is generally lacking. Some sagebrush seedlings were observed in the Northeast Pasture, but just as in the South Pasture, shrubs have largely been removed by wildfire. Both sites were noted for the overall lack of shrubs, reduced perennial forbs, and reduced relative dominance of deep-rooted perennial bunchgrasses.

Invasive species, such as cheatgrass and curve seed butterwort, were observed mainly within disturbed areas in both pastures. Invasive species such as curvseed butterwort and cheatgrass can become a threat to biotic integrity following large scale disturbances such as wildfire; however, adequate desirable perennial species are present within the seeded plant communities to hinder further spread or establishment of invasive or noxious plant species. The seeded plant communities within the pastures have a high abundance of Sandberg bluegrass and crested wheatgrass, as well as other desirable vegetation (Tables 14 and 15) that are providing soil cover and competition to invasive species. No noxious weed species were noted within the pastures.

Within all the pastures, the perennial species are appropriately productive and are capable of reproduction and recruitment of new seedlings. The drill seedings in the Southeast and Southwest Pastures are currently establishing and should continue to establish over the next few years. The Northeast and South Pastures have reduced cover of deep-rooted perennial bunchgrasses, but invasive species do not appear to be increasing over time. Overall, shrubs are lacking throughout the pastures. Although deep-rooted perennial bunchgrasses are present within all four pastures, they are currently at reduced levels in some areas. 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.

Current management is expected to maintain production, and provide for the maintenance of ecological processes (nutrient cycling, hydrologic cycling, and energy flow) within the seeded plant communities of the Northeast, Southeast, South, and Southwest Pastures of the Kinyon Allotment. However, at this time the vegetation communities within the Northeast, Southeast, South, and Southwest Pastures of the Kinyon Allotment are not functioning to maintain native animal habitat or life form diversity due to the low abundance and diversity of perennial forbs, reduced relative dominance of deep-rooted perennial grasses, and/or overall lack of shrubs across the pastures. Therefore, the Northeast, Southeast, South, and Southwest Pastures are 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 Kinyon Allotment are dominated by native and seeded non-native species. 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.

Northeast, Northwest, and Southwest Pastures:

 X Standard Doesn't Apply

Salmon Falls Creek, a perennial stream, forms a portion of the eastern boundary of the allotment (Northeast Pasture) but livestock do not have access to the stream due to cliffs/rimrock. Therefore, Standard 7 does not apply to the reaches of Salmon Falls Creek within the Kinyon Allotment.

Due to the absence of intermittent or perennial water bodies, Standard 7 also does not apply to the Northwest or Southwest Pastures.

Southeast and South Pastures:

Rangeland Health Assessment

Devil Creek flows along the eastern side of the Southeast and South Pastures of the Kinyon Allotment. Livestock are able to access Devil Creek within the allotment, but access is restricted due to fencing and cliffs/rimrock. This reach of Devil Creek is dewatered for much of the year upstream of the allotment for the purpose of irrigating private lands. No riparian vegetation exists along the reach of Devil Creek within the allotment due to the dewatering. The Devil Creek reach within the Kinyon Allotment is an ephemeral stream.

Evaluation of Standard 7

Devil Creek within the allotment is within Idaho Department of Environmental Quality (IDEQ) assessment unit (AU) ID17040213SK002_04. The AU is listed in the IDEQ 2012 Integrated Report as not supporting the beneficial use of cold water aquatic life (IDEQ 2014). Cold water aquatic life is the beneficial use for undesignated water bodies which includes water bodies for which uses have not been designated or use designations are incomplete (IDAPA 58.01.02). The cause listed for the AU not supporting the beneficial use is elevated water temperature. The AU was removed from the 303(d) list of water quality impaired streams after approval of the Salmon Falls Subbasin Assessment and Total Maximum Daily Loads (TMDL) (IDEQ 2008). The AU is currently identified as a Category 4a stream (i.e., AU with an approved TMDL).

Evaluation Finding – Southeast and South Pastures are:

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

Rationale for Evaluation Finding

Although Standards 2 and 3 do not apply to the Kinyon Allotment, Standard 7 is not being met in the Southeast and South Pastures of the allotment based on IDEQ beneficial use support status and water quality impairment information (IDEQ 2014). The Devil Creek AU within the allotment (AU ID17040213SK002_04) is listed by IDEQ as not supporting the beneficial use of cold water aquatic life due to elevated water temperature. However, the reaches of Devil Creek within the allotment are dewatered for private land irrigation and are not capable of supporting the designated beneficial use of cold water aquatic life. The current management on the Kinyon Allotment is not affecting water temperature for Devil Creek within the AU. Therefore, it is not causing Devil Creek to fail to support the designated beneficial use of cold water aquatic life.

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 Kinyon Allotment. In the Jarbidge Field Office special status plants are generally associated with distinct soil types. 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 355 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 Kinyon Allotment contains 2,122 acres (12% 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 724 acres of high potential, 1,110 acres of medium potential, 288 acres of low potential, and 15,589 acres of non-habitat for slickspot peppergrass (Table 16). The nearest known occupied habitat for slickspot peppergrass is 15 miles to the west, on the west side of Clover

Creek.

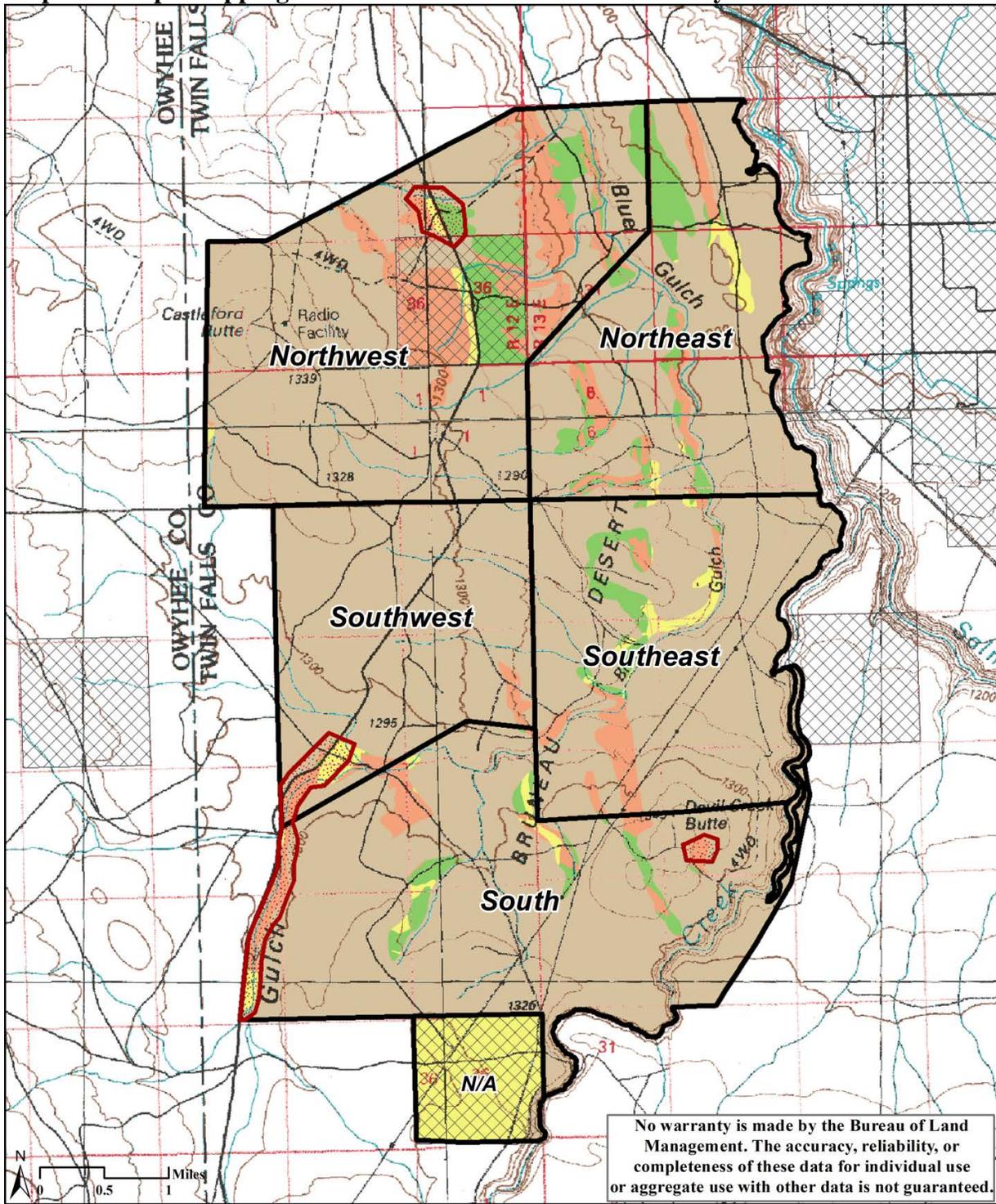
Table 16. Slickspot Peppergrass Potential Habitat (Acres)

Pasture[^]	High	Medium	Low	Non-habitat
Northeast	280	198	70	2,412
Northwest	167	417	16	3,635
Southeast	134	184	75	2,879
South	140	218	80	4,155
Southwest	3	93	47	2,438

[^]An additional 70 acres administered by the BLM occur within the Kinyon Allotment; however, these acres are within the canyon and do not occur within a pasture. These 70 acres are categorized as non-habitat for slickspot peppergrass.

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Map 7. Slickspot Peppergrass Potential Habitat and Area 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 Kinyon 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).

Large fires such as the Clover Fire in 2005, Murphy Complex Fire of 2007, Long Butte Fire of 2010, and Kinyon Road Fire of 2012 have eliminated the majority of sagebrush in the allotment.

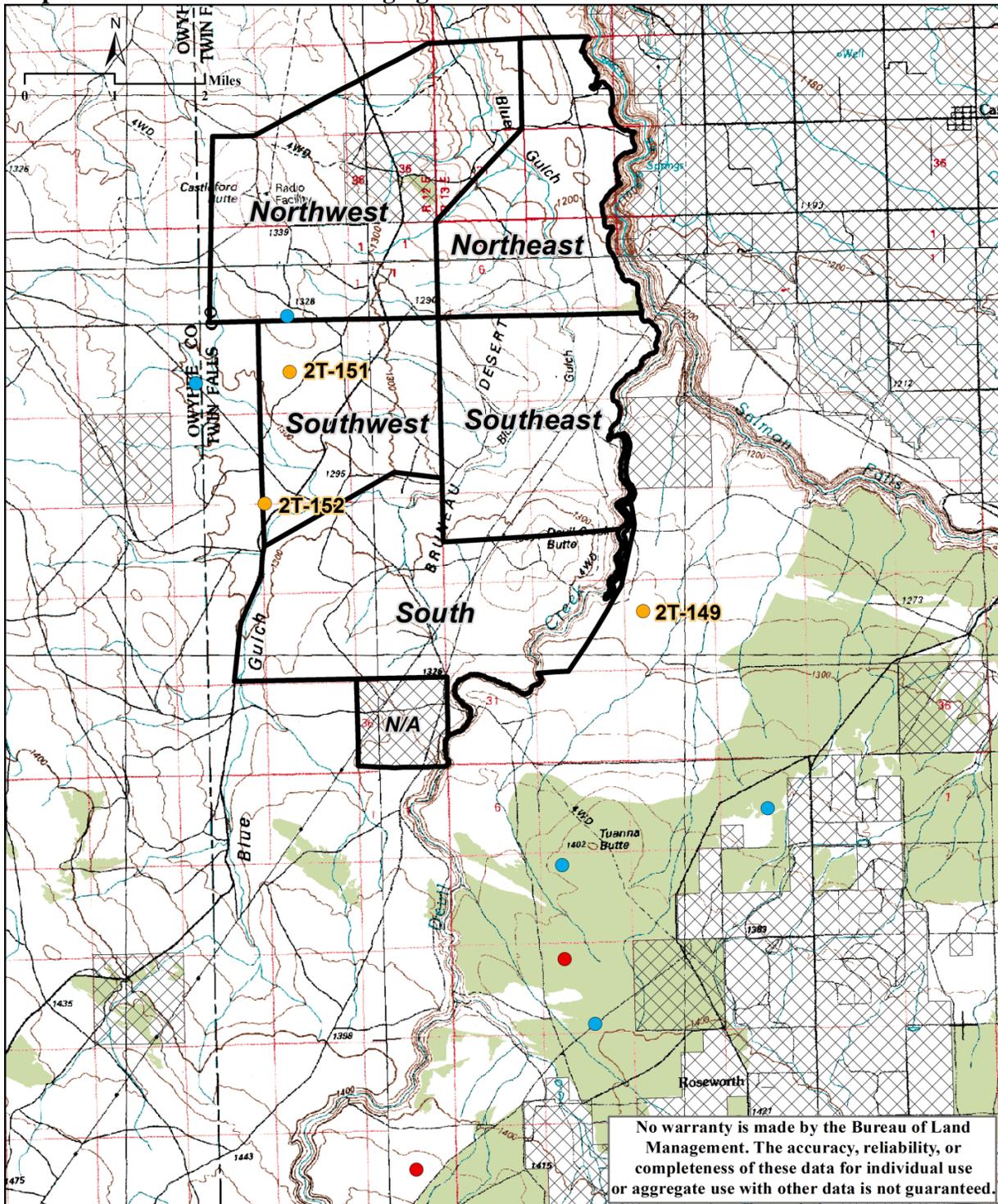
Based on vegetation mapping from 2013, the only remaining sagebrush occurs in small isolated patches in the Northeast (28 acres, <1% of pasture), Northwest (2 acres, <1% of pasture), and Southeast (1 acre, <1% of pasture) Pastures.

Following the fires, the BLM aerial seeded sagebrush in strips; however, following the Kinyon Road Fire in 2012 the BLM only reseeded sagebrush on approximately 2,300 acres of the allotment (13% of the allotment). Areas burned in the Kinyon Road Fire that were not reseeded to sagebrush include the majority of the Northeast, Northwest, South, and Southwest Pastures. Where sagebrush has been reseeded, recovery of the sagebrush community needed for sage-grouse is expected to take one (Wambolt and Payne, 1986) to several (Baker, 2006; Baker, 2011) decades assuming the absence of additional fire. Where sagebrush has not been reseeded, areas are not expected to recover without suitable seed sources.

Large areas of sagebrush occur to the south of the allotment in the Conover and Roseworth Point Allotments (Map 8).

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Map 8. Shrubland Habitat and Sage-grouse Leks



The Kinyon Allotment contains 2 occupied and 1 undetermined (due to a lack of recent surveys) sage-grouse leks. Within five miles there are 3 occupied, 5 undetermined, 1 not verified (historic lek in database, no count numbers assigned to the lek), and 2 unoccupied sage-grouse leks (Map 8). Sage-grouse attendance at occupied leks within five miles of the allotment are shown in Table 17. Leks are considered occupied if there has been documented sage-grouse activity within the past five years.

Table 17. Sage-grouse Attendance at Occupied Leks within Five Miles of the Kinyon Allotment, 2000-2014

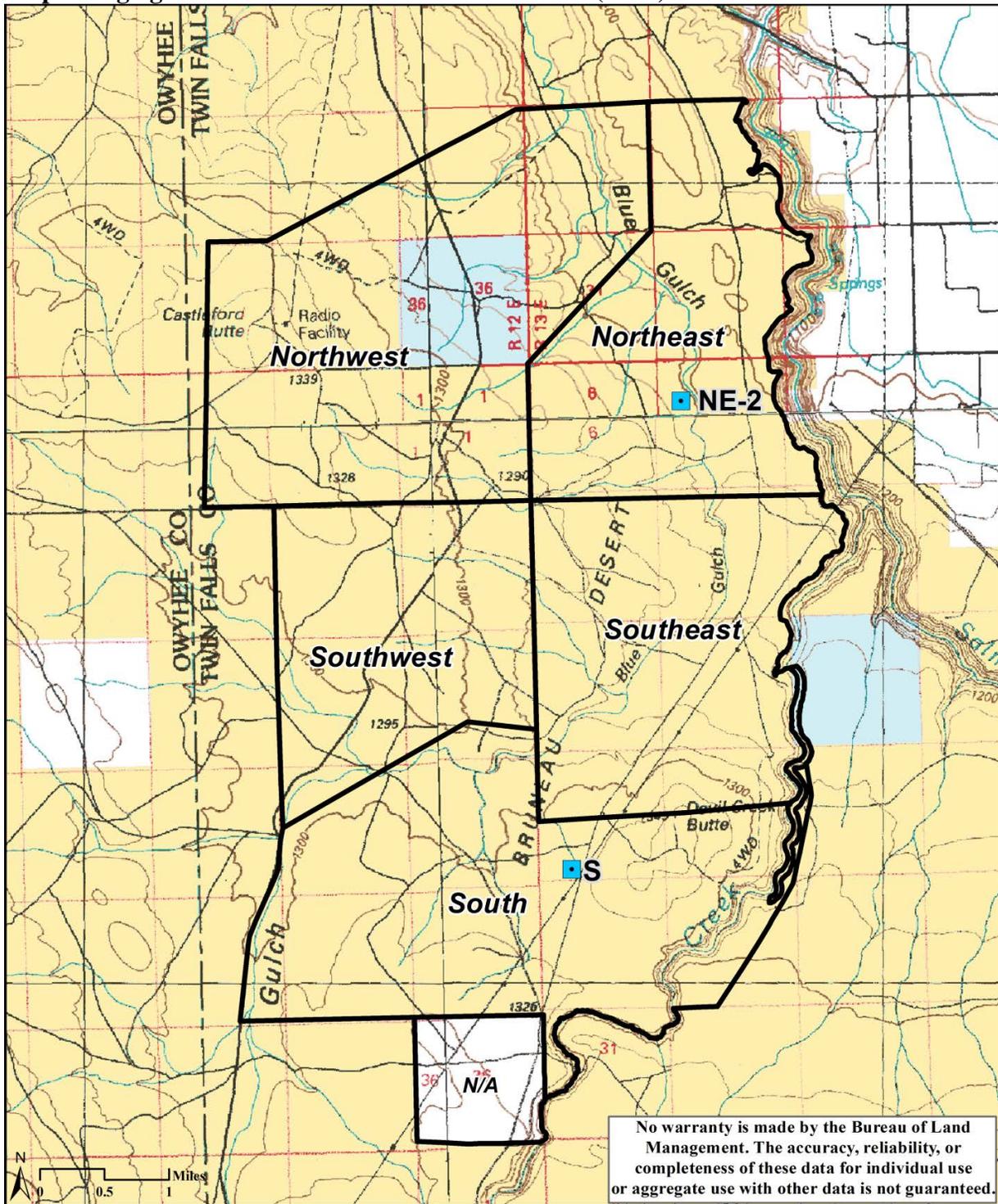
Lek	Location	Survey Year ¹														
		00	01	02	03	04	05	06	07	08	09	10	11	12	13	14
2T-151	SW Pasture	13	11	8	--	0	0*	0	0*	19	10	18*	0	4*	8	4
2T-152	SW Pasture	0	0	0	--	0	0*	0	--*	0	0	--	13	0*	0	0
2T-149	0.4 mile E	18	16	12	--	--	2	3	--	0	8	0	4	12*	16	9

¹Surveys were not conducted in years indicated by dashes (--); an asterisk indicates area around lek burned in a wildfire that year (*).

Nesting and Early Brood Rearing Habitat

The current conditions of sage-grouse seasonal habitats were assessed following protocols outlined in the Sage-grouse HAF (Stiver et al., 2010). Sage-grouse habitat suitability assessments were conducted in 2012 at HAF site **S-** South Pasture and in 2013 at HAF site **NE_2-** Northeast Pasture. Locations of sage-grouse habitat suitability assessments (HAF sites) are shown in Map 9.

Map 9. Sage-grouse Habitat Assessment Framework (HAF) Sites



No sage-grouse droppings were observed during the assessments or during the IIRH field visits. Sage-grouse habitat suitability assessments are not necessarily an indication of rangeland health; they are merely indicators of habitat suitability. However, vegetation data collected as part of the habitat suitability assessments may be used to inform and interpret other rangeland health information and observations. Sage-grouse habitat suitability assessments are shown in Table 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
Average Sagebrush Canopy Cover	15 - 25%	10 - < 15% or > 25%	< 10%
			NE_2(3% sagebrush, 7% rabbitbrush), S(0%)
Average Sagebrush Height	12 - 30"	10 -11" or >30"	< 10"
	NE_2(25")		S(0")
Sagebrush Growth Form	Spreading	Mix of spreading and columnar	Columnar
	NE_2		S
Average Grass Height	≥ 7"	5 - < 7"	< 5"
			NE_2(1.9"), S(2.9")
Average Perennial Grass Canopy Cover	≥ 10%	5 - < 10%	< 5%
	NE_2(29%), S(39.5%)		
Average Forb Canopy Cover	≥ 5%	3 - < 5%	< 3%
			NE_2(1%), S(1%)
Preferred Forb Abundance and Diversity	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
			NE_2, S
Overall Site Evaluation			NE_2, S
Pasture Evaluation			Northeast, Northwest, South, Southeast, Southwest

One HAF site is located in the Northeast Pasture (HAF site NE_2). The entire pasture has burned and the only area mapped as sagebrush is in the southeastern corner of the pasture (28 acres, <1% of the pasture). Sagebrush is sparse throughout the pasture (3% sagebrush cover at the HAF site, 1-2% sagebrush cover in the west half of the pasture). Without sagebrush of adequate cover and height, the pasture is unsuitable for sage-grouse. Grass canopy cover was rated suitable and average grass height was rated unsuitable. Eight species of forbs were observed with the only common forb being sagebrush phlox (*Phlox aculeata*). Cheatgrass was observed at 20 percent cover (all layers).

The South Pasture contains one HAF site (HAF site S). The entire pasture has burned and does not contain any areas mapped as sagebrush making it unsuitable for sage-grouse. HAF site S is mapped as recent burn and will likely return as a Sandberg bluegrass vegetation community. Attributes at the site were rated unsuitable for all habitat indicators except for perennial grass

canopy cover (suitable). Eight forb species were observed with the only common forbs being sagebrush phlox and longleaf phlox (*Phlox longifolia*). Cheatgrass was observed at 0.5 percent cover (all layers).

The Northwest, Southeast, and Southwest Pastures were not assessed using the HAF. These pastures have all burned in wildfires, which essentially eliminated suitable sagebrush cover for nesting and early brood rearing. During the IIRH field visit sagebrush seedlings were observed in the west half of the Northeast Pasture and the northeast third of the Northwest Pastures. Sagebrush was aerial seeded in strips in these areas following the Clover Fire of 2005. Seedlings are in the 1-2 percent cover range and are up to 20" in height. Sagebrush seedlings were not observed in areas that were seeded and then re-burned in the Kinyon Road Fire of 2012.

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

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

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

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

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

There are 4 nesting territories for ferruginous hawks in the allotment (Table 19). Nests occur in scattered junipers along Blue Gulch. The Northeast Pasture contains one nesting territory with a nest (Nest F36) that was destroyed by the Kinyon Road Fire of 2012 and another nest (Nest F36a) 0.6 mile to the south that was not burned. The Southwest Pasture contains two nesting territories with 4 nest sites (Nests F24, F24a, F25, F25a). On the border between the Southwest and South Pastures there is another nesting territory with a primary nest (Nest F34) and an alternate nest (Nest F34a). Wildfires have killed some junipers along Blue Gulch, but the burned skeletons still support raptor nests.

Table 19. Ferruginous Hawk Nest Data

Nest	Survey Year ¹													10	11	12	13				
	95	96	97	98	99	00	01	02	03	04	05	06	07					08	09		
F24	--	2	--	--	--	I	I	--	--	--	--	--	2	2	I	I	1	--	3		
F24a																		I	I		
F25	--	2	--	--	--	I	I	--	--	--	--	--	A	I	I	I	1	2	I	R-4	
F25a																		I	--	I	
F25b																		I*	--	I	
F34		1	--	--	--	2	A	--	--	--	--	--	3	I	1	--	--	2	RT-3	I	
F34a																	2	A	--	R-5	
F36			1	--	--	I	I	--	--	--	--	--	I	I	2	S	1			Nest tree burned in 2012	
F36a																				I	I

¹Where the table is blank the nest had not yet been identified. Surveys 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. If the nest was used by common raven (R), red-tailed hawk (RT), or Swainson hawk (S) that was also recorded. An asterisk indicates the nest materials fell out of the tree (*).

Junipers along Blue Gulch provide suitable nesting habitat in the Northeast (approximately 6 junipers), Northwest (approximately 40 junipers), South (approximately 75 junipers), and Southeast (approximately 140 junipers) Pastures. No trees are present in the Southwest Pasture. The allotment is predominately a perennial grassland that provides marginal habitat for mammalian prey (black-tailed jackrabbit, mountain cottontail, ground squirrels, etc.) favored by ferruginous hawks.

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

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

Wildfires have eliminated the majority of sagebrush in the allotment making it unsuitable for Brewer's Sparrow nesting. The only remaining nesting habitat occurs in small isolated patches of sagebrush. Small isolated patches of sagebrush occur in the Northeast (28 acres, <1% of pasture), Northwest (2 acres, <1% of pasture), and Southeast (1 acre, <1% of pasture) Pastures.

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

Loggerhead shrikes are associated with open grasslands and shrub-steppe habitats. In southern Idaho loggerhead shrikes place nests in big sagebrush, antelope bitterbrush and greasewood (Woods and Cade, 1996). Nest shrubs ranged from 35 to 117 inches tall (Woods and Cade, 1996). The average height of the nest was 31 inches and ranged from 13 to 63 inches above ground (Woods and Cade, 1996). Although big sagebrush was shorter than greasewood or bitterbrush nest height was similar for all shrubs (Woods and Cade, 1996). In the Jarbidge Field Office a few loggerhead shrike nests have been found in western juniper.

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

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

Wildfires have eliminated the majority of sagebrush in the allotment making it unsuitable for Loggerhead shrike nesting. The only remaining nesting habitat occurs in small isolated patches of sagebrush. Additionally, junipers along Blue Gulch provide some nesting habitat.

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

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

Wildfires have eliminated the majority of sagebrush in the allotment making it unsuitable for sagebrush sparrow nesting. The only remaining nesting habitat occurs in small isolated patches of sagebrush.

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

Pygmy rabbits are sagebrush obligates that are usually found in areas with tall dense stands of big sagebrush and deep soils (Green and Flinders, 1980; Heady and Laundré, 2005). Pygmy rabbits usually excavate burrow systems with multiple entrances. Burrow entrances are often at the base of sagebrush (Green and Flinders, 1980). Pygmy rabbits spend most of their time (68%)

in a generally small area (less than 200 feet radius [3 acres]) from the burrow within a larger (90 acres to 170 acres) home range. The primary food of pygmy rabbits is sagebrush which comprises 99 percent of its winter diet (Green and Flinders, 1980). Grasses and forbs make up more of the diet in the late spring into early summer.

No surveys for pygmy rabbits have been conducted in the allotment. Without sagebrush the allotment is unsuitable for pygmy rabbits.

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

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

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

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

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

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

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

Tall cliffs that provide suitable roosting habitat for spotted bats are present along Devil Creek and Salmon Falls Creek. Spotted bats may forage along the canyons and over the allotment.

Evaluation for Standard 8

There are no known BLM sensitive or federally listed plants within the Kinyon Allotment. Approximately 355 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 724 acres of high potential, 1,110 acres of medium potential, and 288 acres of low potential habitat for slickspot peppergrass. The nearest known occupied habitat for slickspot peppergrass is 15 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	South	Southeast	Southwest
Sage-grouse (nesting & early brood rearing)	U	U	U	U	U
(late brood rearing)	U	U	U	U	U
(winter)	U	U	U	U	U
Ferruginous hawk (nesting)	S	S	S	S	U
(foraging)	M	M	M	M	M
Brewer's sparrow (nesting)	U	U	U	U	U
Sagebrush sparrow (nesting)	U	U	U	U	U
Loggerhead shrike (nesting)	U	U	U	U	U
Pygmy rabbit (year round)	U	U	U	U	U
Piute ground squirrel (year round)	M	M	M	M	M
Spotted bat (roosting)	S	U	S	S	U
(foraging)	S	S	S	S	S

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

Overall, sage-grouse nesting and early brood rearing habitat is unsuitable since wildfire has eliminated the majority of sagebrush in the allotment. The only remaining areas mapped as sagebrush occur in small isolated patches in the Northeast (28 acres, <1% of pasture), Northwest (2 acres, <1% of pasture), and Southeast (1 acre, <1% of pasture) Pastures. Restoration of sage-grouse habitat in this allotment has been difficult due to repeated wildfires. No late brood rearing habitat is found within the allotment. Without sagebrush, wintering habitat was rated unsuitable.

Junipers along Blue Gulch provide suitable nesting habitat in the Northeast (approximately 6 junipers), Northwest (approximately 40 junipers), South (approximately 75 junipers), and Southeast (approximately 140 junipers) Pastures. No trees for nesting are present in the Southwest Pasture. The allotment contains marginal habitat for prey species such as mountain cottontail, black-tailed jackrabbit and ground squirrels usually hunted by ferruginous hawk.

Without sagebrush the allotment was rated unsuitable for Brewer's sparrow, loggerhead shrike, and sagebrush sparrow nesting. Pygmy rabbit habitat was also rated unsuitable.

Wildfires have converted shrub-steppe habitats in the allotment to perennial grass communities. Because shrub habitats provide more favorable environments for ground squirrels than grass habitats (Yensen et al., 1992; Van Horne et al., 1997) pastures in the allotment were rated marginal for Piute ground squirrels.

Spotted bat roosting habitat is found along the eastern side of the Northeast, South, and Southeast Pastures. The Northwest and Southwest Pastures do not contain roosting habitat. Spotted bats may forage along Devil Creek and Salmon Falls Creek and over the allotment.

Evaluation Finding – Allotment (Northwest, Northeast, Southwest, Southeast, and South Pastures) is:

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

Rationale for Evaluation Finding

Large fires such as the Clover Fire in 2005, Murphy Complex Fire of 2007, Long Butte Fire of 2010, and Kinyon Road Fire of 2012 have eliminated the majority of sagebrush in the allotment. The only remaining areas mapped as sagebrush occur in small isolated patches in the Northeast (28 acres, <1% of pasture), Northwest (2 acres, <1% of pasture), and Southeast (1 acre, <1% of pasture) Pastures. In addition, sagebrush seedlings were observed during the IIRH field visits in the west half of the Northeast Pasture and the northeast third of the Northwest Pastures (1-2% sagebrush cover). Without sagebrush of adequate density across the majority of the allotment, the allotment is unsuitable for sage-grouse and other sagebrush dependent special status species. Therefore, all pastures in the allotment are not meeting Standard 8.

Restoration of sage-grouse habitat in this allotment has been difficult due to repeated wildfires. Following the fires, the BLM aerial seeded sagebrush in strips; however, following the Kinyon Road Fire in 2012 the BLM only reseeded sagebrush on approximately 2,300 acres of the allotment (13% of the allotment). Areas burned in the Kinyon Road Fire that were not reseeded to sagebrush include the majority of the Northeast, Northwest, South, and Southwest Pastures. Where sagebrush has been reseeded, recovery of the sagebrush community needed for sage-grouse is expected to take one (Wambolt and Payne, 1986) to several (Baker, 2006; Baker, 2011) decades assuming the absence of additional fire. Where sagebrush has not been reseeded, areas are not expected to recover without suitable seed sources.

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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 thurberianum</i>	Thurber's needlegrass	Native	NW_1
<i>Agropyron cristatum</i>	Crested wheatgrass	Exotic, Seeded	NE, NE_1, NW_1, SP_1
<i>Elymus elymoides</i>	Squirreltail	Native	NW_1, S, SE_1, SW_1
<i>Poa bulbosa</i>	Bulbous bluegrass	Exotic	NW_1, SE_1
<i>Poa secunda</i>	Sandberg bluegrass	Native	NE, NE_1, NW_1, S, SE_1, SP_1, SW_1
<i>Pseudoroegneria spicata</i>	Bluebunch wheatgrass	Native, Seeded	NW_1, SE_1, SW_1
Annual Grasses			
<i>Bromus tectorum</i>	Cheatgrass	Exotic, Invasive	NE_1, NW_1, SE_1, SP_1, SW_1
<i>Vulpia octoflora</i>	Sixweeks fescue	Native	NE_1, NW_1
Perennial Forbs			
<i>Allium nevadense</i>	Nevada onion	Native	SE_1, SP_1, SW_1
<i>Astragalus atratus</i>	Mourning milkvetch	Native	NW_1
<i>Astragalus lentiginosus</i>	Freckled milkvetch	Native	SE_1, SW_1
<i>Astragalus purshii</i>	Woollypod milkvetch	Native	NW_1, SE_1, SP_1
<i>Balsamorhiza hookeri</i>	Hooker's balsamroot	Native	NW_1
<i>Calochortus bruneaunis</i>	Bruneau mariposa lily	Native	NE, NE_1, NW_1, SE_1
<i>Castilleja angustifolia</i>	Northwestern Indian paintbrush	Native	S
<i>Chaenactis douglasii</i>	Douglas' dustymaiden	Native	NE
<i>Crepis acuminata</i>	Tapertip hawkbeard	Native, Sage-grouse Preferred	NW_1
<i>Cryptantha</i> spp.	Cryptantha	Native	SE_1
<i>Delphinium andersonii</i>	Anderson's larkspur	Native	NE_1, NW_1, SE_1, SP_1
<i>Erigeron aphanactis</i>	Rayless shaggy fleabane	Native, Sage-grouse Preferred	S
<i>Erigeron pumilus</i>	Shaggy fleabane	Native, Sage-grouse Preferred	NE, S, SP_1
<i>Linanthus pungens</i>	Granite prickly phlox	Native	S
<i>Linum lewisii</i>	Lewis flax	Native	SW_1
<i>Lomatium foeniculaceum</i>	Desert biscuitroot	Native, Sage-grouse Preferred	SP_1
<i>Machaeranthera canescens</i>	Hoary tansyaster	Native	NE
<i>Medicago sativa</i>	Alfalfa	Exotic, Sage-grouse Preferred	NW_1, SE_1
<i>Onobrychis viciifolia</i>	Sainfoin	Exotic, Sage-grouse Preferred	SE_1, SW_1
<i>Penstemon</i> spp.	Penstemon	Native	SE_1
<i>Penstemon speciosus</i>	Royal penstemon	Native	SP_1
<i>Phlox aculeata</i>	Sagebrush phlox	Native, Sage-grouse Preferred	NE, NE_1, NW_1, S, SE_1, SP_1, SW_1
<i>Phlox hoodii</i>	Spiny phlox	Native, Sage-grouse Preferred	NW_1, S, SE_1, SW_1
<i>Phlox longifolia</i>	Longleaf phlox	Native, Sage-grouse Preferred	NE, NW_1, S, SW_1
<i>Tragopogon dubius</i>	Yellow salsify	Exotic, Sage-grouse Preferred	NE_1, NW_1, SE_1, SP_1, SW_1
<i>Zigadenus venenosus</i>	Meadow deathcamas	Native	NW_1
Annual Forbs			
<i>Ceratocephala testiculata</i>	Curvseed butterwort	Exotic	NE_1, NW_1, SE_1,

Scientific Name	Common Name	Species Type	Site(s) where species occurred
			SP_1, SW_1
<i>Collinsia parviflora</i>	Maiden blue eyed Mary	Native	SP_1
<i>Descurainia incana</i>	Mountain tansymustard	Native	NE, SE_1, SP_1
<i>Descurainia pinnata</i>	Western tansymustard	Native	NW_1, SP_1, SW_1
<i>Halogeton glomeratus</i>	Saltlover	Exotic	NE_1
<i>Lactuca serriola</i>	Prickly lettuce	Exotic, Sage-grouse Preferred	S
<i>Lepidium perfoliatum</i>	Clasping pepperweed	Exotic	NW_1, SP_1, SW_1
<i>Microsteris gracilis</i>	Slender phlox	Native, Sage-grouse Preferred	SP_1
<i>Salsola kali</i>	Russian thistle	Exotic	SE_1, SP_1
<i>Sisymbrium altissimum</i>	Tall tumbledustard	Exotic	NW_1, SP_1, SW_1
Shrubs			
<i>Artemisia tridentata ssp. wyomingensis</i>	Wyoming big sagebrush	Native	NE, NW_1
<i>Atriplex canescens</i>	Fourwing saltbush	Native	NW_1
<i>Chrysothamnus viscidiflorus</i>	Yellow rabbitbrush	Native	NE, SP_1
<i>Ericameria nauseosa</i>	Rubber rabbitbrush	Native	NE, SP_1

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