

Standards for Land Health Evaluation
and
Guidelines for Livestock Grazing Management
for
Public Lands in Oregon and Washington

Update for
Lane Plan 1 Allotment (#00207)

April 2019

Background

The Lane Plan 1 Allotment (#00207) is located approximately 20 miles east of Lakeview, Oregon (see Map A-1) south of Hwy 140. The allotment, totaling 26,577 acres¹ with one permittee, contains six pastures: Big Lake (7,833 acres), Big Valley (7,425 acres), Grain Camp (1,356 acres), Juniper Lake (5,084 acres), North Gibson Canyon (1,251 acres), and South Gibson Canyon (3,582 acres) totaling. The Bureau of Land Management (BLM) manages 25,090 acres, which includes 90 acres owned by a private individual with an agreement for the bureau to manage the land in the Big Valley pasture. The remaining 1,487 acres within the allotment is managed under private ownership. Within the allotment are 37 acres of exclosures, the majority (98%) of which exclude cattle from riparian areas along Twentymile Creek in the Big Valley pasture. This exclosure was built in response to a 1994 Biological Opinion (BO) issued by the US Fish and Wildlife Service (USFWS) to minimize effects on the Warner Sucker (*Catostomus warnerensis*).

There are 1,942 Animal Unit Month's (AUM) authorized for cattle forage between April 1st through October 10th. The Lane Plan 1 Allotment has been grazed under a rest-rotation system, which has been in place since 1969 with minor rescheduling primarily due to the availability of water for livestock. Water for livestock is limited to reservoirs, springs, and waterholes, which can be dry during years of low precipitation.

There are 27 long term trend plots on the allotment with 13 plots in Big Lake pasture, 5 plots in Big Valley pasture, 1 plot in Grain Camp pasture, 6 plots in Juniper Lake pasture, 1 plot in N. Gibson Canyon pasture, and 1 plot in S. Gibson Canyon pasture. Nine of the trend plots have additional monitoring, which may include a combination of Line-Point-Intercept (LPI), Observed Apparent Trend (OAT), Nested Frequency, and/or Step-toe transects. Eighteen of the trend plots are photo plots only. Additionally, 7 Assessment, Inventory, and Monitoring (AIM) plots with photos, soil, and vegetation data were randomly collected throughout the allotment.

A Lane Plan 1 Allotment Rangeland Health Assessment (RHA) was originally completed in 1999. Standards 1, 3, and 5 were met; while standards 2 and 4 were not met. This assessment is an update to the original RHA. Presented in Table 1 is a summary of both the original 1999 and updated assessments.

The same Ecological Site Inventory (ESI) data was used in both RHA's; however, since the ESI data was first collected, the data has had refinements which were finalized in 2005 for the Lakeview District. Therefore, the ESI data between the previous RHA and the current RHA differ slightly.

Table 1. Summary of Rangeland Health Assessments for the Lane Plan 1 Allotment (#00207)

Standard	2018 Assessment	Comments 2018	1999 Assessment	Comments 1999
1. Watershed Functional – Uplands	Met	Trend, utilization, and AIM monitoring data indicate vegetation and litter cover are adequately protecting soils and allow for infiltration, permeability rates, moisture storage, and overall soil stability appropriate to the climate and landform for the allotment. See standard 1 discussion.	Met	Majority of soil (93%) is rated as having stable to slight erosion potential and having a stable to upward ecological trend. Vegetation community and range condition data were consistent with plant composition for the identified soils and climate.
2. Watershed Function – Riparian/ Wetland Areas	Met	In 2016, an interdisciplinary team (ID) identified and surveyed a total of 2,546 acres of intermittent wetlands in the allotment. All 2,546 acres were determined to be at PFC. PFC surveys completed in 2016, within the allotment, found 0.2 miles of Twentymile Creek Functional at Risk with an Upward Trend; the remaining 1.28 miles within the allotment were determined to be at PFC.	Not Met	Two reaches on Twentymile Creek were rated as Functional at Risk during PFC surveys in 1996. One of these reaches had an upward trend and has been excluded from grazing since 1996. The other reach had No Apparent Trend and the existing conditions are the result of historical grazing practices and natural conditions. Current management practices are resulting in progress towards meeting the standard. Current livestock management is not a significant factor in not meeting the standard.
3. Ecological Processes	Met	This standard is currently met for natural wildlife populations, diversity, and sustainability with current environmental conditions. The majority of ecosystems in the allotment are within functional condition and support natural ecological process Currently, this standard is being met for vegetation. Low sagebrush-Idaho fescue and low-sagebrush –Sandberg bluegrass communities comprise over 50% of the allotment. Based on trend plots and AIM plots the vegetation community is similar to the reference state with some invasives, while ecological functions have been maintained. Therefore current rest-rotation grazing management is maintaining sufficient vegetation cover and litter for nutrient cycling, energy flow, and hydrologic cycle in the Lane Plan 1 Allotment.	Met	The allotment is managed under a rest-rotation grazing system maintaining plant health and current vegetative communities appropriate to these soils and climate. Current grazing management is maintaining sufficient vegetation cover and litter for nutrient cycling.
4. Water Quality	Not Applicable	The reaches of Twentymile Creek in the allotment are intermittent, generally going dry by the end of June, so there is not water	Not Met	Twentymile Creek, which is intermittent, from the mouth to the headwaters does not meet state temperature standards.

		available to measure water quality parameters. Twentymile Creek within the allotment does not contribute water via overland flow to the lower reaches where the water quality parameters were measured. This standard is not applicable within the allotment.		Livestock management is not considered to be a significant factor in not meeting the standard.
5. Native, T/E, And Locally Important Species	Met	Designated critical Warner Sucker habitat (Threatened species under the Endangered Species Act (ESA)) exists within the allotment. No occupied habitat exists within the allotment, and is not likely to exist due to natural fish passage barriers. Stream channel and riparian conditions within the allotment have an upward trend. This update includes Multi-Scale suitability ratings for Greater Sage Grouse. The Lakeview IDT determined seasonal habitat availability is appropriate for the Greater Sage-Grouse—see Standard 5 discussion.	Met	The diversity of plant and wildlife species are consistent with productive sagebrush steppe communities. No known special status species plants occur within the allotment. While, Twentymile Creek flows into occupied Warner sucker habitat, which is a Threatened Species under the Endangered Species Act (ESA), no occupied habitat exists within the allotment.

Standard 1. Watershed Function-Uplands: Upland soils exhibit infiltration and permeability rates, moisture storage, and stability that are appropriate to soil, climate, and landform.

This standard is being met. This is the same determination reached in the previous RHA in 1999 which used ESI transects to determine Observed Apparent Trend (OAT), Ecological Condition and soil erosion potential with the Soil Surface Factor (SSF) rating.

In 2018 SSF ratings (Table 2b) for the allotment show 2,558 acres (10%) were classified as being stable, 18,854 acres (71%) as having slight erosion potential, and 1 acre (< 1%) with critical erosion potential. The remaining 5,165 acres (19%) are unknown due to vegetation communities within transition areas which were too small to be mapped separately. Ratings for OAT (Table 2c) indicated 4,882 acres (18%) were trending upward, with a static rating for 16,288 acres (61%), a downward trend for 243 acres (1%), and the remaining 5,165 acres (19%) are unknown.

In 2018 the Lane Plan 1 Allotment has primarily stable or upward trends, as indicated by monitoring plots (see Map A-2) consisting of photographs and vegetation transect data (Appendix A - Monitoring Summaries). However, plots PS-455 A, PS-455 B, and PS-455 C located within 120 meters of each other, indicate a downward trend due to an increase in brome species, such as cheatgrass (*Bromus tectorum*), field brome, also known as Japanese brome, (*Bromus arvensis*), and soft brome (*Bromus hordeaceus*); which are annual, shallow rooted grasses providing poor vegetation and decreasing soil conditions. In addition to the trend plots, there are AIM plots with baseline data which can be grouped by dominate vegetation communities. These trend and AIM plots fall within 7 dominant ESI Geographic Information

System (GIS) polygon² (polygons are derived from ESI transect data) vegetation and soil communities (see Maps A- 3-4) and the unknown portions of the allotment (Table 2a-d): bluebunch wheatgrass (*Pseudoroegneria spicata*) at 469 acres (2%), low sagebrush (*Artemisia arbuscula*)-Brome species at 1,123 acres (4%), low sagebrush-Idaho fescue (*Festuca idahoensis*) at 4,498 acres (17%), low sagebrush-Sandberg's bluegrass (*Poa secunda*) at 8,338 acres (31%), silver sagebrush (*Artemisia cana*) at 235 acres (1%), mountain big sagebrush (*Artemisia tridentata*)-Sandberg bluegrass at 468 acres (2%), western juniper (*Juniperus occidentalis*)-low sagebrush-Idaho fescue at 3,000 acres (11%), and unknown at 4,147 acres (15%); totaling 22,277 acres (84%) of the allotment. The remaining ESI polygons with no plot data accounts for 4,300 acres (16%), primarily composed of low sagebrush, big sagebrush, and western juniper communities.

Based on all plot data available, there is adequate vegetation cover, litter, and community structure to facilitate infiltration, moisture storage, and soil stability appropriate for the soils found on the Lane Plan I Allotment in conjunction with the climate regime for this region.

Bluebunch wheatgrass dominant vegetation communities

Within the bluebunch wheatgrass ESI polygon is one photo trend plot (LP1-07) indicating the site is stable. From the photographs it is obvious the plot location lies within an area of big sagebrush. Both shrubs and grasses appear vigorous during the years the plot was recorded. Foliar and ground cover, as seen in the photographs, appears consistent with the bluebunch wheatgrass ESI data.

Low sagebrush-brome species dominant vegetation communities

There are two AIM plots, LA-INTS-016 and SFA-UPSH-672, in the low sagebrush-brome species ESI polygon. Foliar, ground, and litter cover appear consistent with the low sagebrush-brome species ESI data. Baseline data for LA-INTS-016 (Table 3) and SFA-UPSH-672 (Table 6) indicate both have similar foliar cover. In addition to foliar and ground cover measurements, AIM plots measure soil stability. Plot LA-INTS-016 (Table 5) had a soil stability rating of 1.4, while SFA-UPSH-672 (Table 8) had a rating of 2.1; both ratings indicating potential for soil erosion expected from soils with high clay and low organic content.

Plot SFA-UPSH-672 also includes Rangeland Health Indicators (RHI) (Table 9), which rated the plot as having slight to moderate deviations from reference conditions, at the plot site, for both "Soil Stability" and "Hydrologic Function" and a rating of none to slight for "Biotic Integrity". While these RHI ratings indicate deviations from reference conditions with the rill and overland surface indicators, they are not indications that the site is in a downward trend. The presence of rills and overland flow appear to be the result of historic soil erosion and the site is currently very stable based on biotic indicators. The photos of the site support this conclusion as the vegetation cover and production of shrubs and perennial grass (bottlebrush squirreltail) is indicative of a site producing at potential. The SSF ratings (Table 2b) from the ESI data indicate soil stability has a slight potential for soil erosion.

The vegetation cover and production recorded at these AIM plots indicate that the soils in the low sagebrush-brome species polygon exhibit infiltration and permeability rates, moisture storage, and stability that are appropriate for these sites.

Low sagebrush-Idaho fescue dominant vegetation communities

The low sagebrush-Idaho fescue ESI polygons contain 10 plots. Two of the plots (LP1-508 and PS-455 D) are photo trend only, both indicating stable trends. Photographs from plot LP1-508 show shrubs and grasses have maintained vigor, and are near a juniper thinning where range conditions may change. Plot PS-455 D shows trend is stable, with shrubs and grasses maintaining health. Foliar and ground cover, as seen in the photographs, appears consistent with the low sagebrush-Idaho fescue ESI data.

Plot LP1-01 is a nested frequency plot (Table 10) with data collected 5 times between the years 1997-2014. Photos and measurements for bare ground, foliar cover, litter cover, and bare rock cover have low variation over the years, thus the trend is stable. Foliar, ground, and litter cover appear consistent with the low sagebrush-Idaho fescue ESI data.

Plot LP1-01 also had an OAT rating taken in 1987 (Table 13). In 1987 the plot was rated as having an upward trend due to high vegetation vigor, a high number of seedlings of desirable species, sufficient litter, and little evidence of pedestaling. The site did have well developed gullies, but appear to be from historic erosion and did not affect the upward trend rating.

Plots PS-455 A, PS-455 B, PS-455 C, LP1-03, and LP1-430 all have photo trends and baseline data, which includes step-toe transects and LPI shrub canopy cover data canopy cover. Photographs for plots PS-455 A, PS-455 B, PS-455 C, and LP1-03 indicate stable trends throughout the monitoring period.

Baseline ground cover data was collected in 2016 for plots PS-455 A, PS-455 B, PS-455 C, and LP1-430; and collected in 2015 for plot LP1-03. No trend can be determined from only one year of data but the difference in the ground cover by species is significant and is the result of livestock management. Plots PS-455 A (Table 14) and PS-455 B (Table 17) are within 100 meters of each other and have similar foliar and bare ground cover, but are in different pastures. Although plot PS-455 C (Table 20) is also near plots PS-455 A and PS-455 B, within 120 meters of both, it has 15% more foliar cover than the other two plots. The reason for the difference in ground cover and species frequency (Tables 15,18 and 21) is explained by the location of these plots. PS-455 A is the in the Big Lake pasture and PS-455 B in the Big Valley pasture and both are near the gate between the two pastures and represents a disturbed area on both sides of the fence. The livestock are herded thru this gate when they are moved from one pasture to the other at least once a year in 2 out of every three years. This congregation of cattle in the corner of the pastures and around the gate is responsible for the lower ground cover and higher frequency of introduced annual brome grasses then is found in the other trend plot PS-445 C. PS-455 C is in the Juniper Lake pasture only 120 meters away, but since livestock do not trail through this area, the ground and foliar cover are higher and the species composition (Tables 20-21) is similar to what is expected in a low sagebrush-Idaho fescue community.

The photos of LP1-430 shows the plot trended upward between the years 1975-1992 after a prescribed burn in 1974; becoming stable from 1993-2016. The one year (2016) of baseline data (Tables 26 and 27) illustrates a site with the ground cover and species composition representative of a stable low sagebrush-Idaho fescue community.

The photos of LP1-03 indicate a stable trend and the one year of baseline data (2015) illustrates a site with the ground cover and species composition representative of a stable low sagebrush-Idaho fescue community.

Plots PS-455 A (Table 16), PS-455 B (Table 19), PS-455 C (Table 22), LP1-03 (Table 25), and LP1-430 (Table 28) also have baseline LPI shrub canopy cover data, collected across three 100 ft. transects, in 2012. The Ecological Site Description for low sagebrush/Idaho fescue at potential should have 10-15% low sagebrush canopy cover. The average low sagebrush canopy cover was 15% for PS-455 A, 10% for PS-455 B, 9% for PS-455 C, 23% for LP1-03 and 16% for LP1-430. Therefore all the plots except LP1-03 had low sagebrush canopy cover at the expected level for a low sagebrush/Idaho fescue site.

There are two AIM plots (LA-INTS-008 and LA-INTS-020) in the low sagebrush-Idaho fescue ESI polygon. Foliar, ground, and litter cover appear consistent with the low sagebrush-Idaho fescue ESI data. Baseline data for LA-INTS-008 (Table 29) and LA-INTS-020 (Table 32) indicate both have similar foliar cover. In addition to foliar and ground cover measurements, AIM plots measure soil stability. Plot LA-INTS-008 (Table 31) had a soil stability rating of 2.8, while LA-INTS-020 (Table 34) had a rating of 2.6; both ratings indicating potential for soil erosion expected in soils with high clay and low organic content.

The vegetation cover and production recorded at the trend plots and AIM plots indicate that the soils in the low sagebrush-Idaho fescue polygon exhibit infiltration and permeability rates, moisture storage, and stability that are appropriate for these sites.

Low sagebrush-Sandberg bluegrass dominant vegetation communities

The low sagebrush-Sandberg bluegrass ESI polygons contain 15 plots. Nine of the plots (418, LP1-06, PS-534-1, PS-534-2, PS-534-3, PS-534-5, PS-534-6, PS-534-7, and PS-534-8) are photo trend only, all indicating stable to upward trends. Plot 418 show plants have maintained vigor during the trend period, overall. With plot 418 located near the Big Lake playa, precipitations levels affect this plot more than other plots, which is reflected in the photos contrasting wet vs. dry years. Plots PS-534-1, PS-534-2, PS-534-3, PS-534-7, and PS-534-8 show that grass and shrub vigor has remained stable during the course of observation. Plots PS-534-5 and PS-534-6 are within areas where prescription burning in 1974 occurred. For plot PS-534-5 an upward trend was seen from 1975 to 2000, became stable thereafter; while plot PS-534-6 has seen an upward trend until 2011, which was the latest year of observation. Foliar and ground cover, as seen in the photographs, appears consistent with the low sagebrush-Sandberg bluegrass ESI data; except for plots 418 and PS-534-1 which have no seral stage, SSF, or OAT data associated with the ESI polygons.

Plot LP1-02 is a nested frequency plot (Table 35) with data collected 4 times between the years 1997-2015, and overall has been stable. Overall, foliar, ground, and litter cover appear consistent with the low sagebrush-Sandberg bluegrass ESI data.

Plots PS-445, PS-503, and LP1-08 have photo trends and baseline data, which includes step-toe transects and/or LPI shrub canopy cover data. All three photo plots indicate stable trends, with grasses and shrubs maintaining vigor. Plots PS-445 (Table 38) and LP1-08 (Table 42) have similar foliar and bare ground cover. Additionally, PS-445 (Table 39) and LP1-08 (Table 42) have similar species frequencies, with plot PS-445 having a larger variety of forbs. Foliar, ground, and litter cover appear consistent with the low sagebrush-Sandberg bluegrass ESI data with the exception of soft brome which is present on both plots ranging from 10% species frequency at plot LP1-08 up to 23% at plot PS-445. Also, plots PS-445 (Table 40), PS-503 (Table 41), and LP1-08 (Table 44) have baseline LPI shrub canopy cover data, collected across three 100 ft. transects, in 2012. Plot PS-445 had an average of 17% low sagebrush canopy cover, plot PS-503 had an average of 21% low sagebrush canopy cover, and plot LP1-08 had an average of 8% low sagebrush canopy cover.

There are two AIM plots, LA-INTS-002 and LA-INTS-012, in the low sagebrush-Sandberg bluegrass ESI polygon. Plot LA-INTS-002 has foliar, ground, and litter cover which appears consistent with the low sagebrush-Sandberg bluegrass ESI data. Plot LA-INTS-012 lies within the Big Lake reservoir playa which does not have any shrub cover recorded. Plot LA-INTS-012 is a forb dominated community, also there are no seral stage, SSF, or OAT data associated with the ESI polygon for this plot's location. Baseline data for LA-INTS-002 (Table 45) and LA-INTS-012 (Table 48) indicate both have similar foliar and litter cover. However, LA-INTS-002 has greater bare rock cover, while LA-INTS-012 has greater bare ground. Plot LA-INTS-002 had a soil stability rating of 1.3, while LA-INTS-012 had a rating of 1.9; both ratings indicating higher potential for soil erosion expected in soils with high clay and low organic content.

The vegetation cover and production recorded at the trend plots and AIM plots indicate that the soils in the low sagebrush-Sandberg bluegrass polygon exhibit infiltration and permeability rates, moisture storage, and stability that are appropriate for these sites.

Mountain big sagebrush-Sandberg bluegrass dominant vegetation communities

There are two photo trend plots, LP1-506 and LP1-04, in the mountain big sagebrush-Sandberg bluegrass ESI polygon. Plot LP1-506 shows an upward trend along a riparian area, where vegetation has grown along the banks providing greater bank stability from 1970 to 2006, with the trend becoming stable thereafter. Plot LP1-04 indicates a stable trend prior to construction of the Ruby Pipeline in 2011. Recent photos depict upward trends and vegetative recovery of vegetation within the previously disturbed area.

Overall, grasses and forbs are maintaining vigor at both plots. Foliar and ground cover, as seen in the photographs for plot LP1-506, appear consistent with the mountain big sagebrush-Sandberg bluegrass

ESI data. While plot LP1-04 is within the mountain big sagebrush-Sandberg bluegrass ESI polygon, the site appears to be dominated by low sagebrush.

The vegetation cover and production recorded at the trend plot LP-506 and the recovery of vegetation at LP-04 indicate that the soils in the Mountain big sagebrush-Sandberg bluegrass polygon exhibit infiltration and permeability rates, moisture storage, and stability that are appropriate for these sites.

Silver sagebrush dominant vegetation communities

The silver sagebrush ESI polygon has one photo trend plot, PS-534-4. Photographs from plot PS-534-4 indicate shrubs and grasses have maintained vigor. Foliar and ground cover, as seen in the photographs, appear consistent with the silver sagebrush ESI data.

Western juniper-low sagebrush-Idaho fescue dominant vegetation communities

AIM plot, LA-INS-004 (Table 51) occurs within the western juniper-low sagebrush-Idaho fescue ESI polygon. Foliar cover and bare ground are high with low litter cover. Perennial grass and shrub cover are appropriate at 40 and 31 percent, respectively. Overall, foliar cover and ground cover appear consistent with the western juniper-low sagebrush-Idaho fescue ESI data. Plot LA-INTS-004 (Table 53) had a soil stability rating of 2.0, indicating potential for soil erosion expected for soils with high clay and low organic content.

Incomplete/unknown ESI dominant vegetation communities

Plot LP1-05, a photo trend plot, is located within an ESI polygon labeled as “Incomplete”. These incomplete/unknown classifications are due to vegetation communities within transition areas which were too small to be mapped separately. Photographs indicate this is likely a mountain big sagebrush-Sandberg bluegrass or mountain big sagebrush-Idaho fescue dominated vegetation community. Grasses and shrubs have maintained vigor when photographs were taken. Foliar and ground cover, appears consistent with other mountain big sagebrush ESI data.

Standard 2. Watershed Function-Riparian/Wetland: Areas are in properly functioning physical condition appropriate to soil, climate, and landform.

In the 1999 RHA, this standard was not met due to non-proper functioning condition (PFC) on two reaches, designated “Lower” and “Big Valley”, on Twentymile Creek. The “Lower” reach (river mile (RM) 2.8-3.0) was in the Lane Plan I Allotment, being managed under a rest rotation system and was rated as Functional at Risk with No Apparent Trend. The “Big Valley” reach (RM 6.6-6.9), was upstream of the allotment, was within an enclosure and was rated as Functional at Risk with an upward trend. The Functional at Risk rating was a result of historical grazing practices and natural conditions. Current management practices are resulting in progress towards meeting the standard. Livestock management in 1999 was not a significant factor in the standard not being met.

This standard is currently being met. Lotic PFC inventories were completed in October 2016, on approximately 1.48 miles (river mile (RM) 2.8-4.28) of Twentymile Creek within the Lane Plan I Allotment. Reach 2.8-3.0 was determined to be Functional at Risk with an Upward Trend; the primary issue was excessive bank erosion due to historic (Pre-AMP, 1970) management. The reach is intermittent and recovery is naturally occurring slowly. Bank stability is improving and riparian vegetation is increasing based on photos and past surveys, resulting in the determination of condition trending upward. The reach was considered very close to being at PFC. From RM 3.0-4.28 Twentymile Creek was determined to be at PFC, with stable banks and healthy riparian vegetation.

Five lentic sites totaling 2,546 acres were rated as PFC, including Big Lake (2,300 acres), Big Reservoir (94 acres), Deano Reservoir (1 acre), Juniper Lake (91 acres), and Lucky Reservoir (60 acres). All five lentic sites have riparian vegetation, such as sedge (*Carex*) and rush (*Juncus*) species with little to no soil erosion along playa/lake edges.

Standard 3. Ecological Processes: Healthy, productive, and diverse plant and animal populations and communities appropriate to soil, climate, and landform are supported by ecological processes of nutrient cycling, energy flow, and hydrologic cycle.

Wildlife

In the 1999 RHA this standard was met. The allotment provided habitat for terrestrial wildlife species, such as California bighorn sheep, elk, mule deer, pronghorn, and sage grouse. No major competition between wildlife and domestic livestock for forage existed.

This standard is currently met from the aspect of natural wildlife populations, diversity, and sustainability with current environmental conditions. The majority of ecosystems in the allotment are within functional condition and support natural ecological processes typically found within sagebrush-steppe communities in the northern Great Basin. Habitat quality and population levels fluctuate over time, and generally represent natural trends in the ecosystem; however, some species may show erratic or negative trends. These trends are determined through monitoring of habitat and animal composition and community structure. The allotment provides adequate habitat for populations of mule deer (*Odocoileus hemionus*), pronghorn (*Antilocapra americana*), Rocky Mountain elk (*Cervus elaphus nelsoni*), California bighorn sheep (*Ovis canadensis californiana*), and Greater Sage-Grouse (*Centrocercus urophasianus*). Previously there were 200 AUMs allocated for wildlife which has since been updated to 230 AUMs allocated for wildlife. Portions of the allotment lie within ODFW Warner Big Game Management Unit for mule deer and elk. Current populations are moving in an upward trend, but still below management objectives. The allotment contains crucial over-wintering habitat for Greater Sage-Grouse, mule deer and elk.

Vegetation

In the 1999 RHA this standard was met. The 1999 RHA reported 93% of the allotment had an SSF rating of slight erosion potential to stable soils, with OAT indicating 93% of the allotment had a static or upward trend. The remaining 7% of the allotment was unknown for both indicators. The allotment is managed under a rest-rotation grazing system maintaining plant health and vegetative communities appropriate to those soils and climate. Utilization levels were at or below 45%. Grazing management maintained sufficient vegetation cover and litter for nutrient cycling, energy flow, and hydrologic cycle.

Currently, this standard is being met for vegetation. Ecological Site Index seral stage data (Table 2d), indicated Potential Natural Community (PNC) accounted for 13 acres (< 1%), late-seral stage was 5,803 acres (22%), mid-seral stage was 15,044 acres (57%), early-seral stage was 555 acres (2%), and 5,165 acres (19%) were unknown. Based on plots with species identification within the ESI low sagebrush-Idaho fescue communities both Sandberg bluegrass and Idaho fescue are present, but Sandberg bluegrass is more dominant than Idaho fescue. There is adequate vegetation cover, litter, and community structure to facilitate infiltration, moisture storage, and soil stability appropriate for the soils found on the Lane Plan 1 Allotment in conjunction with the climate regime for this region.

Bluebunch wheatgrass dominant vegetation community

Photographs from plot LP1-07 show the site appears to be at mid-seral stage and in fair condition, which is consistent with the bluebunch wheatgrass ESI data. Ecological Site Description (ESD) data, which provides several states within a vegetation community ranging from State 1 = reference state (desired condition) to State 4 = a site dominated by annuals (poor range conditions), was also used to further illustrate the sites ecological health. Plot LP1-07 appears to be within State 2 according to the ESD data, where the vegetation community is similar to the reference state with some invasives, while ecological functions have been maintained.

Low sagebrush-brome species dominant vegetation community

Data from AIM reveals brome species account for 6% of the plot; squirreltail, Sandberg bluegrass, and low sagebrush make up 15%, 7%, and 19%, respectively at plot LA-INTS-016 (Table 4). At plot SFA-UPSH-672, brome species are less than 1% of the plot; with Idaho fescue, Sandberg bluegrass, and low sagebrush accounting for 17%, 7%, and 21%, respectively. With perennial grasses remaining stable or increasing (more years of data are needed to determine exact trend) this site is stable. This data suggests the site is at a mid-seral stage, in fair condition, which is consistent with low sagebrush-brome species ESI data. Both plots are in State 2 according to the ESD data, where the vegetation community is similar to the reference state with some invasives, while ecological functions have been maintained.

Low sagebrush-Idaho fescue dominant vegetation communities

Photographs from plots LP1-508 and PS-455 D show the sites appear to be at mid-seral stage and in fair condition, which is consistent with the low sagebrush-Idaho fescue ESI data. Both plots appear to be within State 2 according to the ESD data, where the vegetation community is similar to the reference state with some invasives, while ecological functions have been maintained.

At plot LP1-01 (Tables 11a & 11b), nested frequency measurements show that Sandberg bluegrass consistently covers more of the site than Idaho fescue. Notable vegetation species include low sagebrush which has sufficient coverage; while squirreltail (*Elymus elymoides*), antelope bitterbrush, phlox (*Phlox*) species and buckwheat (*Eriogonum*) species are present in reduced numbers. The site appears to be at mid-seral stage and in fair condition, which is consistent with the low sagebrush-Idaho fescue ESI data. The plot appears to be within State 2 according to the ESD data, where the vegetation community is similar to the reference state with some invasives, while ecological functions have been maintained.

Plots PS-455 A (Table 15), PS-455 B (Table 18), and PS-455 C (Table 21) again reveal Sandberg bluegrass has a greater coverage than Idaho fescue. Low sagebrush is well represented, while prairie Junegrass (*Koeleria macrantha*), squirreltail, carex species, and phlox species are present at lower coverages. Additionally, blue-eyed Mary (*Collinsia* species), nineleaf biscuitroot, (*Lomatium triternatum*), and Oregon yampah (*Perideridia oregana*), which are preferred forbs for Greater Sage Grouse, occur in this area where the three plots are concentrated.

Unfortunately, brome species have become well established at plots PS-455 A, PS-455 B, and PS-455 C ranging from 13% species frequency at plot PS-455 C up to 31% at plot PS-455 A. Sandberg bluegrass remains the dominant grass, except at plot PS-455 A where soft brome has become the dominant grass. These brome species are annual, shallow rooted grasses, affecting an estimated 10 acres; providing poor forage for livestock, poor vegetation cover, low litter production, and reduced soil stability. This increase in brome species results in these plots exhibiting an apparent downward trend. These 3 plots are concentrated in an area where three pastures meet along a road with two gates, resulting in increased disturbance from livestock. This area also borders a recent juniper thinning which may result in non-native grasses spreading, such as brome species. Therefore, this site would be a good area for a native seeding project, to reduce the spread of invasives. Plots PS-455 A, PS-455 B, and PS-455 C are not indicative of the pasture conditions in which they lie; these pastures are stable, maintaining desirable range conditions based on soil types and climate for this region.

As mentioned in Standard 1, plots PS-455 A (Table 16), PS-455 B (Table 19), PS-455 C (Table 22), LP1-03 (Table 25), and LP1-430 (Table 28) also have baseline LPI shrub canopy cover data, collected across three 100 ft. transects, in 2012. The Ecological Site Description for low sagebrush/Idaho fescue at potential should have 10-15% low sagebrush canopy cover. The average low sagebrush canopy cover was 15% for PS-455 A, 10% for PS-455 B, 9% for PS-455 C and 16% for LP1-430. Therefore these plots had low sagebrush canopy cover at the expected levels for a low sagebrush/Idaho fescue site. Plot LP1-03 had an average of 23% low sagebrush cover, but also had the highest cover and frequency values of perennial grasses (Tables 23 and 24) found in the low sagebrush/Idaho fescue community.

Photographs from plots PS-455 A, PS-455 B, and PS-455 C show the site appears to be at mid-seral stage and in fair condition, which is consistent with the low sagebrush-Idaho fescue ESI data. All three plots appear to be within State 3 according to the ESD data, where the vegetation community is dominated by low sagebrush with the loss of perennial grasses due to increased cheatgrass density and cover.

Plots LP1-03 (Table 24) and LP1-430 (Table 27) also illustrate Sandberg bluegrass is the dominant grass over Idaho fescue. Again low sagebrush has adequate coverage, with squirreltail, bluebunch wheatgrass, phlox species and buckwheat species represented at lower frequencies. Plots LP1-03 and LP1-430 are listed as late-seral stage in good condition according to ESD data. However, based on photographs, both plots appear to be in mid-seral stage and in fair condition similar to the majority of the allotment. Both plots appear to be within State 2 according to the ESD data, where the vegetation community is similar to the reference state with some invasives, while ecological functions have been maintained.

Two AIM plots, LA-INTS-008 (Table 30) and LA-INTS-020 (Table 33), show similar results to the other plots in the low sagebrush-Idaho fescue communities with the exception of plot LA-INTS-020 where Idaho fescue had greater coverage than Sandberg bluegrass. Low sagebrush has sufficient coverage at plot LA-INTS-008; however, at plot LA-INTS-020, low sagebrush has reduced cover, while western juniper has a 6% cover estimate. This is the highest percentage of western juniper recorded among the low sagebrush-Idaho fescue plots. Three other plots (LA-INTS-008, LP1-01, and PS-455 B) recorded western juniper, none of which were greater than 3%. Additionally, blue-eyed Mary was found on plot LA-INTS-008, with nineleaf biscuitroot on plot LA-INTS-020; both being preferred forbs. Both plots appear to be within State 2 according to the ESD data, where the vegetation community is similar to the reference state with some invasives, while ecological functions have been maintained.

Low sagebrush-Sandberg bluegrass dominant vegetation communities

There are nine plots in the in this vegetation community that were photo trend plot with no quantitative vegetation data. Photographs from plot 418 show this site is in the early seral stage with no shrubs, this is the result of periodic flooding due to being on the edge of the Big Lake playa. Photographs from plots LP1-06, PS-534-1, PS-534-2, PS-534-3, PS-534-5, PS-534-6, PS-534-7, and PS-534-8 indicate these sites appear to be at mid-seral stage and in fair condition. These plots appear to be within State 2 according to the ESD data, where the vegetation community is similar to the reference state with some invasives, while ecological functions have been maintained.

At plot LP1-02 (Tables 36a & 36b), nested frequency measurements show Sandberg bluegrass is the dominant grass with greater coverage than Idaho fescue and squirreltail, which is consistent with the low sagebrush-Sandberg bluegrass ESI dominant vegetation community data. Low sagebrush has sufficient coverage as the LPI shrub canopy cover was measured showing low sagebrush at 16%. The site appears to be at mid-seral stage and in fair condition, which is consistent with the low sagebrush-Sandberg bluegrass ESI data. The plot appears to be within State 2 according to the ESD data, where the vegetation community is similar to the reference state with some invasives, while ecological functions have been maintained.

Photographs from plots PS-445, PS-503, and LP1-08 show the site appears to be at mid-seral stage and in fair condition. All three plots appear to be within State 2 according to the ESD data, where the vegetation community is similar to the reference state with some invasives, while ecological functions have been maintained. Plots PS-445 (Table 39) and LP1-08 (Table 42) recorded Sandberg bluegrass as

the dominant grass followed by soft brome and squirreltail. Low sagebrush is well represented, with other notable forbs such as, phlox and fleabane species. Plot LP1-08 also has nineleaf biscuitroot, a preferred forb of Greater Sage Grouse. Additionally, plots PS-445 (Table 40), PS-503 (Table 41), and LP1-08 (Table 44) have baseline LPI shrub canopy cover data, collected across three 100 ft. transects, in 2012. Plot PS-445 had an average of 17% low sagebrush canopy cover, plot PS-503 had an average of 21% low sagebrush canopy cover, and plot LP1-08 had an average of 8% low sagebrush canopy cover. The Ecological Site Description for low sagebrush/Sandberg bluegrass at potential should have 10-15% low sagebrush canopy cover. Therefore these plots have a low sagebrush canopy cover similar to the expected potential, except for PS-503, which because of higher elevation and precipitation this site has higher a production potential as witnessed by the presence of juniper.

Two AIM plots, LA-INTS-002 and LA-INTS-012, are within the low sagebrush-Sandberg bluegrass designated by the ESI data; however, plot LA-INTS-012 lies within the playa portion of the Big Lake reservoir and is subjected to periodic flooding. Plot LA-INTS-012 being in a playa affects the vegetation community, especially in terms of shrub cover. The dominant vegetation type are forbs, primarily woolly groundsel (*Packera cana*), with no Sandberg bluegrass or shrubs recorded. Plot LA-INTS-012 has no seral stage, SSF, or OAT data associated with the ESI polygons.

Plot LA-INTS-002 appears to be at mid-seral stage and in fair condition and within State 2 according to the ESD data, where the vegetation community is similar to the reference state with some invasives, while ecological functions have been maintained. Plot LA-INTS-002 (Table 46) has slightly more Idaho fescue coverage than Sandberg bluegrass and low sagebrush and other notable vegetation includes soft brome and squirreltail; along with a small amount of nineleaf biscuitroot, a preferred forb. The plot appears to be within State 2 according to the ESD data, where the vegetation community is similar to the reference state with some invasives, while ecological functions have been maintained.

Mountain big sagebrush-Sandberg bluegrass dominant vegetation community

Photographs from plots LP1-04 and LP1-506 show the site appears to be at mid-seral stage and in fair condition, which is consistent with the mountain big sagebrush-Sandberg bluegrass ESI data. Both plots show a small amount of western juniper encroachment, with plot LP1-04 indicate juniper thinning around 2012. Plot LP1-506 shows vegetation returning and stabilizing the riparian area at the plot. Plot LP1-04 shows the Ruby Pipeline construction occurring in 2011 and the subsequent return of vegetation. Overall, plot photographs illustrate a vegetation community, within State 2, that is slightly deteriorated compared to the reference state of the ESD data, due to the increase in mountain big sagebrush, Sandberg bluegrass, and western juniper; while ecological functions have been maintained.

Silver sagebrush dominant vegetation communities

Photographs from plot PS-534-4 show the site appears to be at mid-seral stage and in fair condition, which is not consistent with the silver sagebrush ESI data. The ESI data labels the site as dominated by silver sagebrush and in the early-seral stage in poor condition. However Plot 534-4 is on the edge of this

community and the vegetation community in the photographs appears as diverse as the majority of the allotment according to photographs, with a good mix of shrubs, grasses, and forbs.

Western juniper-low sagebrush-Idaho fescue dominant vegetation communities

Data from AIM plot, LA-INTS-004 (Table 52), shows the site appears to be at mid-seral stage and in fair condition, while the ESI data states the plot lies within a late-seral stage ESI polygon. Foliar cover recorded Sandberg bluegrass and squirreltail, but no Idaho fescue. Low sagebrush is present in sufficient numbers, along with antelope bitterbrush and a small amount of spiny hopsage (*Grayia spinose*). Other notable vegetation includes lupine and pussytoes (*Antennaria*) species, along with blue-eyed Mary, a preferred forb. The plot appears to be within State 2 according to the ESD data, where the vegetation community is similar to the reference state with some invasives, while ecological functions have been maintained.

Incomplete/unknown ESI dominant vegetation communities

Photographs from plot LP1-05 show the site appears to be at mid-seral stage and in fair condition. No comparison to ESI data can be made do to the plot's location in an "incomplete" (unknown) vegetation community. Photographs show the site is dominated by big sagebrush and what is likely Sandberg bluegrass. The vegetation communities' diversity appears similar to the majority of the allotment in terms of shrub, grass, and forb cover.

Actual use and utilization

Actual use has been collected since 1993 (Table 54), while utilization data has been collected sporadically for approximately 30 years. Overall, grazing management is maintaining sufficient vegetation cover and litter for nutrient cycling. Perennial grasses are in good condition with pasture utilization remaining under the 50% utilization except in the Big Lake pasture during 2002 (58%), 2007 (58%), and 2009 (57%) when utilization measurements were taken. North and South Gibson Canyons, often grazed together, had one year of utilization over 50% in 2009 (52%). Only during 2006, was the total AUM's of 1,942 for the allotment exceeded. Five of the six pastures have been grazed according to the rest-rotation schedule, with minor exceptions due to livestock water availability. The Big Lake pasture has seen the least amount of rest; with 2015 the only year rested during 1993-2016. While the vegetation conditions remain stable, due to only being grazed between July-September and having usually low AUM's in recent years, it is recommended that this pasture receive consistent rest every 3-4 years.

Approximately 12,700 acres have been treated for western juniper thinning since 2010. Approximately 9,750 of those acres were burned to remove juniper piles and thin the understory. Juniper thinning has occurred to reduce both fuels and juniper encroachment across the allotment. Prescription burning and thinning is nearly completed on the Lane Plan 1 Allotment and has provided a more stable and healthy vegetation community and improved Greater Sage Grouse habitat.

Weeds

As stated earlier, the annual grasses cheatgrass, field brome, and soft brome are found throughout the allotment and lie within an estimated 4,289 acres (17%) of the allotment. Recently, North African grass (*Ventenata dubia*) has been discovered and is found primarily along the Bonneville Power Administration (BPA) transmission corridor, Lucky Reservoir Road, and Big Valley Road. While North African grass is currently growing in small patches, the spread of this invasive is a concern. There was about 6,000 acres of cut juniper sites sprayed to reduce annual grass production and 2,000 acres seeded with native perennial grasses. Notable invasive forbs, which are concentrated along roads and disturbed areas, include bull thistle (*Cirsium vulgare*), Canadian thistle (*Cirsium arvense*), and Scotch thistle (*Onopordum acanthium*). Chemical spraying on 34 acres, mostly on thistle species along roadways, has been completed as of 2016.

Standard 4. Water Quality: Surface water and groundwater quality, influenced by agency actions, complies with State water quality standards.

In the 1999 RHA this standard was not met. Twentymile Creek from the mouth to the headwaters did not meet state temperature standards. The creek is intermittent, often drying out by the end of June. Changes in livestock management with respect to riparian vegetation are expected to make progress towards this standard being met. Livestock management was not considered to be a significant factor in not meeting the standard.

Although, Twentymile Creek from the mouth to the headwaters does not meet state standards for temperature, dissolved oxygen, silver, arsenic, and thallium, Lakeview BLM determined this standard does not apply within the dry reaches of the creek in this allotment. The reaches of Twentymile Creek in the allotment are intermittent, generally going dry by the end of June, so there is not water available to measure water quality parameters, including temperature or dissolved oxygen, during the time period when those parameters are generally considered critical (late summer). Changes in grazing management appear to have improved riparian vegetation and stream channel conditions according to photo plots.

Standard 5. Native, T&E, and Locally Important Species: Habitats support healthy, productive and diverse population and communities of native plants and animals (including special status species and species of local importance) appropriate to soil, climate and landform.

Vegetation

In the 1999 RHA no special status plants were within the Lane Plan 1 Allotment and the standard was met for vegetation. Currently this standard is again being met and no special status plants have been observed within the Lane Plan 1 Allotment. However, both the Sagehen and Vinyard Individual Allotments, along the northern border of the Lane Plan 1 Allotment, have Warner bedstraw (*Galium serpticum*), which is a special status plant. Warner bedstraw habitat includes steep slopes, rocky areas, meadows, and juniper woodland from 1450 to 2750 meters. Warner bedstraw is mapped as being near the northern portion of the Lane Plan 1 Allotment and may expand into the Lane Plan 1 Allotment in the future. Lane Plan 1 has suitable habitat for expansion of Warner bedstraw. The plant is susceptible to grazing.

Noxious weeds were primarily concentrated along roads and the BPA transmission line's right-of-way. A small infestation of spiny cocklebur in Juniper pasture was being intensively treated to prevent its spread.

Noxious weeds are still concentrated along roads, with North Africa grass and thistle species being the primary concern. Spiny cocklebur, as mentioned in the 1999 RHA, no longer appears to be a problem in Juniper pasture. Across the allotment Bromus species have spread throughout but have not displaced native grasses in large numbers at this time. Native vegetation communities continue to be diverse and thrive, having adequate distribution and production consistent with the climate and soil types for this allotment.

Fish/Fish Habitat

In both the 1999 RHA and the current RHA, this standard was met.

Designated critical Warner Sucker habitat (Threatened under the Endangered Species Act (ESA)) exists within the allotment, although no occupied habitat exists there. Occupied Warner sucker habitat exists downstream of the allotment, in lower Twentymile Creek. There is no potential for Warner Sucker to occupy habitat in Upper Twentymile Creek due to natural fish passage barriers downstream of the allotment. Stream channel and riparian conditions within the allotment are on an upward trend.

Because Twentymile Creek flows into occupied sucker habitat below the allotment, and designated critical habitat exists within the allotment, it was determined through Section 7 consultation that grazing has the potential to effect suckers and/or critical habitat. This potential effect has been minimized by restrictions placed on riparian grazing and the US Fish and Wildlife Service issued a Biological Opinion to authorize "take" of the species. The Twentymile Creek Watershed drains into lower Twentymile and Twelvemile Creeks which are considered strongholds for Warner Sucker. Warner Redband Trout (*Oncorhynchus mykiss gibbsi*), a Bureau Sensitive Species, is also found in lower Twentymile Creek below the allotment, where their populations are strong.

Wildlife/Wildlife Habitat

In 1999, this standard was met. The diversity of wildlife species was consistent with productive sagebrush steppe communities. Deer and pronghorn populations were healthy, while elk populations were low. The allotment was considered to be marginal habitat for California bighorn sheep. Sage-Grouse populations were stable to declining with one known lek within the allotment. Additionally, the allotment was used by wintering bald eagles (*Haliaeetus leucocephalus*), various bat species, and possibly pygmy rabbits (*Brachylagus idahoensis*).

Currently, standard 5 is being met for native, T&E and locally important wildlife species within the Lane Plan I Allotment. The diversity of the wildlife and plant species is an indication of health and productivity found within the different habitats in the allotment.

Special status wildlife species and/or their habitats that are present within this allotment include: Bald Eagle, Golden Eagle (*Aquila chrysaetos*), Ferruginous Hawk (*Buteo regalis*), silver-haired bat

(*Lasionycteris noctivagans*), hoary bat (*Lasiurus cinereus*), fringed myotis (*Myotis thysanodes*), long-eared myotis (*Myotis evotis*), Yuma myotis (*Myotis yumanensis*), Townsend's big-eared bat (*Corynorhinus townsendii*), Greater Sage-Grouse, gray wolf (*Canis lupus*), and pygmy rabbit. There are also species of high public interest, which include: mule deer, pronghorn, Rocky Mountain elk, and California bighorn sheep.

There is one known Golden Eagle nest located within the allotment. The nest occurs in the eastern portion of the allotment. Bald and Golden Eagle foraging does occur throughout the allotment. No surveys have been conducted for Ferruginous Hawks; however, foraging habitat exists throughout the majority of the allotment.

Six Bureau Species of Concern are known to occur throughout the Lane Plan I, of which, four are classified either as BLM-Sensitive and/or Oregon-Sensitive Vulnerable. These include hoary bat, fringed myotis, Townsend's long-eared bat, Yuma myotis, silver-haired bat, and long-eared myotis. There are no known caves, outbuildings, adits, or shafts on BLM portions of the allotment that are available for winter hibernacula. There is a low potential for roosting/resting habitat within the allotment. Habitat use for these species is likely to be limited to foraging use.

Gray wolves are known to occur within the allotment and are a Bureau Sensitive Species and Oregon Sensitive Species, as well as, Federally Endangered Species. The Lane Plan I Allotment is within the East Wolf Management Zone. Gray wolves occupy several varieties of terrestrial ecosystems, provided abundant prey resources. Gray wolves are currently listed under the Federal Endangered Species Act of 1973, but unlikely in the near future, in danger of extinction. There is the potential for conflicts to occur as more gray wolves move in the Lakeview Resource Area. Confirmed incidents of depredation have decreased during 2015 and the majority of depredation occurs on private land (ODFW 2016).

Pygmy rabbits are not known to occur within the allotment nor is there habitat that has been associated with pygmy rabbits in the area.

Mule deer inhabit a large portion of the allotment for use in wintering habitat. The entire allotment is within identified mule deer winter range habitat (99%). Conflicts between livestock and mule deer do not generally occur. Limiting early spring and fall livestock grazing reduces impacts to wintering mule deer and associated habitats. Western juniper encroachment may also hinder mule deer winter range conditions throughout the allotment. Mule deer depend on antelope bitterbrush during the winter season (Bergman et al. 2014).

Rocky Mountain elk winter habitat occurs throughout the allotment with 5,184-acres (20%) available. Conflicts between Rocky Mountain elk and livestock are not known to occur. Limiting early spring and fall livestock grazing reduces impacts to wintering elk and their associated habitats. Western juniper encroachment may hinder elk winter range conditions throughout the allotment.

Pronghorn occur throughout the allotment and all but the southern-most portion of the allotment is identified as winter habitat with 20,455-acres (77%) available. Winter range habitat is critical for pronghorn (McInnis and Vavra 1987). Pronghorn use occurs in areas of low sagebrush or shorter

Wyoming big sagebrush (*Artemisia tridentata* ssp. *wyomingensis*). Increasing encroachment of western juniper could potentially decrease available habitats for pronghorn in low sagebrush habitats within the allotment.

Bighorn sheep occur in the southern-most portion of the allotment with 2,943-acres (11%) identified as winter habitat. Mule deer and pronghorn wintering habitat overlap with bighorn sheep habitat and there is potential for competition. Conflicts may occur between bighorn sheep and livestock during the lambing season (Wilson et al. 1978). Although some competition may occur between cattle and bighorn sheep, it is likely insignificant. Limiting livestock use on lambing grounds although direct conflict is unlikely to occur at lambing sites because ewes generally choose rugged terrain for parturition sites (Smith et al. 2015). These sites are unlikely to be used by cattle.

Greater Sage-Grouse

Updates concerning habitats and its associated species predominately concern Greater Sage-Grouse (hereafter sage-grouse). Sage-grouse occur throughout the majority of the Lane Plan I Allotment. Within the allotment are three management zones: Priority Habitat Management Areas (PHMA), Sagebrush Focal Areas (SFA), and General Habitat Management Areas (GHMA). Lane Plan I Allotment contains 187 (0.7%) acres within PHMA, 16,028 (61%) acres within SFA and 10,073 (38%) acres within GHMA. There are five identified leks within the allotment, two of which have a conservation status of “occupied” and the other three “pending.” The occupied leks are within the vicinity of Lucky Reservoir and Big Reservoir North #1. Sage-grouse densities within SFAs are considered higher when compared to other areas to the east.

Habitat Assessment Framework (HAF) and Assessment, Inventory, and Monitoring (AIM) surveys were conducted within the Lane Plan I Allotment during the 2015, 2016, and 2017 field seasons respectively. Sage-grouse select seasonal habitats within their respective home ranges, which include breeding, summer/late brood-rearing, and winter. The availability of sagebrush cover for suitable lekking habitat is appropriate at 10-25%, whereas the marginal habitat has well above the appropriate coverage of sagebrush. This suggests that the overabundance of sagebrush cover could potentially prevent native grasses from establishing within the allotment. There are portions of the allotment that do not support sage-grouse seasonal habitat due to plant structure characteristics. Currently, there are no known resource conflicts for this species.

Sage-grouse select seasonal habitats within their home ranges, which include breeding, summer, and winter habitats (BLM 2015). Sage-grouse are generally traditional in their seasonal movement patterns. Some sage-grouse move long distances (>30 km) from breeding to summer and summer to winter habitats. Sage-grouse diets shift from insects and forbs during the breeding and summer seasons to sagebrush during winter (BLM 2015).

Bureau of Land Management field offices that manage sage-grouse habitat are required to incorporate the use of mid-, fine-, and site-scale indicators (Table 2-2 of ARMPA; Appendix C) and the habitat suitability rating process provided by the Sage-Grouse Habitat Assessment Framework (HAF; Technical Reference 6710-1, Stiver et al. 2015) when assessing habitat for a population or subpopulation or other

biologically relevant area. The BLM Habitat Assessment Summary Report (BLM 2018) describes habitat suitability at the mid-scale (2nd Order), fine-scale (3rd Order) and site-scale (4th Order). The mid-scale is comprised of 11.7 million acres and represents sage-grouse subpopulations and PACs (Map 1; Appendix B). Areas with potential to provide habitat are identified and seasonal habitats and landscape indicators are mapped (BLM 2018). The fine-scale is comprised of 2,178,967 acres and represents lek clusters and leks. Seasonal use areas and connectivity between use areas are identified, and human disturbances are assessed (BLM 2018). The fine-scale habitat analysis area encompasses the Warner PAC (including the Lane Plan I Allotment) (Map 2; Appendix B). The fine-scale analysis area is comprised of land cover types that provide existing or potential seasonal habitats for sage-grouse (Table 55; Appendix B). Sage-grouse require large tracts of connected habitat for viability. There is a high degree of connectivity within the fine-scale area among winter, breeding, and summer habitat, which extends well beyond the allotment itself. Anthropogenic disturbances, which potentially disrupt seasonal movements and/or cause mortality, are not widely occurring within the fine-scale area. Both the mid-scale and fine scale areas were rated suitable by an interdisciplinary (ID) team (BLM 2018).

Vegetation composition, structure, and diversity is vital to the viability of sage grouse populations. Sage-grouse wholly depend on vegetation for a variety of reasons. During the early breeding/nesting period, chicks require copious amounts of insects, of which, use-varying species of vegetation. Hens forage on forbs nearest their nest site. Native perennial bunchgrasses of adequate height are important for nest screening. During the late summer/brood-rearing period, chicks transition from a diet of insects to one dominated by perennial forbs. Forbs remain an important part of the sage-grouse diet through summer until transitioning to sagebrush in the fall. The availability of sagebrush cover for suitable breeding (nesting/early brood-rearing) and winter habitat is appropriate at 10-25%, whereas the marginal habitat may have well above or slightly below the appropriate coverage of sagebrush. Sagebrush, utilized as forage and cover in the winter, is crucial due to the lack of grasses and forbs available at that time.

The site-scale addresses indicators (predominantly vegetation centered and described above) identified within the ARMPA (Table 2-2) (ARMPA; BLM 2015). Assessment, Inventory, and Monitoring (AIM) data, with HAF supplementary indicators, were collected at 79 site scale plots (approximately 0.7 acres/plot) throughout the Warner's Fine-Scale area during the 2015, 2016, 2017, and 2018 field seasons. Table 55 displays the habitat suitability ratings and proportional area by season for the entire fine-scale analysis area. Table 56 (Appendix B) depicts the Warner-Tucker Hill simple suitability proportions for the site-scale and Table 57 (Appendix B) displays a summary of the site-scale habitat suitability ratings and the proportional area estimates with an 80% confidence interval.

Sage-grouse occur throughout the majority of the Lane Plan I Allotment; 35,815 acres (66%) of the 54,036-acre allotment is spring seasonal sage-grouse habitat, 36,678 acres (68%) is summer seasonal sage-grouse habitat, and 33,708 acres (62%) is winter seasonal sage-grouse habitat. Within the allotment, there are two habitat management areas: Priority Habitat Management Area (PHMA) in a Sagebrush Focal Area (SFA) and General Habitat Management Area (GHMA) making up 88% and 8% of

the allotment respectively. Sage-grouse densities within SFAs are considered higher when compared to other areas. Therefore, SFAs are important for the persistence of the species.

Seven of the 79 site-scale AIM/HAF plots actually fell within the allotment. The proportional area of suitable habitat from AIM data collections in breeding seasonal habitat was 63.5% suitable, 8.2% marginal, and 28.3% unsuitable (Table 57). Plots deemed marginal and/or unsuitable generally did not have enough sagebrush cover, perennial grass cover, and/or forb production. Some sites had greater than 25% sagebrush cover, which is a marginal indicator. This suggests that the overabundance of sagebrush cover in some areas could potentially prevent native grasses from establishing within the allotment. The entire winter habitat within the allotment is suitable. There are portions of the allotment that do not support sage-grouse seasonal habitat due to plant structure characteristics. Warner weighted proportions of habitat suitability by season for the Lane Plan I Allotment are displayed in Figures 1, 2 and 3 (Appendix B). Currently, there are no known resource conflicts on the allotment for this species.

Long-term trend plot data is not easily comparable to HAF site scale data due to the resulting data type of basal versus canopy cover and the plot locations tending to be relatively close to roads or near water sources where cattle congregate. However, the trend data does add information on the stability of the perennial grasses and shrubs to help provide rationale for an overall assessment of whether the allotment is meeting Standard 5 for sage grouse. The Big Lake (Tables 4, 7, 15 and 24; Appendix A) indicates that total perennial grass cover ranges from 0.7% to 40% in 2016, with *Poa secunda* dominating perennial grass species. The perennial grass cover is baseline data; therefore, no trend has developed. Low sagebrush is stable ranging from 19.3% to 31% (Tables 4, 7, 15, and 24; Appendix A). Data from the Big Valley plots in 2016 indicate perennial grass cover ranges from 5.3% to 34.7% (Table 52; Appendix A), which is in an upward trend. The Ruby Pipeline had created some disturbance with increased perennial grasses. Sagebrush cover within this plot is suitable at 22% (Table 52; Appendix A). The Juniper Lake Pasture plot indicates low sagebrush cover has been stable (Tables 27, 33, 36a, and 39; Appendix A).

Based on ODFW's 2017 conservation status, there is two occupied leks and three pending leks. There are two suitable, three marginal and no unsuitable leks. The suitable leks are occupied and the three marginal leks are all pending (inactive in the last two years) and the rating is largely due to juniper encroachment within 3 km of the lek, increasing probability of mortality. Marginal leks have some juniper within 3 km, but generally a little farther out, compared to unsuitable leks, or lack an additional unsuitable indicator such as a fence or road that added to the unsuitability of some leks.

Sixteen lentic and three lotic Riparian Summer/Late-Brood Rearing sites within the allotment were assessed in 2016 and 2017 (BLM 2018). Indicators used to assess these sites included perennial herbaceous cover, preferred forb diversity and availability, and riparian stability based on Proper Functioning Condition (PFC). Nine of the sites were rated suitable; however, Big Lake, the largest riparian site was rated unsuitable. Eight sites were rated marginal. Big Lake is lacking perennial herbaceous cover, preferred forbs, and is largely an alkaline playa, devoid of habitat characteristics sage-grouse require. This site does not have potential to be suitable. The proportion of riparian sites

rated suitable was greater than the proportion of sites rated marginal; therefore, the riparian brood-rearing habitat is considered suitable.

Invasive species as well as native invaders have dramatically altered the landscape by changing the vegetation structure and fire regime; forming dense, dry grass stands and promoting frequent fire (Pellant 1996). Western juniper is native to eastern Oregon, but has expanded beyond its historical range due to fire suppression, reduction in fuels from livestock grazing, and precipitation pattern changes. Western juniper can deplete soils of water, alter species composition and biodiversity of shrub-steppe, increase erosion, reduce stream flows, and reduce forage production for livestock (Miller et al. 2000). Suitability ratings at AIM plots were determined within three breeding seasonal habitats. Table 58 depicts the suitability rating for spring seasonal habitat. Three plots were surveyed and rated suitable during the appropriate time as indicated within the habitat objectives (Table 2-2; Appendix C). Of the four plots surveyed in summer seasonal habitat three plots were rated suitable and one unsuitable (Figure 2; Appendix B). In winter seasonal habitat, we found five plots in were suitable and one unsuitable (Figure 3; Appendix B). The results from HAF indicate >63.5% of the breeding season habitat within the allotment is in suitable condition.

It is determined that the Lane Plan I Allotment meets Standard 5 for Greater Sage-Grouse based on site scale HAF and long term trend data within the allotment as well as how the allotment contributes to the overall suitability at the fine scale. The Lane Plan I Allotment, located in the southern portion of the Warner Fine Scale area (Map 2; Appendix B), is contributing significantly to the amount of quality year-round sage grouse habitat at a connectivity corridor between Hart Mountain and use areas to the south.

Lane Plan I Allotment provides habitat capable of supporting varying mammals species, which include: gray wolves, coyotes (*Canis latrans*), jackrabbits (*Lepus* spp.), cottontails (*Sylvilagus* spp.), ground squirrels (*Spermophilus* spp.), American badgers (*Taxidea taxus*), and other shrub-steppe mammals species, as well as, amphibians and reptiles such as sagebrush lizards (*Sceloporus graciosus*), Northern Alligator Lizard (*Elgaria coerulea*), Great Basin Gopher Snake (*Pituophis catenifer deserticola*), and Great Basin Rattlesnake (*Crotalus viridis lutosus*).

Fuels treatments have occurred throughout the Lane Plan I Allotment. Western juniper treatments started in 2012; removing approximately 9,913 acres as part of the South Warner Juniper Removal Project, which encompasses approximately 25,000 total acres. Western juniper removal increases the resistance of Greater Sage-Grouse habitat to invasive annual grasses and the resiliency of habitat to disturbances by restoring productivity and biodiversity.

In the analysis of Standard 5, western juniper cover was the primary cause of some leks being rated marginal to unsuitable, in an area otherwise considered suitable for sage grouse. Juniper at only 3% cover lowers sage grouse nesting probability (Severson et al. 2016), and survival and nest success decrease because juniper provides perch sites for raptors and corvids which prey on the grouse and/or depredate nests; however, juniper cover is not an indicator within the ARMPA Table 2-2 for early nesting, upland summer, or winter habitat. However, juniper may be affecting habitat at a smaller scale, though this is not captured with the HAF. Severson et al. (2017a) linked conifer removal treatments to

improved demographic rates. The two most important demographic parameters affecting population growth, female survival and nest survival, increased with treatment in the South Warners by 6.6% and 18.8% respectively from 2010 to 2014 (Severson et al. 2017a). Positive vegetation responses to juniper removal have been observed within three years of treatment in the South Warners (Severson et al. 2017b). Following treatment, sagebrush height increased and perennial grass and tall herbaceous cover significantly increased (Severson et al. 2017b).

2019 Team Members

Name	Title
LeeAnn McDonald	Wildlife Biologist
John Klock	Botanist
Grace Haskins	Weed Management Specialist
Joe Chigbrow	Interdisciplinary Biologist
James Leal	Fisheries Biologist
Les Boothe	Rangeland Management Specialist
Paul Whitman	Planning and Environmental Coordinator
Theresa Romasko	Assistant Field Manager

Recommendations

Seeding project where Big Lake, Big Valley, and Juniper Lake meet.

Replace fence between North and South Gibson Canyon pastures.

Continue juniper treatments.

2019 Determination

Existing grazing management practices on the Lane Plan 1 Allotment promote achievement of, or significant progress towards the Oregon Standards for Rangeland Health and conform with the applicable Guidelines for Livestock Grazing Management.

Existing grazing management practices on the Lane Plan 1 Allotment will require modification or change prior to the next grazing season to promote achievement of the Oregon Standards for Rangeland Health and conform with the applicable Guidelines for Livestock Grazing Management.



Jami Ludwig, Field Manager

6/7/19

Date

¹All acreages within allotment derived from GIS layers located on G:\corp\BLMReplication\ORWA_rep_gdb\ and within the mxd file located at G:\lak\lvra_local\Resource_Area_projects\range\Chigbrow\ LX_Ranch_AllotmentInfo2017

² ESI polygon data based on current Oregon/Washington BLM GIS "slk_veg" layer located on G:\corp\BLMReplication\ORWA_rep_gdb\ and within the mxd file located at G:\lak\lvra_local\Resource_Area_projects\range\Chigbrow\ LX_Ranch_AllotmentInfo2017

Appendix A – Monitoring Summaries

Table 2a. ESI dominant vegetation communities in Lane Plan 1 Allotment

Vegetation Community		
Plant Code	Scientific Name	Common Name
ABCO	<i>Abies concolor</i>	white fir
ABCO-PIPO	<i>Abies concolor-Pinus ponderosa</i>	white fir-ponderosa pine
PSSPS	<i>Pseudoroegneria spicata</i>	bluebunch wheatgrass
ARAR8-BROMU	<i>Artemisia arbuscula-Bromus</i> species	low sagebrush-brome species
ARAR8-FEID	<i>Artemisia arbuscula-Festuca idahoensis</i>	low sagebrush-Idaho fescue
ARAR8-POA	<i>Artemisia arbuscula-Poa</i> species	low sagebrush-bluegrass species
ARAR8-POSE	<i>Artemisia arbuscula-Poa secunda</i>	low sagebrush-Sandberg bluegrass
ARCA13	<i>Artemisia cana</i>	silver sagebrush
ARTR2-PSSPS	<i>Artemisia tridentata-Pseudoroegneria spicata</i>	big sagebrush-bluebunch wheatgrass
ARTR2-BRTE	<i>Artemisia tridentata-Bromus tectorum</i>	big sagebrush-cheatgrass
ARTRV-CELE3-BRTE	<i>Artemisia tridentata</i> ssp. <i>vaseyana-Cercocarpus ledifolius-Bromus tectorum</i>	mountain big sagebrush-curl leaf mountain mahogany-cheatgrass
ARTRV-FEID	<i>Artemisia tridentata</i> ssp. <i>vaseyana-Festuca idahoensis</i>	mountain big sagebrush-Idaho fescue
ARTRV-POA	<i>Artemisia tridentata</i> ssp. <i>vaseyana-Poa species</i>	mountain big sagebrush-Poa species
ARTRV-POSE	<i>Artemisia tridentata</i> ssp. <i>vaseyana-Poa secunda</i>	mountain big sagebrush-Sandberg bluegrass
ARTRV-ACTH7	<i>Artemisia tridentata</i> ssp. <i>vaseyana-Achnatherum thurberianum</i>	mountain big sagebrush-Thurber's needlegrass
CELE3-FEID	<i>Cercocarpus ledifolius-Festuca idahoensis</i>	curl leaf mountain mahogany-Idaho fescue
FEID	<i>Festuca idahoensis</i>	Idaho fescue
JUNCU	<i>Juncus</i> species	rush species
JUOC-ARAR8-FEID	<i>Juniperus occidentalis-Artemisia arbuscula-Festuca idahoensis</i>	western juniper-low sagebrush-Idaho fescue
JUOC-ARAR8-POSE	<i>Juniperus occidentalis-Artemisia arbuscula-Poa secunda</i>	western juniper-low sagebrush-Sandberg bluegrass
JUOC-ARTR2-PSSPS	<i>Juniperus occidentalis-Artemisia tridentata-Pseudoroegneria spicata</i>	western juniper-big sagebrush-bluebunch wheatgrass
JUOC-ARTR2-BRTE	<i>Juniperus occidentalis-Artemisia tridentata-Bromus tectorum</i>	western juniper-big sagebrush-cheatgrass
JUOC-ARTRV-ELEL5	<i>Juniperus occidentalis-Artemisia tridentata</i> ssp. <i>vaseyana-Elymus elymoides</i>	western juniper-mountain big sagebrush-squirreldtail
POTR5-ELGL	<i>Populus trmuloides-Elymus glaucus</i>	quaking aspen-blue wildrye
SAVE4	<i>Sarcobatus vermiculatus</i>	greasewood
Rockland	N/A	N/A
None*	N/A	N/A
Unknown**	N/A	N/A

* "None" refers to the water bodies Big Lake and Lucky Reservoir

** "Unknown" combines dominate vegetation labeled as "Incomplete" along with the remaining allotment acres with no classified vegetation communities.

Note: Highlighted rows indicate ESI polygons which had plot data

Table 2b. ESI dominant vegetation communities in Lane Plan 1 Allotment: Soil Surface Factor Acres

Vegetation Community Plant Code	Acres	% of total acres	SSF Acres					
			Stable	Slight	Moderate	Critical	Severe	Unknown
ABCO	17	< 1%	-	17	-	-	-	-
ABCO-PIPO	65	< 1%	-	-	-	-	-	65
PSSPS	469	2%	-	469	-	-	-	-
ARAR8-BROMU	1123	4%	-	1123	-	-	-	-
ARAR8-FEID	4498	17%	511	3987	-	-	-	-
ARAR8-POA	694	3%	-	694	-	-	-	-
ARAR8-POSE	8338	31%	-	7645	-	-	-	692
ARCA13	235	1%	-	235	-	-	-	-
ARTR2-PSSPS	7	< 1%	-	7	-	-	-	-
ARTR2-BRTE	105	< 1%	-	105	-	-	-	-
ARTRV-CELE3-BRTE	58	< 1%	-	58	-	-	-	-
ARTRV-FEID	155	1%	-	155	-	-	-	-
ARTRV-POA	116	< 1%	-	116	-	-	-	-
ARTRV-POSE	468	2%	-	468	-	-	-	-
ARTRV-ACTH7	224	1%	-	224	-	-	-	-
CELE3-FEID	4	< 1%	4	-	-	-	-	-
FEID	60	< 1%	60	-	-	-	-	-
JUNCU	1983	7%	1983	-	-	-	-	-
JUOC-ARAR8-FEID	3000	11%	-	3000	-	-	-	-
JUOC-ARAR8-POSE	134	1%	-	134	-	-	-	-
JUOC-ARTR2-PSSPS	101	< 1%	-	101	-	-	-	-
JUOC-ARTR2-BRTE	316	1%	-	316	-	-	-	-
JUOC-ARTRV-ELEL5	< 1	< 1%	-	< 1	-	-	-	-
POTR5-ELGL	< 1	< 1%	-	< 1	-	-	-	-
SAVE4	1	< 1%	-	-	-	1	-	-
Rockland	159	1%	-	-	-	-	-	159
None*	102	< 1%	-	-	-	-	-	102
Unknown**	4147	15%	-	-	-	-	-	4147

* "None" refers to the water bodies Big Lake and Lucky Reservoir

** "Unknown" combines dominate vegetation labeled as "Incomplete" along with the remaining allotment acres with no classified vegetation communities.

Note: Highlighted rows indicate ESI polygons which had plot data

Table 2c. ESI dominant vegetation communities in Lane Plan 1 Allotment: Observed Apparent Trend Acres

Vegetation Community Plant Code	Acres	% of total acres	OAT Acres			
			Upward	Static	Down	Unknown
ABCO	17	< 1%	-	17	-	-
ABCO-PIPO	65	< 1%	-	-	-	65
PSSPS	469	2%	469	-	-	-
ARAR8-BROMU	1123	4%	-	1123	-	-
ARAR8-FEID	4498	17%	1050	3448	-	-
ARAR8-POA	694	3%	-	694	-	-
ARAR8-POSE	8338	31%	81	7564	-	692
ARCA13	235	1%	-	235	-	-
ARTR2-PSSPS	7	< 1%	7	-	-	-
ARTR2-BRTE	105	< 1%	-	105	-	-
ARTRV-CELE3-BRTE	58	< 1%	-	58	-	-
ARTRV-FEID	155	1%	62	93	-	-
ARTRV-POA	116	< 1%	116	-	-	-
ARTRV-POSE	468	2%	468	-	-	-
ARTRV-ACTH7	224	1%	-	224	-	-
CELE3-FEID	4	< 1%	4	-	-	-
FEID	60	< 1%	-	60	-	-
JUNCU	1983	7%	1983	-	-	-
JUOC-ARAR8-FEID	3000	11%	508	2492	-	-
JUOC-ARAR8-POSE	134	1%	33	101	-	-
JUOC-ARTR2-PSSPS	101	< 1%	101	-	-	-
JUOC-ARTR2-BRTE	316	1%	-	74	242	-
JUOC-ARTRV-ELEL5	< 1	< 1%	-	< 1	-	-
POTR5-ELGL	< 1	< 1%	-	< 1	-	-
SAVE4	1	< 1%	-	-	1	-
Rockland	159	1%	-	-	-	159
None*	102	< 1%	-	-	-	102
Unknown**	4147	15%	-	-	-	4147

* "None" refers to the water bodies Big Lake and Lucky Reservoir

** "Unknown" combines dominate vegetation labeled as "Incomplete" along with the remaining allotment acres with no classified vegetation communities.

Note: Highlighted rows indicate ESI polygons which had plot data

Table 2d. ESI dominant vegetation communities in Lane Plan 1 Allotment: Acres within Seral Stage

Vegetation Community Plant Code	Acres	% of total acres	Acres within Seral Stage				
			PNC	Late	Mid	Early	Unknown
ABCO	17	< 1%	-	-	-	17	-
ABCO-PIPO	65	< 1%	-	-	-	-	65
PSSPS	469	2%	-	-	469	-	-
ARAR8-BROMU	1123	4%	-	-	1123	-	-
ARAR8-FEID	4498	17%	13	572	3913	-	-
ARAR8-POA	694	3%	-	-	694	-	-
ARAR8-POSE	8338	31%	-	81	7564	-	692
ARCA13	235	1%	-	-	-	235	-
ARTR2-PSSPS	7	< 1%	-	7	-	-	-
ARTR2-BRTE	105	< 1%	-	-	105	-	-
ARTRV-CELE3-BRTE	58	< 1%	-	58	-	-	-
ARTRV-FEID	155	1%	-	24	132	-	-
ARTRV-POA	116	< 1%	-	116	-	-	-
ARTRV-POSE	468	2%	-	-	468	-	-
ARTRV-ACTH7	224	1%	-	-	224	-	-
CELE3-FEID	4	< 1%	-	4	-	-	-
FEID	60	< 1%	-	-	-	60	-
JUNCU	1983	7%	-	1983	-	-	-
JUOC-ARAR8-FEID	3000	11%	-	2925	76	-	-
JUOC-ARAR8-POSE	134	1%	-	33	101	-	-
JUOC-ARTR2-PSSPS	101	< 1%	-	-	101	-	-
JUOC-ARTR2-BRTE	316	1%	-	-	74	242	-
JUOC-ARTRV-ELEL5	< 1	< 1%	-	-	-	< 1	-
POTR5-ELGL	< 1	< 1%	-	-	-	< 1	-
SAVE4	1	< 1%	-	-	-	1	-
Rockland	159	1%	-	-	-	-	159
None*	102	< 1%	-	-	-	-	102
Unknown**	4147	15%	-	-	-	-	4147

* "None" refers to the water bodies Big Lake and Lucky Reservoir

** "Unknown" combines dominate vegetation labeled as "Incomplete" along with the remaining allotment acres with no classified vegetation communities.

Note: Highlighted rows indicate ESI polygons which had plot data

Bluebunch wheatgrass dominant vegetation community

#LP1-07 (Photo)

Years of recorded data: 1970, 1971, 1973, 1974, 1976, 1981, 1991, 1997, 2002, 2005, 2008, 2011, 2014

Plot was established in Grain Camp Pasture. Vegetation at this site includes big sagebrush, crested wheatgrass, and Sandberg bluegrass. Photographs indicate no significant changes in vegetation community or cover; trend is stable. Both shrubs and grasses appear vigorous during the years the plot was recorded.

Low sagebrush-brome species dominant vegetation community

#LA-INTS-016 (AIM)

Year of recorded data: 2016

Plot was established in Big Lake Pasture; this is baseline data, thus no trend. Vegetation primarily includes low sagebrush, squirreltail, Sandberg bluegrass, and soft brome. Based on this year's data, vegetation community and soil are consistent for this landform and this region's climate regime.

Table 3. LA-INTS-016 LPI: Cover/Litter Report

Summary Category	Avg. %
Foliar Cover	58.0
Bare Ground	10.0
Bare Lichen Between-Plant Cover	0.0
Bare Moss Between-Plant Cover	0.7
Litter Between-Plant Cover	16.0
Bare Rock Between-Plant Cover	15.3

Table 4. LA-INTS-016 LPI: Cover Estimates by Species

Plant Code	Scientific Name	Common Name	Foliar Cover %
ELEL5	<i>Elymus elymoides</i>	squirreltail	15.3
POSE	<i>Poa secunda</i>	Sandberg bluegrass	6.7
FEID	<i>Festuca idahoensis</i>	Idaho fescue	0.7
BRHO2	<i>Bromus hordeaceus</i>	soft brome	6.0
CRAC2	<i>Crepis acuminata</i>	tapertip hawksbeard	0.7
LAGL5	<i>Layia glandulosa</i>	whitedaisy tidytips	8.7
EPBR3	<i>Epilobium brachycarpum</i>	tall annual willowherb	6.0
ARAR8	<i>Artemisia arbuscula</i>	low sagebrush	19.3
ERNA10	<i>Ericameria nauseosa</i>	rubber rabbitbrush	1.3

Table 5. LA-INTS-016 Soil Stability

	All Samples	Samples with Foliar Cover	Samples without Foliar Cover
Plot Avg.	1.4	1.5	1.4
Line 1 Avg.	2.2	2.0	2.3
Line 2 Avg.	1.2	1.5	1.0
Line 3 Avg.	1.0	1.0	1.0

#SFA-UPSH-672 (AIM and RHI)

Year of recorded data: 2016

Plot was established in Big Lake Pasture; this is baseline data, thus no trend. Vegetation primarily includes low sagebrush, Idaho fescue, Sandberg bluegrass, squirreltail, and nineleaf biscuitroot. Based on this year's data, vegetation community and soil are consistent for this landform and this region's climate regime.

Table 6. SFA-UPSH-672 LPI: Cover/Litter Report

Summary Category	Avg. %
Foliar Cover	53.3
Bare Ground	24.7
Bare Lichen Between-Plant Cover	0.0
Bare Moss Between-Plant Cover	0.0
Litter Between-Plant Cover	12.0
Bare Rock Between-Plant Cover	10.0

Table 7. SFA-UPSH-672 LPI: Cover Estimates by Species

Plant Code	Scientific Name	Common Name	Foliar Cover %
FEID	<i>Festuca idahoensis</i>	Idaho fescue	16.7
POSE	<i>Poa secunda</i>	Sandberg bluegrass	7.3
ELEL5	<i>Elymus elymoides</i>	squirreltail	2.7
DAUN	<i>Danthonia unispicata</i>	onespike danthonia	1.3
BRHO2	<i>Bromus hordeaceus</i>	soft brome	0.7
LOTR2	<i>Lomatium triternatum</i>	nineleaf biscuitroot	4.0
PHHO	<i>Phlox hoodii</i>	spiny phlox	0.7
CATA2	<i>Camissonia tanacetifolia</i>	tansyleaf evening primrose	0.7
COPA3	<i>Collinsia parviflora</i>	maiden blue eyed Mary	0.7
CORA5	<i>Cordylanthus ramosus</i>	bushy bird's beak	0.7
LAGL5	<i>Layia glandulosa</i>	whitedaisy tidytips	1.3
ARAR8	<i>Artemisia arbuscula</i>	low sagebrush	20.7
PUTR2	<i>Purshia tridentata</i>	antelope bitterbrush	1.3
ERNA10	<i>Ericameria nauseosa</i>	rubber rabbitbrush	0.7

Table 8. SFA-UPSH-672 Soil Stability

	All Samples	Samples with Foliar Cover	Samples without Foliar Cover
Plot Avg.	2.1	2.4	1.8
Line 1 Avg.	1.5	0.0	1.5
Line 2 Avg.	2.8	3.3	2.0
Line 3 Avg.	1.7	1.5	2.0

Table 9. SFA-UPSH-672 Rangeland Health Indicators

Soil/Site Stability					Hydrologic Function					Biotic Integrity									
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17			
ET	ME	M	SM	NS	ET	ME	M	SM	NS	ET	ME	M	SM	NS	ET	ME	M	SM	NS
Average rating		SM			Average rating		SM			Average rating		NS							

Indicators

- | | | | |
|---------------------------------|---|--------------------------------------|---------------------|
| 1: Rills | 6: Wind scour and/or Depositional areas | 11: Soil compaction layer(s) | 16: Invasive plants |
| 2: Water flow patterns | 7: Litter movement | 12: Functional/Structural groups | 17: Reproductive |
| 3: Pedestals and/or Terracettes | 8: Soil surface resistance to erosion | 13: Plant mortality/decadence | |
| 4: Bare ground | 9: Soil surface loss/degradation | 14: Litter amount | |
| 5: Gullies | 10: Plant community relative to infiltration/runoff | 15: Annual production (not recorded) | |

Indicator Ratings

ET = Extreme to Total ME = Moderate to Extreme M = Moderate SM = Slight to Moderate NS = None to Slight

Low sagebrush-Idaho fescue dominant vegetation communities

#LP1-508 (Photo)

Years of data recorded: 1970, 1971, 1975, 1982, 1992, 2002, 2009, and 2012

Plot was established in Juniper Lake Pasture. Vegetation includes low sagebrush, big sagebrush, Idaho fescue, Sandberg bluegrass, and western juniper. Photographs indicate a stable trend with no significant changes in vegetation community up to 2011, with shrubs and grasses maintaining vigor. The 2012 photograph shows the plot is near a juniper thinning where range conditions may change.

#PS-455D (Photo)

Years of data recorded: 1957, 1970, 2000, 2009, and 2012

Plot was established in Juniper Lake Pasture. Vegetation includes low sagebrush, squirreltail, Sandberg bluegrass, and western juniper. Photographs indicate a stable trend with no significant changes in vegetation community, with shrubs and grasses maintaining vigor.

#LP1-01 (Nested Frequency, OAT, and Photo)

Years of recorded data: 1987, 1992, 2002, 2005, 2008, 2011, 2014

Plot was established in Big Valley Pasture. Vegetation primarily includes low sagebrush, Sandberg bluegrass, squirreltail, and Idaho fescue. Photographs indicate a stable trend with no significant changes in vegetation community, with shrubs and grasses maintaining vigor. Based on the data, vegetation community and soil are consistent for this landform and this region's climate regime.

Table 10. LP1-01 Nested Frequency: % Basal Ground Cover

Summary Category	1997	2002	2005	2008	2014
Bare Ground	20	13	14	16	18
Bare Rock	33	37	34	31	33
Litter	16	25	18	22	21
Vegetation	32	24	34	31	29
Moss, Lichen, Soil Crusts	0	0	0	0	0

Table 11a. LP1-01 Nested Frequency: % Ground Cover by Species 1997-2005

Plant Code	Scientific Name	Common Name	1997	2002	2005
FEID	<i>Festuca idahoensis</i>	Idaho fescue	N/A	4	3
ELEL5	<i>Elymus elymoides</i>	squirreltail	N/A	1	1
POSE	<i>Poa secunda</i>	Sandberg bluegrass	N/A	6	14
CAREX	<i>Carex</i> species	sedge species	0	0	0
ERIOG	<i>Eriogonum</i> species	buckwheat species	N/A	0	< 1
PHLOX	<i>Phlox</i> species	phlox species	N/A	1	< 1
PUTR2	<i>Purshia tridentata</i>	antelope bitterbrush	N/A	1	1
ARAR8	<i>Artemisia arbuscula</i>	low sagebrush	N/A	5	12
Cryptogram	Cryptogram	Cryptogram	N/A	2	2
Unk Annual Forb	Unk Annual Forb	Unk Annual Forb	N/A	3	1
Unk Perennial Forb	Unk Perennial Forb	Unk Perennial Forb	N/A	1	0

Table 11b. LP1-01 Nested Frequency: % Ground Cover by Species 2008-2014

Plant Code	Scientific Name	Common Name	2008	2014
FEID	<i>Festuca idahoensis</i>	Idaho fescue	4	7
ELEL5	<i>Elymus elymoides</i>	squirreltail	1	1
POSE	<i>Poa secunda</i>	Sandberg bluegrass	14	9
CAREX	<i>Carex</i> species	sedge species	0	1
ERIOG	<i>Eriogonum</i> species	buckwheat species	< 1	0
PHLOX	<i>Phlox</i> species	phlox species	1	1
PUTR2	<i>Purshia tridentata</i>	antelope bitterbrush	1	1
ARAR8	<i>Artemisia arbuscula</i>	little sagebrush	9	7
Cryptogram	Cryptogram	Cryptogram	2	2
Unk Annual Forb	Unk Annual Forb	Unk Annual Forb	1	0
Unk Perennial Forb	Unk Perennial Forb	Unk Perennial Forb	0	0

Table 12a. LP1-01 Nested Frequency: % Species Frequency 1997-2005

Plant Code	Scientific Name	Common Name	1997	2002	2005
FEID	<i>Festuca idahoensis</i>	Idaho fescue	32.5	54	65
ELELE5	<i>Elymus elymoides</i>	squirreltail	14.0	22	5*
POSE	<i>Poa secunda</i>	Sandberg bluegrass	80.0	89	94
ACTH7	<i>Achnatherum thurberianum</i>	Thurber's needlegrass	0.0	0	0
KOMA	<i>Koeleria macrantha</i>	prairie Junegrass	0	0	0
CAREX	<i>Carex</i> species	sedge species	N/A	0	0
PHLOX	<i>Phlox</i> species	phlox species	6.5	28	7
ERIOG	<i>Eriogonum</i> species	buckwheat species	0.5	56	5
ANTEN	<i>Antennaria</i> species	pussytoes species	N/A	0	1
CREPI	<i>Crepis</i> species	hawksbeard species	0	12	0
ERIGE2	<i>Erigeron</i> species	fleabane species	N/A	8	4
ARAR8	<i>Artemisia arbuscula</i>	little sagebrush	51	68	51
PUTR2	<i>Purshia tridentata</i>	antelope bitterbrush	1	6	1
JUOC	<i>Juniperus occidentalis</i>	western juniper	0	0	0
Cryptogram	Cryptogram	Cryptogram	23	48	N/A
Unk Perennial Forb	Unk Perennial Forb	Unk Perennial Forb	0.5	51	0
Unk Annual Forb	Unk Annual Forb	Unk Annual Forb	5.5	72	87

*Vegetation likely misidentified, resulting in anomaly in trend.

Table 12b. LP1-01 Nested Frequency: % Species Frequency 2008-2014

Plant Code	Scientific Name	Common Name	2008	2014
FEID	<i>Festuca idahoensis</i>	Idaho fescue	68	70
ELELE5	<i>Elymus elymoides</i>	squirreltail	18	22
POSE	<i>Poa secunda</i>	Sandberg bluegrass	97	96
ACTH7	<i>Achnatherum thurberianum</i>	Thurber's needlegrass	0	2
KOMA	<i>Koeleria macrantha</i>	prairie Junegrass	0	1
CAREX	<i>Carex</i> species	sedge species	5	4
PHLOX	<i>Phlox</i> species	phlox species	14	25
ERIOG	<i>Eriogonum</i> species	buckwheat species	11	7
ANTEN	<i>Antennaria</i> species	pussytoes species	0	0
CREPI	<i>Crepis</i> species	hawksbeard species	0	1
ERIGE2	<i>Erigeron</i> species	fleabane species	0	0
ARAR8	<i>Artemisia arbuscula</i>	little sagebrush	51	44
PUTR2	<i>Purshia tridentata</i>	antelope bitterbrush	1	1
JUOC	<i>Juniperus occidentalis</i>	western juniper	0	0
Cryptogram	Cryptogram	Cryptogram	N/A	N/A
Unk Perennial Forb	Unk Perennial Forb	Unk Perennial Forb	0	0
Unk Annual Forb	Unk Annual Forb	Unk Annual Forb	61	0

Table 13. LP1-01 Observed Apparent Trend

Year	1987
Vigor	9
Seedlings	9
Surface Litter	3
Pedestals	5
Gullies	2
Total	28
Rating	Upward

OAT ratings

Vigor: High = 10, Low = 1; Seedlings: High # = 10, Low # = 1, Surface Litter: High accumulation= 5, Low accumulation = 1; Pedestals: None to Low pedestaling = 5, High pedestaling = 1, Gullies: None to Low # with stable channels = 5, High # with eroding or fresh channels

#PS-455 A (LPI, Photo, and Step-toe)

Years of recorded data: 1974, 1975, 1978, 1981, 1992, 2000, 2006, 2009, 2012, 2016

Plot was established in Big Lake Pasture; this is baseline data for LPI and Step-toe transects, thus no trend. Vegetation primarily includes low sagebrush, soft brome, Sandberg bluegrass, Idaho fescue, and Oregon yampah. Photographs indicate no significant changes in vegetation community or cover; trend is stable. Based on the data, vegetation community and soil are consistent for this landform and this region's climate regime.

Table 14. PS-455 A Step-toe: % Basal Ground Cover

Summary Category	2016
Bare Ground	22
Bare Rock	22
Litter	27
Vegetation	29
Moss, Lichen, Soil Crusts	0

Table 15. PS-455 A Step-toe: % Species Frequency Cover

Plant Code	Scientific Name	Common Name	2016
POSE	<i>Poa secunda</i>	Sandberg bluegrass	15
FEID	<i>Festuca idahoensis</i>	Idaho fescue	7
KOMA	<i>Koeleria macrantha</i>	prairie Junegrass	1
ELEL5	<i>Elymus elymoides</i>	squirreltail	2
PENST	<i>Penstemon</i> species	beardtongue species	1
LOTR2	<i>Lomatium triternatum</i>	nineleaf biscuitroot	9
PEOR6	<i>Perideridia oregana</i>	Oregon yampah	29
PHLO2	<i>Phlox longifolia</i>	longleaf phlox	5
BRTE	<i>Bromus tectorum</i>	cheatgrass	4*
BRHO2	<i>Bromus hordeaceus</i>	soft brome	27*
GADI2	<i>Gayophytum diffusum</i>	spreading groundsmoke	1*
LAGL5	<i>Layia glandulosa</i>	whitedaisy tidytips	26*
COGR2	<i>Collinsia grandiflora</i>	giant blue eyed Mary	3*
COPA3	<i>Collinsia parviflora</i>	maiden blue eyed Mary	5*
EPBR3	<i>Epilobium brachycarpum</i>	tall annual willowherb	15*
ARAR8	<i>Artemisia arbuscula</i>	low sagebrush	31

* These are Annual plants and the frequency was recorded as the closest plant; however, closet perennial was also recorded and therefore total exceeds 100%.

Table 16. PS-455 A LPI: % Shrub Canopy Cover

Transect #	2012		
	ARAR8	PUTR2	CHIV18
1 West	25.4	0.3	0
2 East	9.9	0	0
3 North	9.7	0	0.7
Average	15	0.1	0.2

#PS-455 B (LPI, Photo, and Step-toe)

Years of recorded data: 1968, 1970, 1974, 1978, 1981, 1992, 2000, 2006, 2010, 2012, 2016

Plot was established in Big Valley Pasture; this is baseline data for LPI and Step-toe transects, thus no trend. Vegetation primarily includes low sagebrush, Sandberg bluegrass, soft brome, squirreltail, Idaho fescue, and blue-eyed Mary. Photos show no significant changes in vegetation community or cover up to 2012; trend is stable. Based on the data, vegetation community and soil are consistent for this landform and this region's climate regime.

Table 17. PS-455 B Step-toe: % Basal Ground Cover

Summary Category	2016
Bare Ground	23
Bare Rock	34
Litter	15
Vegetation	28
Moss, Lichen, Soil Crusts	0

Table 18. PS-455 B Step-toe: % Species Frequency Cover

Plant Code	Scientific Name	Common Name	2016
POSE	<i>Poa secunda</i>	Sandberg bluegrass	34
FEID	<i>Festuca idahoensis</i>	Idaho fescue	4
ELEL5	<i>Elymus elymoides</i>	squirreltail	6
CAREX	<i>Carex</i> species	sedge species	3
BRTE	<i>Bromus tectorum</i>	cheatgrass	3*
BRHO2	<i>Bromus hordeaceus</i>	soft brome	23*
PENST	<i>Penstemon</i> species	beardtongue species	6
PEOR6	<i>Perideridia oregana</i>	Oregon yampah	2
PHLOX	<i>Phlox</i> species	phlox species	4
ZIPA2	<i>Zigadenus paniculatus</i>	foothill deathcamas	1
ERLA6	<i>Eriophyllum lanatum</i>	common woolly sunflower	1
LAGL5	<i>Layia glandulosa</i>	whitedaisy tidytips	21*
COGR2	<i>Collinsia grandiflora</i>	giant blue eyed Mary	14*
COPA3	<i>Collinsia parviflora</i>	maiden blue eyed Mary	5*
EPBR3	<i>Epilobium brachycarpum</i>	tall annual willowherb	10*
ARAR8	<i>Artemisia arbuscula</i>	low sagebrush	35
PUTR2	<i>Purshia tridentata</i>	antelope bitterbrush	1
JUOC	<i>Juniperus occidentalis</i>	western juniper	3

* These are Annual plants and the frequency was recorded as the closest plant; however, closet perennial was also recorded and therefore total exceeds 100%.

Table 19. PS-455 B LPI: % Shrub Canopy Cover

Transect #	2012	
	ARAR8	PUTR2
1 West	7.8	0
2 North	14.4	0
3 East	9	4.1
Average	10.4	1.4

#PS-455C (LPI, Photo, and Step-toe)

Years of data recorded: 1957, 1970, 1978, 1981, 1992, 2000, 2006, 2009, 2012, and 2016

Plot was established in Juniper Lake Pasture; this is baseline data for LPI and Step-toe transects, thus no trend. Vegetation primarily includes low sagebrush, Sandberg bluegrass, soft brome, Idaho fescue, and Oregon yampah. Photos indicate no significant changes in vegetation community or cover; trend is stable. Based on the data, vegetation community and soil are consistent for this landform and this region's climate regime.

Table 20. PS-455 C Step-toe: % Basal Ground Cover

Summary Category	2016
Bare Ground	17
Bare Rock	26
Litter	12
Vegetation	44
Moss, Lichen, Soil Crusts	1

Table 21. PS-455 C Step-toe: % Species Frequency Cover

Plant Code	Scientific Name	Common Name	2016
POSE	<i>Poa secunda</i>	Sandberg bluegrass	25
FEID	<i>Festuca idahoensis</i>	Idaho fescue	6
KOMA	<i>Koeleria macrantha</i>	prairie Junegrass	1
ELEL5	<i>Elymus elymoides</i>	squirreltail	1
CAREX	<i>Carex</i> species	sedge species	1
BRHO2	<i>Bromus hordeaceus</i>	soft brome	13*
ERBL	<i>Erigeron bloomeri</i>	scabland fleabane	2
ARAC2	<i>Arenaria aculeata</i>	prickly sandwort	1
ARABI2	<i>Arabis</i> species	rockcress species	1
LOTR2	<i>Lomatium triternatum</i>	nineleaf biscuitroot	3
PEOR6	<i>Perideridia oregana</i>	Oregon yampah	14
PHLOX	<i>Phlox</i> species	phlox species	7
ERLA6	<i>Eriophyllum lanatum</i>	common woolly sunflower	5
PHCH	<i>Phoenicaulis cheiranthoides</i>	wallflower phoenicaulis	1
PENST	<i>Penstemon</i> species	beardtongue species	1
ANDI2	<i>Antennaria dimorpha</i>	low pussytoes	3
GADI2	<i>Gayophytum diffusum</i>	spreading groundsmoke	3*
LAGL5	<i>Layia glandulosa</i>	whitedaisy tidytips	27*
CRYPT	<i>Cryptantha</i> species	cryptantha species	1*
CORA5	<i>Cordylanthus ramosus</i>	bushy bird's beak	3*
EPBR3	<i>Epilobium brachycarpum</i>	tall annual willowherb	9*
Moss	N/A	moss species	1
ARAR8	<i>Artemisia arbuscula</i>	low sagebrush	25

* These are Annual plants and the frequency was recorded as the closest plant; however, closet perennial was also recorded and therefore total exceeds 100%.

Table 22. PS-455 C LPI: % Shrub Canopy Cover

	2012
Transect #	ARAR8
1 Sout	5.1
2 East	6
3 West	16.1
Average	9.1

#LP1-03 (LPI, Photo, and Step-toe)

Years of recorded data: 1966, 1969, 1970, 1971, 1973, 1974, 1981, 1991, 1995, 2000, 2006, 2009, 2012, 2015

Plot was established in Big Lake Pasture; this is baseline data for LPI and Step-toe transects, thus no trend. Vegetation primarily includes low sagebrush, Sandberg bluegrass, Idaho fescue, and squirreltail. Photos indicate no significant changes in vegetation community or cover; trend is stable. Based on the data, vegetation community and soil are consistent for this landform and this region's climate regime.

Table 23. LP1-03 Step-toe: % Basal Ground Cover

Summary Category	2015
Bare Ground	25
Bare Rock	10
Litter	30
Vegetation	34
Moss, Lichen, Soil Crusts	0

Table 24. LP1-03 Step-toe: % Species Frequency Cover

Plant Code	Scientific Name	Common Name	2015
POSE	<i>Poa secunda</i>	Sandberg bluegrass	40
FEID	<i>Festuca idahoensis</i>	Idaho fescue	20
ELEL5	<i>Elymus elymoides</i>	squirreltail	11
PHLOX	<i>Phlox</i> species	phlox species	3
DANTH	<i>Danthonia</i> species	oatgrass species	2
ERIOG	<i>Eriogonum</i> species	buckwheat species	1
ARAR8	<i>Artemisia arbuscula</i>	low sagebrush	21
ARTR2	<i>Artemisia tridentata</i>	big sagebrush	1

Table 25. LP1-03 Step-toe: % Shrub Canopy Cover

	2012
Transect #	ARAR8
1 South	21
2 North	36
3 West	11.1
Average	22.7

#LP1-430 (LPI, Photo, and Step-toe)

Years of data recorded: 1966, 1976, 1970, 1974, 1975, 1992, 1997, 2002, 2008, 2012, 2016

Plot was established in Juniper Lake Pasture; this is baseline data for LPI and Step-toe transects, thus no trend. Vegetation primarily includes low sagebrush, Sandberg bluegrass, Idaho fescue, and squirreltail. Photos show prescribed fire, burnt shrubs after 1974. Photos indicate an upward trend from 1975-1992, while the remaining photos show vegetation community and cover remaining stable. Based on the data, vegetation community and soil are consistent for this landform and this region’s climate regime.

Table 26. LP1-430 Step-toe: % Basal Ground Cover

Summary Category	2016
Bare Ground	12
Bare Rock	32
Litter	14
Vegetation	41
Moss, Lichen, Soil Crusts	1

Table 27. LP1-430 Step-toe: % Species Frequency Cover

Plant Code	Scientific Name	Common Name	2016
POSE	<i>Poa secunda</i>	Sandberg bluegrass	36
ELEL5	<i>Elymus elymoides</i>	squirreltail	7
FEID	<i>Festuca idahoensis</i>	Idaho fescue	7
PSSPS	<i>Pseudoroegneria spicata</i>	bluebunch wheatgrass	1
HYMEN7	<i>Hymenoxys</i> species	rubberweed species	1
LUPIN	<i>Lupinus</i>	lupine species	1
PHLOX	<i>Phlox</i> species	phlox species	15
Unk Annual Forb	Unk Annual Forb	Unk Annual Forb	1*
ARAR8	<i>Artemisia arbuscula</i>	low sagebrush	27

* These are Annual plants and the frequency was recorded as the closest plant; however, closet perennial was also recorded and therefore total exceeds 100%.

Table 28. LP1-430 LPI: % Shrub Canopy Cover

	2012
Transect #	ARAR8
1	12.1
2	11.8
3 West	25.2
Average	16.4

#LA-INTS-008 (AIM)

Year of recorded data: 2016

Plot was established in Big Valley Pasture; this is baseline data, thus no trend. Vegetation primarily includes low sagebrush and Sandberg bluegrass. Based on this year’s data, vegetation community and soil are consistent for this landform and this region’s climate regime.

Table 29. LA-INTS-008 LPI: Cover/Litter Report

Summary Category	Avg. %
Foliar Cover	47.3
Bare Ground	20.0
Bare Lichen Between-Plant Cover	0.0
Bare Moss Between-Plant Cover	0.0
Litter Between-Plant Cover	14.7
Bare Rock Between-Plant Cover	18.0

Table 30. LA-INTS-008 LPI: Cover Estimates by Species

Plant Code	Scientific Name	Common Name	Foliar Cover %
POSE	<i>Poa secunda</i>	Sandberg bluegrass	11.3
FEID	<i>Festuca idahoensis</i>	Idaho fescue	1.3
PHHO	<i>Phlox hoodii</i>	spiny phlox	2.0
EPBR3	<i>Epilobium brachycarpum</i>	tall annual willowherb	3.3
ARCO	<i>Arabis cobrensis</i>	sagebrush rockcress	2.0
TRMA3	<i>Trifolium macrocephalum</i>	largehead clover	0.7
ARCA2	<i>Aralia californica</i>	California spikenard	0.7
COPA3	<i>Collinsia parviflora</i>	maiden blue eyed Mary	1.3
LAGL5	<i>Layia glandulosa</i>	whitedaisy tidytips	1.3
NABR	<i>Navarretia breweri</i>	Brewer's navarretia	0.7
ARAR8	<i>Artemisia arbuscula</i>	low sagebrush	27.3
JUOC	<i>Juniperus occidentalis</i>	western juniper	0.7

Table 31. LA-INTS-008 Soil Stability

	All Samples	Samples with Foliar Cover	Samples without Foliar Cover
Plot Avg.	2.8	3.1	2.5
Line 1 Avg.	3.7	4.5	3.3
Line 2 Avg.	2.5	3.0	2.0
Line 3 Avg.	2.2	2.0	2.3

#LA-INTS-020 (AIM)

Year of recorded data: 2016

Plot was established in Juniper Lake Pasture; this is baseline data, thus no trend. Vegetation primarily includes low sagebrush, Idaho fescue, Sandberg bluegrass, nineleaf biscuitroot, and western juniper. Based on this year's data, vegetation community and soil are consistent for this landform and this region's climate regime.

Table 32. LA-INTS-020 LPI: Cover/Litter Report

Summary Category	Avg. %
Foliar Cover	44.0
Bare Ground	16.7
Bare Lichen Between-Plant Cover	0.0
Bare Moss Between-Plant Cover	0.7
Litter Between-Plant Cover	12.0
Bare Rock Between-Plant Cover	26.7

Table 33. LA-INTS-020 LPI: Cover Estimates by Species

Plant Code	Scientific Name	Common Name	Foliar Cover %
FEID	<i>Festuca idahoensis</i>	Idaho fescue	9.3
POSE	<i>Poa secunda</i>	Sandberg bluegrass	5.3
ELEL5	<i>Elymus elymoides</i>	squirreltail	2.7
LOTR2	<i>Lomatium triternatum</i>	nineleaf biscuitroot	6.7
ARCA2	<i>Aralia californica</i>	California spikenard	2.0
ANDI2	<i>Antennaria dimorpha</i>	low pussytoes	1.3
ARCO	<i>Arabis cobrensis</i>	sagebrush rockcress	0.7
PHHO	<i>Phlox hoodii</i>	spiny phlox	0.7
ZIPA2	<i>Zigadenus paniculatus</i>	foothill deathcamas	0.7
EPBR3	<i>Epilobium brachycarpum</i>	tall annual willowherb	2.0
CORA5	<i>Cordylanthus ramosus</i>	bushy bird's beak	1.3
ARAR8	<i>Artemisia arbuscula</i>	low sagebrush	14.7
JUOC	<i>Juniperus occidentalis</i>	western juniper	6.0

Table 34. LA-INTS-020 Soil Stability

	All Samples	Samples with Foliar Cover	Samples without Foliar Cover
Plot Avg.	2.6	2.3	2.9
Line 1 Avg.	3.2	2.0	3.5
Line 2 Avg.	1.7	2.0	1.0
Line 3 Avg.	3.2	3.0	3.3

Low sagebrush-Sandberg bluegrass dominant vegetation communities

#418 (Photo)

Years of recorded data: 1966, 1973, 1978, 1992, 2005, 2008, 2014

Plot was established in Big Lake. Vegetation includes Sandberg bluegrass and western dock (*Rumex aquaticus*). Photographs indicate some changes in vegetation community through the years, most likely due to varying precipitation. With the plot location located near the edge of the Big Lake playa, precipitation levels can have an impact on vegetation fluctuations; overall, photo trend is stable.

#LP1-06 (Photo)

Years of data recorded: 1966, 1969, 1970, 1973, 1977, 1981, 1989, 1991, 1996, 2002, 2007, 2011, 2014

Plot was established in South Gibson Canyon Pasture. Vegetation includes low sagebrush and Sandberg bluegrass. Photographs indicate no significant changes in vegetation community or cover, vegetation community and soil are consistent for this landform and this region's climate regime; trend is stable.

#PS-534-1 (Photo)

Years of recorded data: 1974, 1975, 1996, 2002, 2011

Plot was established in Big Lake Pasture. Vegetation includes low sagebrush, Sandberg bluegrass, and Idaho fescue. Photographs indicate no significant changes in vegetation community or cover, vegetation community and soil are consistent for this landform and this region's climate regime; trend is stable.

#PS-534-2 (Photo)

Years of recorded data: 1974, 1975, 1996, 2002, 2011

Plot was established in Juniper Lake Pasture. Vegetation includes low sagebrush, Sandberg bluegrass, and Idaho fescue. Photographs indicate no significant changes in vegetation community or cover, vegetation community and soil are consistent for this landform and this region's climate regime; trend is stable.

#PS-534-3 (Photo)

Years of recorded data: 1974, 1992, 1996, 2002, 2011

Plot was established in Juniper Lake Pasture. Vegetation includes low sagebrush, Sandberg bluegrass, and Idaho fescue. Photographs indicate no significant changes in vegetation community or cover, vegetation community and soil are consistent for this landform and this region's climate regime; trend is stable.

#PS-534-5 (Photo)

Years of recorded data: 1974, 1975, 1976, 2000, 2009, 2011

Plot was established in Juniper Lake Pasture. Vegetation includes big sagebrush, rabbitbrush, Sandberg bluegrass, Idaho fescue, and western juniper. Photographs show prescribed fire, burnt junipers after 1974, indicating an upward trend from 1975-2000, with the remaining photographs showing the vegetation community and cover becoming stable after 2000. Vegetation community and soil are consistent for this landform and this region's climate regime.

#PS-534-6 (Photo)

Years of recorded data: 1974, 1975, 2000, 2009, 2011

Plot was established in Juniper Lake Pasture. Vegetation includes low sagebrush, antelope bitterbrush, rabbitbrush, Sandberg bluegrass, and western juniper. Photographs show prescribed fire, burnt junipers after 1974, indicating an upward trend from 1975-2011. Vegetation community and soil are consistent for this landform and this region's climate regime.

#PS-534-7 (Photo)

Years of recorded data: 1974, 2000, 2011

Plot was established in Juniper Lake Pasture. Vegetation includes low sagebrush, Sandberg bluegrass, and Idaho fescue. Photographs indicate no significant changes in vegetation community or cover, vegetation community and soil are consistent for this landform and this region's climate regime; trend is stable.

#PS-534-8 (Photo)

Years of recorded data: 1974, 1978, 1996, 2002, 2011

Plot was established in Big Lake Pasture. Vegetation includes low sagebrush, Sandberg bluegrass, and Idaho fescue. Photographs indicate no significant changes in vegetation community or cover, vegetation community and soil are consistent for this landform and this region's climate regime; trend is stable.

#LP1-02 (LPI, Nested Frequency, and Photo)

Years of recorded data: 1987, 1992, 1997, 2005, 2008, 2011, 2015

Plot was established in Big Lake Pasture. Vegetation includes low sagebrush, Sandberg bluegrass, and Idaho fescue. Photographs indicate no significant changes in vegetation community or cover, vegetation community and soil are consistent for this landform and this region's climate regime; trend is stable.

Table 35. LP1-02 Nested Frequency: % Basal Ground Cover

Summary Category	1997	2005	2008	2015
Bare Ground	38	33	29	36
Bare Rock	6	5	6	5
Litter	21	25	41	25
Vegetation	35	37	23	33
Moss, Lichen, Soil Crusts	0	0	0	0

Table 36a. LP1-02 Nested Frequency: % Ground Cover by Species 1997-2008

Plant Code	Scientific Name	Common Name	1997	2005
FEID	<i>Festuca idahoensis</i>	Idaho fescue	N/A	1
POSE	<i>Poa secunda</i>	Sandberg bluegrass	N/A	9
ELEL5	<i>Elymus elymoides</i>	squirreltail	N/A	< 1
ACTH7	<i>Achnatherum thurberianum</i>	Thurber's needlegrass	N/A	0
LUPIN	<i>Lupinus</i> species	lupine species	N/A	0
ERIOG	<i>Eriogonum</i> species	buckwheat species	N/A	1
Unk Annual Forb	Unk Annual Forb	Unk Annual Forb	N/A	3
Moss	N/A	moss species	N/A	1
ARAR8	<i>Artemisia arbuscula</i>	low sagebrush	N/A	20
ARTR2	<i>Artemisia tridentata</i>	big sagebrush	N/A	2

Table 36b. LP1-02 Nested Frequency: % Ground Cover by Species 2011-2015

Plant Code	Scientific Name	Common Name	2008	2015
FEID	<i>Festuca idahoensis</i>	Idaho fescue	3	3
POSE	<i>Poa secunda</i>	Sandberg bluegrass	7	8
ELEL5	<i>Elymus elymoides</i>	squirreltail	0	1
ACTH7	<i>Achnatherum thurberianum</i>	Thurber's needlegrass	0	< 1
LUPIN	<i>Lupinus</i> species	lupine species	0	< 1
ERIOG	<i>Eriogonum</i> species	buckwheat species	0	1
Unk Annual Forb	Unk Annual Forb	Unk Annual Forb	0	0
Moss	N/A	moss species	0	2
ARAR8	<i>Artemisia arbuscula</i>	low sagebrush	12	18
ARTR2	<i>Artemisia tridentata</i>	big sagebrush	1	0

Table 37a. LP1-02 Nested Frequency: % Species Frequency* 1997-2008

Plant Code	Scientific Name	Common Name	1997	2005
FEID	<i>Festuca idahoensis</i>	Idaho fescue	16	14
POSE	<i>Poa secunda</i>	Sandberg bluegrass	64	85
ELELE5	<i>Elymus elymoides</i>	squirreltail	2.5	10
ACTH7	<i>Achnatherum thurberianum</i>	Thurber's needlegrass	0	2
BRTE	<i>Bromus tectorum</i>	cheatgrass	0	0
ASTER	<i>Aster species</i>	aster species	0	0
ERIOG	<i>Eriogonum species</i>	buckwheat species	1.5	7
ERIGE2	<i>Erigeron species</i>	fleabane species	0	7
PHLOX	<i>Phlox species</i>	phlox species	3.5	7
CREPI	<i>Crepis species</i>	hawksbeard species	0	0
LUPIN	<i>Lupinus species</i>	lupine species	0	0
Cryptogram	Cryptogram	Cryptogram	5.5	N/A
Unk Perennial Forb	Unk Perennial Forb	Unk Perennial Forb	1	0
Unk Annual Forb	Unk Annual Forb	Unk Annual Forb	4	42
ARAR8	<i>Artemisia arbuscula</i>	low sagebrush	55	70
ARTR2	<i>Artemisia tridentata</i>	big sagebrush	0.5	6

* Species frequency did not measure moss.

Table 37b. LP1-02 Nested Frequency: % Species Frequency* 2011-2015

Plant Code	Scientific Name	Common Name	2008	2015
FEID	<i>Festuca idahoensis</i>	Idaho fescue	49	41
POSE	<i>Poa secunda</i>	Sandberg bluegrass	79	81
ELELE5	<i>Elymus elymoides</i>	squirreltail	3	11
ACTH7	<i>Achnatherum thurberianum</i>	Thurber's needlegrass	6	5
BRTE	<i>Bromus tectorum</i>	cheatgrass	1	0
ASTER	<i>Aster species</i>	aster species	0	0
ERIOG	<i>Eriogonum species</i>	buckwheat species	5	10
ERIGE2	<i>Erigeron species</i>	fleabane species	0	0
PHLOX	<i>Phlox species</i>	phlox species	7	8
CREPI	<i>Crepis species</i>	hawksbeard species	3	0
LUPIN	<i>Lupinus species</i>	lupine species	0	1
Cryptogram	Cryptogram	Cryptogram	0	0
Unk Perennial Forb	Unk Perennial Forb	Unk Perennial Forb	0	0
Unk Annual Forb	Unk Annual Forb	Unk Annual Forb	11	0
ARAR8	<i>Artemisia arbuscula</i>	low sagebrush	68	77
ARTR2	<i>Artemisia tridentata</i>	big sagebrush	2	0

* Species frequency did not measure moss.

LP1-02 LPI – only one shrub canopy cover transect recorded with ARAR8 = 16.1% in 2012.

#PS-445 (LPI, Photo, and Step-toe)

Years of data recorded: 1968, 1971, 1975, 1981, 1992, 1997, 2002, 2008, 2011, 2012, 2016

Plot was established in Juniper Lake Pasture; this is baseline data for LPI and Step-toe transects, thus no trend. Vegetation primarily includes low sagebrush, Sandberg bluegrass, soft brome, and squirreltail. Photographs indicate no significant changes in vegetation community or cover; trend is stable. Based on the data, vegetation community and soil are consistent for this landform and this region’s climate regime.

Table 38. PS-445 Step-toe: % Basal Ground Cover

Summary Category	2016
Bare Ground	27
Bare Rock	30
Litter	13
Vegetation	30
Moss, Lichen, Soil Crusts	0

Table 39. PS-445 Step-toe: % Species Frequency Cover

Plant Code	Scientific Name	Common Name	2016
POSE	<i>Poa secunda</i>	Sandberg bluegrass	47
ELEL5	<i>Elymus elymoides</i>	squirreltail	5
BRHO2	<i>Bromus hordeaceus</i>	soft brome	23*
ARABI2	<i>Arabis</i> species	rockcress species	1
PHLOX	<i>Phlox</i> species	phlox species	4
AGGL	<i>Agoseris glauca</i>	pale agoseris	1
LIPAS	<i>Lithophragma parviflorum</i>	smallflower woodland-star	4
ERLI	<i>Erigeron linearis</i>	desert yellow fleabane	1
GADI2	<i>Gayophytum diffusum</i>	spreading groundsmoke	4*
LAGL5	<i>Layia glandulosa</i>	whitedaisy tidytips	17*
ARAR8	<i>Artemisia arbuscula</i>	low sagebrush	43

* These are Annual plants and the frequency was recorded as the closest plant; however, closet perennial was also recorded and therefore total exceeds 100%.

Table 40. PS-445 LPI: % Shrub Canopy Cover

	2012
Transect #	ARAR8
1 West	6.8
2 North	14.2
3 East	3
Average	8

#PS-503 (LPI and Photo)

Years of data recorded: 1970, 1971, 1973, 1974, 1977, 1979, 1981, 1997, 2008, 2012

Plot was established in North Gibson Canyon Pasture; this is baseline data for LPI, thus no trend. Vegetation primarily includes low sagebrush, big sagebrush, Sandberg bluegrass, and western juniper. Photographs indicate no significant changes in vegetation community or cover; trend is stable. Based on the data, vegetation community and soil are consistent for this landform and this region's climate regime.

Table 41. PS-503 LPI: % Shrub Canopy Cover

	2012
Transect #	ARAR8
1 East	15.1
2 North	34.8
3 West	12.4
Average	20.8

#LP1-08 (LPI, Photo, and Step-toe)

Years of data recorded: 1968, 1970, 1971, 1973, 1975, 1981, 1991, 1995, 2000, 2005, 2008, 2011, 2012

Plot was established in Juniper Lake Pasture; this is baseline data for LPI and Step-toe transects, thus no trend. Vegetation primarily includes low sagebrush, Sandberg bluegrass, soft brome, squirreltail, and nineleaf biscuitroot. Photographs indicate no significant changes in vegetation community or cover; trend is stable. Based on the data, vegetation community and soil are consistent for this landform and this region's climate regime.

Table 42. LP1-08 Step-toe: % Basal Ground Cover

Summary Category	2016
Bare Ground	24
Bare Rock	15
Litter	28
Vegetation	33
Moss, Lichen, Soil Crusts	0

Table 43. LP1-08 Step-toe: % Species Frequency Cover

Plant Code	Scientific Name	Common Name	2016
POSE	<i>Poa secunda</i>	Sandberg bluegrass	45
ELEL5	<i>Elymus elymoides</i>	squirreltail	5
BRHO2	<i>Bromus hordeaceus</i>	soft brome	10*
LOTR2	<i>Lomatium triternatum</i>	nineleaf biscuitroot	15
ERLI	<i>Erigeron linearis</i>	desert yellow fleabane	1
PHLOX	<i>Phlox species</i>	phlox species	5
LAGL5	<i>Layia glandulosa</i>	whitedaisy tidytips	8*
ARAR8	<i>Artemisia arbuscula</i>	low sagebrush	43

* These are Annual plants and the frequency was recorded as the closest plant; however, closet perennial was also recorded and therefore total exceeds 100%.

Table 44. LP1-08 LPI: % Shrub Canopy Cover

	2012
Transect #	ARAR8
1 North	15.7
2 West	23.3
3 East	12.6
Average	17.2

#LA-INTS-002 (AIM)

Year of data recorded: 2016

Plot was established in South Gibson Canyon Pasture; this is baseline data, thus no trend. Vegetation primarily includes low sagebrush, Idaho fescue, Sandberg bluegrass, soft brome, and nineleaf biscuitroot. Based on this year's data, vegetation community and soil are consistent for this landform and this region's climate regime.

Table 45. LA-INTS-002 LPI: Cover/Litter Report

Summary Category	Avg. %
Foliar Cover	44.7
Bare Ground	3.3
Bare Lichen Between-Plant Cover	0.0
Bare Moss Between-Plant Cover	2.0
Litter Between-Plant Cover	12.0
Bare Rock Between-Plant Cover	38.0

Table 46. LA-INTS-002 LPI: Cover Estimates by Species

Plant Code	Scientific Name	Common Name	Foliar Cover %
FEID	<i>Festuca idahoensis</i>	Idaho fescue	8.7
POSE	<i>Poa secunda</i>	Sandberg bluegrass	6.7
ELEL5	<i>Elymus elymoides</i>	squirreltail	2.0
BRHO2	<i>Bromus hordeaceus</i>	soft brome	5.3
ARAC2	<i>Arenaria aculeata</i>	prickly sandwort	2.0
LOTR2	<i>Lomatium triternatum</i>	nineleaf biscuitroot	2.0
ERLI	<i>Erigeron linearis</i>	desert yellow fleabane	1.3
AGGL	<i>Agoseris glauca</i>	pale agoseris	0.7
ANDI2	<i>Antennaria dimorpha</i>	low pussytoes	0.7
PHHO	<i>Phlox hoodii</i>	spiny phlox	0.7
LAGL5	<i>Layia glandulosa</i>	whitedaisy tidytips	6.0
EPBR3	<i>Epilobium brachycarpum</i>	tall annual willowherb	0.7
ARAR8	<i>Artemisia arbuscula</i>	low sagebrush	13.3

Table 47. LA-INTS-002 Soil Stability

	All Samples	Samples with Foliar Cover	Samples without Foliar Cover
Plot Avg.	1.9	1.5	2.0
Line 1 Avg.	2.0	0.0	2.0
Line 2 Avg.	1.8	1.5	2.0
Line 3 Avg.	2.0	0.0	2.0

#LA-INTS-012 (AIM)

Year of recorded data: 2016

Plot was established in Big Lake Pasture; this is baseline data, thus no trend. Vegetation primarily includes woolly groundsel, western tansymustard, and squirreltail. Vegetation is affected by its location on the Big Lake reservoir playa. Based on this year’s data, vegetation community and soil are consistent for this landform and this region’s climate regime.

Table 48. LA-INTS-012 LPI: Cover/Litter Report

Summary Category	Avg. %
Foliar Cover	49.3
Bare Ground	32.0
Bare Lichen Between-Plant Cover	0.0
Bare Moss Between-Plant Cover	0.0
Litter Between-Plant Cover	18.7
Bare Rock Between-Plant Cover	0.0

Table 49. LA-INTS-012 LPI: Cover Estimates by Species

Plant Code	Scientific Name	Common Name	Foliar Cover %
ELEL5	<i>Elymus elymoides</i>	squirreltail	5.3
POFE	<i>Poa fendleriana</i>	muttongrass	0.7
BRTE	<i>Bromus tectorum</i>	cheatgrass	1.3
PACA15	<i>Packera cana</i>	woolly groundsel	31.3
DEPI	<i>Descurainia pinnata</i>	western tansymustard	9.3
RUOC2	<i>Rudbeckia occidentalis</i>	western coneflower	1.3
CATA2	<i>Camissonia tanacetifolia</i>	tansyleaf evening primrose	0.7
AGHE2	<i>Agoseris heterophylla</i>	annual agoseris	4.0

Table 50. LA-INTS-012 Soil Stability

	All Samples	Samples with Foliar Cover	Samples without Foliar Cover
Plot Avg.	1.3	1.4	1.1
Line 1 Avg.	1.5	2.0	1.3
Line 2 Avg.	1.3	1.4	1.0
Line 3 Avg.	1.0	1.0	1.0

Mountain big sagebrush-Sandberg bluegrass dominant vegetation community

#LP1-04 (Photo)

Years of recorded data: 1966, 1969, 1970, 1971, 1972, 1973, 1976, 1991, 2000, 2005, 2008, 2011, 2014

Plot was established in Big Valley Pasture. Vegetation includes low sagebrush, western juniper, and Sandberg bluegrass. In 2011, the Ruby Pipeline was constructed; photographs from plot and utilization data show an upward trend for the disturbed ground. Vegetation community and soil are consistent for this landform and this region’s climate regime; overall, trend is stable.

#LP1-506 (Photo)

Years of recorded data: 1970, 1971, 1972, 1976, 1981, 1987, 1992, 1997, 2005, 2012, 2015

Plot was established in Big Valley Pasture. Vegetation includes low sagebrush, big sagebrush, antelope bitterbrush, western juniper, and Sandberg bluegrass. Photographs from 1970-2006, indicate an upward trend due to increased vegetation along riparian area providing greater bank stability, while the remaining photos show vegetation community and cover remaining stable. Vegetation community and soil are consistent for this landform and this region’s climate regime.

Silver sagebrush dominant vegetation community

#PS-534-4 (Photo)

Years of recorded data: 1974, 1975, 1992, 1997, 2002, 2009, 2011

Plot was established in Juniper Lake Pasture. Vegetation includes low sagebrush, Sandberg bluegrass, and western juniper. Photographs show prescribed fire, burnt junipers after 1974, indicating an upward trend from 1975-1992, while the remaining photos show vegetation community and cover remaining stable after 1992. Vegetation community and soil are consistent for this landform and this region’s climate regime.

Western juniper-low sagebrush-Idaho fescue dominant vegetation community

#LA-INTS-004 (AIM)

Year of recorded data: 2016

Plot was established in Big Valley Pasture; this is baseline data, thus no trend. Vegetation primarily includes low sagebrush, Sandberg bluegrass, antelope bitterbrush, squirreltail, and blue-eyed Mary. Based on this year’s data, vegetation community and soil are consistent for this landform and this region’s climate regime.

Table 51. LA-INTS-004 LPI: Cover/Litter Report

Summary Category	Avg. %
Foliar Cover	62.0
Bare Ground	30.0
Bare Lichen Between-Plant Cover	0.0
Bare Moss Between-Plant Cover	3.3
Litter Between-Plant Cover	2.7
Bare Rock Between-Plant Cover	2.0

Table 52. LA-INTS-004 LPI: Cover Estimates by Species

Plant Code	Scientific Name	Common Name	Foliar Cover %
POSE	<i>Poa secunda</i>	Sandberg bluegrass	34.7
ELEL5	<i>Elymus elymoides</i>	squirreltail	5.3
LUAR3	<i>Lupinus argenteus</i>	silvery lupine	2.7
ANST2	<i>Antennaria stenophylla</i>	narrowleaf pussytoes	2.0
ANDI2	<i>Antennaria dimorpha</i>	low pussytoes	0.7
DENU3	<i>Delphinium nuttallii</i>	upland larkspur	0.7
ERTH4	<i>Eriogonum thymoides</i>	thymeleaf buckwheat	0.7
PHHO	<i>Phlox hoodii</i>	spiny phlox	0.7
LOCO4	<i>Lomatium cous</i>	cous biscuitroot	0.7
COPA3	<i>Collinsia parviflora</i>	maiden blue eyed Mary	2.0
ARARA	<i>Artemisia arbuscula ssp. arbuscula</i>	low sagebrush	22.0
PUTR2	<i>Purshia tridentata</i>	antelope bitterbrush	9.3
GRSP	<i>Grayia spinosa</i>	spiny hopsage	1.3

Table 53. LA-INTS-004 Soil Stability

	All Samples	Samples with Foliar Cover	Samples without Foliar Cover
Plot Avg.	2.0	2.2	1.8
Line 1 Avg.	1.8	2.3	1.0
Line 2 Avg.	2.2	2.0	2.3
Line 3 Avg.	2.0	2.3	1.7

Incomplete/unknown ESI dominant vegetation communities

#LP1-05 (Photo)

Years of recorded data: 1966, 1969, 1970, 1971, 1972, 1973, 1976, 1978, 1980, 1981, 1982, 1987, 1991, 2002, 2005, 2008, 2011, 2014

Plot was established in Big Valley Pasture; this is baseline data for LPI, thus no trend. Vegetation primarily includes low sagebrush, big sagebrush, antelope bitterbrush, Sandberg bluegrass, and western juniper. Photographs indicate no significant changes in vegetation community or cover; trend is stable. Based on the data, vegetation community and soil are consistent for this landform and this region’s climate regime.

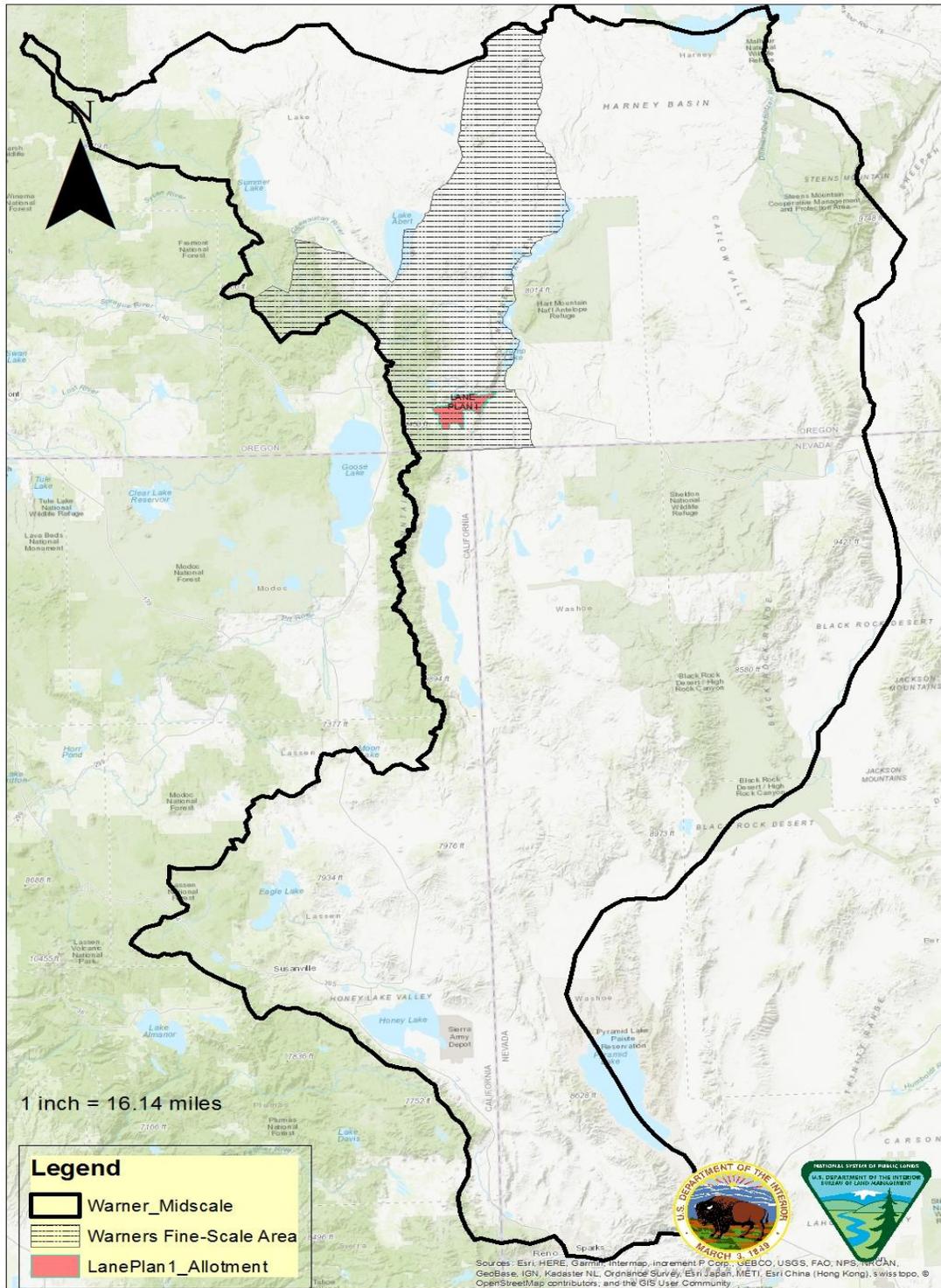
Table 54. Lane Plan 1 Allotment (#00207) Actual Use and Utilization Data by Year

Year	Big Lake AUM's	% Utilization Big Lake	Big Valley AUM's	% Utilization Big Valley	Grain Camp AUM's	% Utilization Grain Camp	Juniper Lake AUM's	% Utilization Juniper Lake	North/South Gibson Canyon AUM's	% Utilization North/South Gibson Canyon	Total AUM's
2016	379	44	639	45	171	-	305	30	369	37	1863
2015	Rested	-	Rested	-	61	41	413	-	440	45	914
2014	101	-	532	44	147	40	Rested	-	135	32	915
2013	130	-	628	-	175	-	336	-	Rested	-	1269
2012	302	-	Rested	-	170	49	350	45	261	46	1083
2011	838	-	208	35	150	21	Rested	-	257	42	1453
2010	247	-	197	26	160	-	335	-	446	-	1385
2009	407	57	Rested	-	226	29	324	48	334	52	1291
2008	639	-	479	40	213	40	Rested	-	367	26	1698
2007	391	58	622	43	Rested	-	544	-	Rested	-	1557
2006	1132	-	Rested	-	176	-	352	-	287	-	1947
2005	352	-	761	-	Rested	-	333	-	Rested	-	1446
2004	800	-	Rested	-	180	-	506	-	383	-	1870
2003	348	-	379	-	195	-	Rested	-	298	-	1220
2002	823	58	Rested	-	153	-	326	49	349	36	1650
2001	484	-	452	-	138	-	Rested	-	353	-	1427
2000	1028	-	Rested	-	152	-	356	45	234	45	1769
1999	41	-	479	-	154	27	336	39	225	30	1235
1998	1235	39	Rested	-	85	-	Rested	-	538	23	1858
1997	1006	45	618	47	Rested	-	285	42	Rested	-	1909
1996	888	28	Rested	-	402	45	321	25	214	-	1825
1995	452	-	679	-	296	-	Rested	-	287	-	1714
1994	584	-	Rested	-	488	38	151	49	Rested	-	1223
1993	832	-	Rested	-	280	-	Rested	-	Rested	-	1112
1992		-	Rested	-	Used w/ S. Gibson	-	Rested	-	347	-	347
1991	-	-	-	51	-	-	-	35	-	-	-
1990	-	-	-	63	-	29	-	-	-	-	-
1989	-	-	-	-	-	-	-	8	-	-	-
1988	-	-	-	34	-	-	-	-	-	-	-
1987	-	38	-	-	-	21	-	90	-	15	-
Recent 10 year Average	3434	159	3305	233	1473	220	2607	123	2609	280	1343
Overall Average	584	46	513	43	199	35	348	42	322	36	1439

Lane Plan 1 Allotment is grazed during spring into early fall, April 1st through October 10th, under a rest-rotation grazing management system. The total AUM's permitted are 1,942, which was only exceeded in 2006. The total average actual use over the last 10 years has been 1343 AUM's. During the years when utilization was collected, the target utilization of 50% was exceeded 4 times, 3 years on the Big Lake pasture and 1 year on the Grain Camp pasture. Actual use on Big Lake pasture shows it has not received the rest it should, which needs to be remedied in future grazing seasons.

Appendix B: HAF Monitoring Summary

Map 1. Greater Sage-Grouse habitat boundaries depicting the mid-and fine-scale and Lane Plan I Allotment.



Map 2. Greater Sage-Grouse habitat boundaries depicting the fine-scale, sage-grouse occupied habitat, and Lane Plan I Allotment.

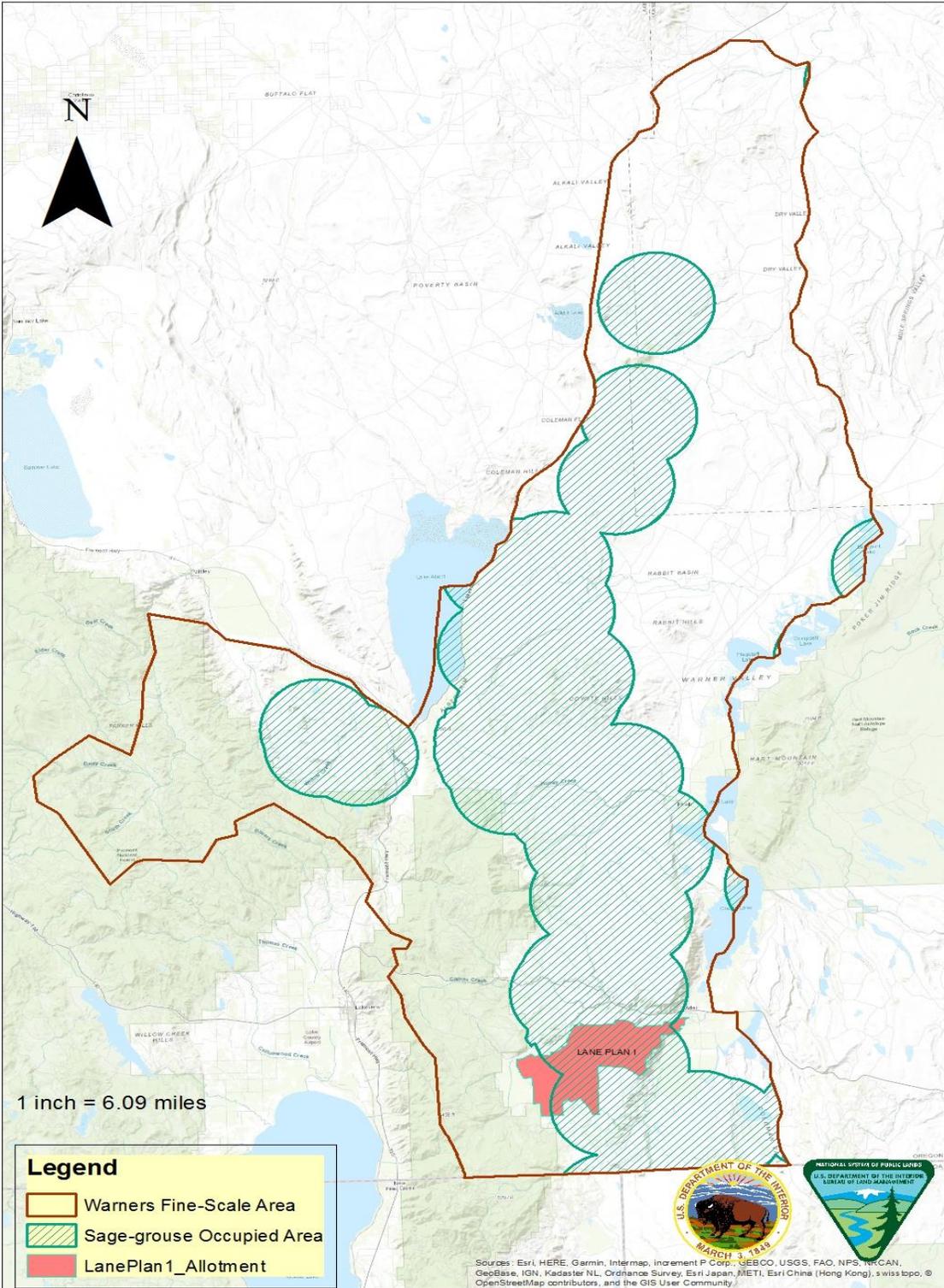


Table 55. Summary of Warner-Tucker Hill Fine-Scale Habitat for spring, summer, and winter within occupied and unoccupied habitat.

Area of Habitat		2446	1940.5	1969.5	5373.6
Occupancy	Habitat	Spring	Summer	Winter	Fine-scale
Occupied (42%)	Existing Sagebrush	1348.3	1177.1	1231.7	1616.8
	Percent of Habitat	55%	61%	63%	30%
	Potential Sagebrush	178.8	149.7	154.2	256.2
	Percent of Habitat	7%	8%	8%	5%
<i>Subtotal Occupied Suitable</i>		1348.3	1177.1	1231.7	1616.8
Unoccupied (58%)	Existing Sagebrush	440	204.3	258.1	1345.5
	Percent of Habitat	18%	11%	13%	25%
	Potential Sagebrush	152	74.6	177.8	1698.9
	Percent of Habitat	6%	4%	9%	32%
<i>Subtotal Unoccupied Suitable</i>		440	204	258	1346
Both	Non-habitat (12%)				456
				Total	5374

Potential & Available Habitat: % of Season	87%	83%	93%	92%
Occupied by season	1713			0
Existing Sagebrush	73%	71%	76%	55%
Potential Sagebrush	14%	12%	17%	36%

Table 56. Simple suitability proportions of HAF points.

Site-Scale Habitat Type	# of Sample Locations within Home Range	Suitable Proportions	Marginal Proportions	Unsuitable Proportions
Breeding Habitat (Nesting/Early Brood Rearing) (Form S-3)	61	52%	25%	23%
Upland Summer/Late Brood-Rearing Habitat (Form S-4)	24	46%	29%	25%
Winter Habitat (Form S-6)	111	63%	19%	18%

Table 57. Summary of site-scale sage-grouse habitat suitability ratings and proportional area estimates (80% confidence interval) for seasonal habitat types in the Warner-Tucker Hill site-scale habitat analysis area, Oregon. Proportional area estimate based on unequal weighting of plots.

Seasonal Habitat	Number of Leks, Plots or Sites			Proportional Area Estimate		
	Suitable	Marginal	Unsuitable	Suitable	Marginal	Unsuitable
Breeding (Lekking)	37 leks	25 leks	14 leks	NA	NA	NA
Breeding (Nesting/Early Brood-rearing)	27	5	3	63.5% CI [55.3, 71.8]	8.2% CI [3.2, 13.2]	28.3% CI [18.7, 37.9]
Upland Summer/Late Brood-rearing	15	4	3	69.3% CI [55.3, 83.4]	17.0% CI [7.5, 26.4]	13.7% CI [3.3, 24.1]
Riparian Summer/Late Brood-rearing	9 sites	8 sites	2 sites	NA	NA	NA
Winter	52	2	8	82.5% CI [76.2, 88.9]	4.6% CI [0, 9.0]	12.9% CI [6.9, 18.9]

Figure 1. Greater sage-grouse nesting/early brood-rearing (spring) habitat suitability proportional area estimates using plots sampled within habitat objectives table date range within the Lane Plan I Allotment (80% confidence Interval, n =3).

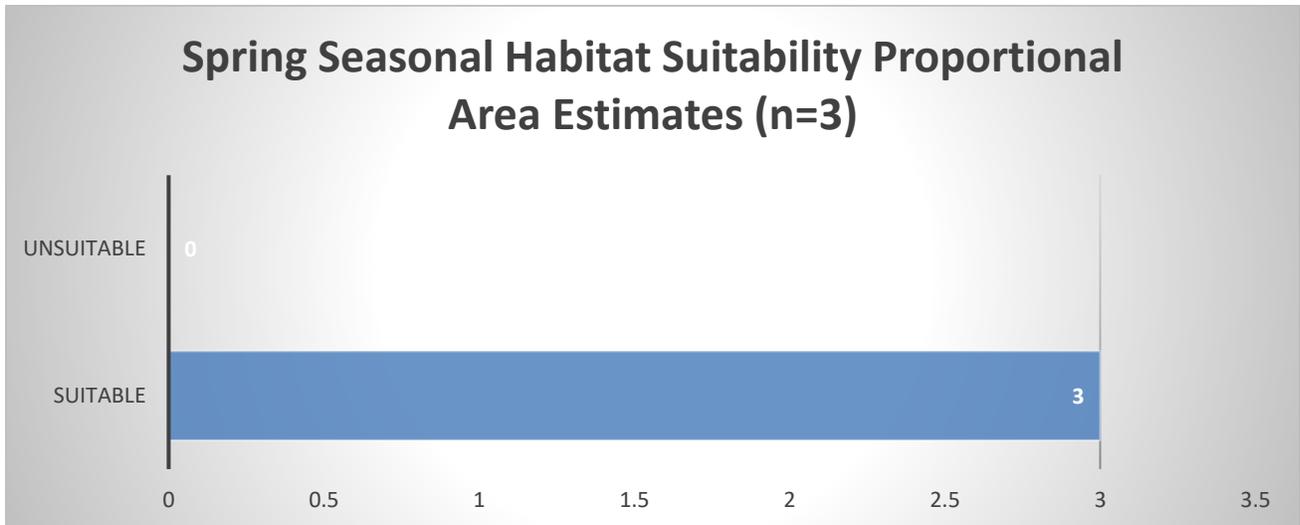


Figure 2. Greater sage-grouse upland summer/late brood-rearing (summer) habitat suitability proportional area estimates using plots sampled within habitat objectives table date range within the Lane Plan I Allotment (80% confidence Interval, n =4).

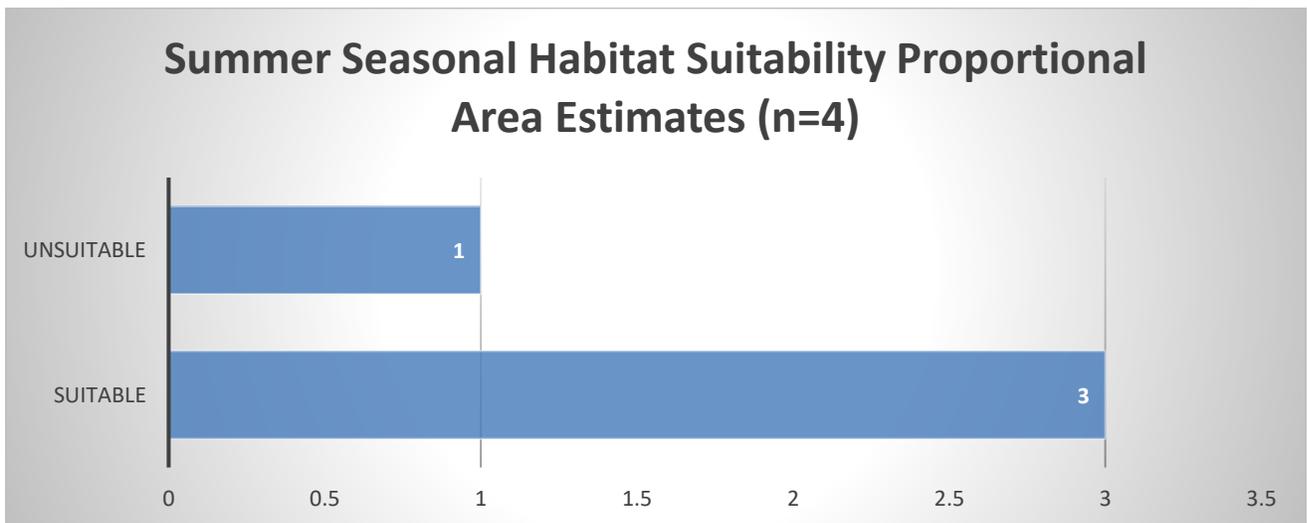
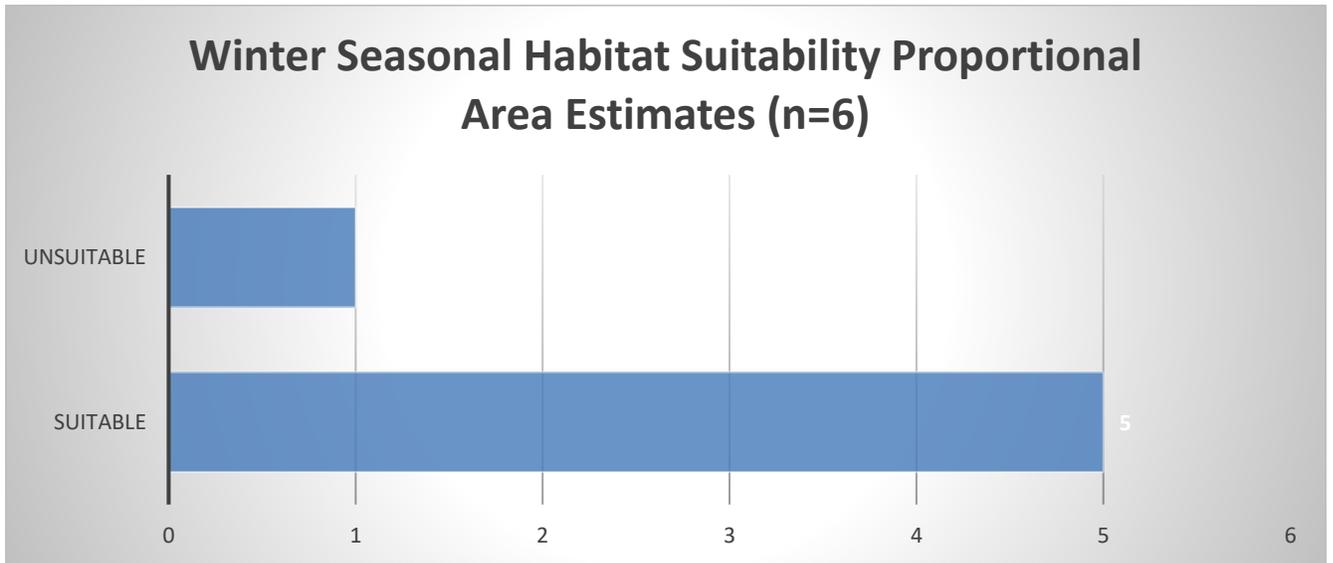


Figure 3. Greater sage-grouse winter habitat suitability proportional area estimates within the Lane Plan I Allotment (n = 6). Winter analysis was not limited by sample date; confidence interval is unknown.



Appendix C. ARMPA Habitat Objectives Table 2-2 (BLM 2015),

**Table 2-2
Habitat Objectives for Greater Sage-grouse**

Attribute	Indicators	Desired Condition (Habitat Objectives)	Reference
Breeding Including Lekking, Pre-nesting, Nesting, and Early Brood Rearing (Seasonal Use Period March 1 – June 30)			
Lek Security	Proximity of trees or other tall structures	No conifers or tall structures within 1.0 mile of lek center, and conifer cover less than 5% within 4.0 miles of lek, excluding old trees, culturally significant, actively used by special status species, and old growth juniper stands.	Connelly et al. 2000; Fresse 2009; Baruch-Mordo et al. 2013; Knick et al. 2013
	Proximity of sagebrush to leks	Lek has adjacent sagebrush cover	Connelly et al. 2000
Cover	Sagebrush cover (%)	10 to 25	Doescher et al. 1986; Gregg et al. 1994; Hanf et al. 1994; Coggins 1998; Crawford and Carver 2000; Bates and Davies 2014; BLM 2015a
	Sagebrush height (inches) Arid sites (warm-dry) Mesic sites (cool-moist)	11 to 31 15 to 31	Gregg et al. 1994; Hanf et al. 1994; Coggins 1998; Crawford and Carver 2000; Fresse 2009.
	Predominant sagebrush shape	Spreading	Connelly et al. 2000
	Perennial grass cover (such as bunchgrass) (%) Arid sagebrush Warm-dry Shallow-dry Mesic sagebrush Cool-moist Warm-moist	10 to 30 10 to 25 20 to 45 20 to 50	Gregg et al. 1994; Coggins 1998; Crawford and Carver 2000; Fresse 2009; NRCS 2015; Bates and Davies 2014; Jon Bates, USDA ARS, pers.comm. 2/10/2015; BLM 2015a; BLM 2015b
	Perennial grass and forb height (inches, including residual grasses) – most important and appropriately measured in nest areas; excludes shallow-dry sites ¹ Arid sites (warm-dry) Mesic sites (cool-moist)	≥ 7 ≥ 9	Gregg et al. 1994; Hanf et al. 1994; Crawford and Carver 2000; Hagen et al. 2007; Jon Bates, USDA ARS, pers.comm. 2/10/2015

**Table 2-2
Habitat Objectives for Greater Sage-grouse**

Attribute	Indicators	Desired Condition (Habitat Objectives)	Reference
	Perennial forb cover (%) ² Arid sagebrush Warm-dry Shallow-dry Mesic sagebrush Cool-moist Warm-moist	2 to 10 2 to 10 6 to 12 5 to 15	Drut 1992; Drut et al. 1994; Crawford and Carver 2000; Freese 2009; NRCS 2015; Bates and Davies 2014; BLM 2015a; Jon Bates, USDA ARS, pers.comm. 2/10/2015; BLM 2015b
Food	Preferred forb diversity and availability	Preferred forbs are common with 5 to 10 species present ²	Hanf et al. 1994; Crawford and Carver 2000; Freese 2009; Bates and Davies 2014; BLM 2015a; Jon Bates, USDA ARS, pers.comm. 2/10/2015
Available Suitable Habitat (Landscape Context)	% of seasonal habitat within 4.0 miles of leks meeting a majority of the desired conditions Arid sagebrush Mesic sagebrush	70 (55-85) 75 (60-90)	Connelly et al. 2000; Karl and Sadowski 2005; Evers 2010; Hagen 2011; NRCS 2015
Brood-rearing/Summer Including Late-brood Rearing, Summering, and Early Autumn (Seasonal Use Period July 1- October 31)			
Cover	Sagebrush cover (%)	10 to 25	Doescher et al. 1986; Drut et al. 1994; Connelly et al. 2000; Crawford and Carver 2000; Bates and Davies 2014; Jon Bates, USDA ARS, pers.comm. 2/10/2015
	Sagebrush height (inches)	15 to 31	Gregg et al. 1994; Hanf et al. 1994; Crawford and Carver 2000; Freese 2009
	Perennial herbaceous (grass and forbs) cover (%) Arid sagebrush Warm-dry Shallow-dry Mesic sagebrush Cool-moist Warm-moist Riparian ³	15 to 30 10 to 25 20 to 45 30 to 55 ≥ 50	Drut et al. 1994; Bates and Davies 2014; NRCS 2015; BLM 2015b; Jon Bates, USDA ARS, pers.comm. 2/10/2015
	Riparian areas/mesic meadows	Majority of areas are in PFC	Stiver et al. 2010, or as updated
Food	Upland and riparian perennial forb availability	Preferred forbs are common with 5 to 10 species present ⁴	Hanf et al. 1994; Freese 2009; Bates and Davies 2014; BLM 2015b; Jon Bates, USDA ARS, pers.comm. 2/10/2015

**Table 2-2
Habitat Objectives for Greater Sage-grouse**

Attribute	Indicators	Desired Condition (Habitat Objectives)	Reference
Available Suitable Habitat (Landscape Context)	% of seasonal habitat within 4.0 miles of leks meeting a majority of the desired conditions Arid sagebrush Mesic sagebrush	70 (55-85) 75 (60-90)	Connelly et al. 2000; Karl and Sadowski 2005; Evers 2010; Hagen 2011; NRCS 2015
Winter Including Late Autumn and Winter (Seasonal Use Period November 1 – February 28)			
Cover and Food	Sagebrush cover above snow (%)	≥ 10	Willis 1990 (in Hagen 2011); Bruce 2011
	Sagebrush height above snow (inches)	≥10	Willis 1990 (in Hagen 2011); Bruce 2011
Available Suitable Habitat (Landscape Context)	% of wintering habitat meeting a majority of the desired conditions Arid sagebrush Mesic sagebrush	70 (55-85) 85 (68-100)	Connelly et al. 2000; Karl and Sadowski 2005; Evers 2010; NRCS 2015

¹Perennial grass and forb minimum height may not be achievable in years with below normal precipitation. Other indicators of desired condition may still render the site suitable, however.

²In very dry years, forb cover and availability may not be at the desired condition, and in certain plant associations such as Wyoming big sagebrush/Needle and Thread, these indicators may rarely be achieved even in years with normal precipitation.

³Riparian includes swales, wet meadows, and intermittent/ephemeral streams.

⁴Sage-grouse preferred forbs are listed in Appendix I.

Appendix D: Literature Cited

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