

BUREAU OF LAND MANAGEMENT
SURPRISE FIELD OFFICE, CEDARVILLE CA

Monitoring Evaluation and Land Health Determination

Horse Lake Allotment

5/9/2014

Contents

Purpose.....	4
Evaluation Period.....	4
Allotment Profile	4
Livestock Management.....	5
Actual use.....	5
Water Sources	7
Wildfires & Prescribed Burns.....	8
Wildlife	8
Monitoring	10
Current conditions on the allotment.....	11
Evaluations of Land Health Standards.....	11
Allotment Objectives	13
AMP Land Use Goals	13
Horse Lake Objectives	13
2008 RMP Objectives and Management Actions can be found in Appendix B.....	13
Land Health Standards	13
Standards for Rangeland Health	13
2011 Land Health Determination.....	14
Achievement of Standards Summary.....	22
Rangeland Health Assessment Conclusions	24
Evaluation of Applicable Resource Goals and Objectives	25
<i>Summary</i>	27
Horse Lake AMP	27
Surprise RMP.....	27
Vya PMU Sage Grouse Conservation Strategy Plan	27
<i>Conclusion</i>	27
<i>Recommendations</i>	28
Goals and Objectives	28
Wildlife	29
Livestock Management.....	30
APPENDIX A MAPS	31
MAP 1 Horse Lake Allotment Land Status	31
MAP 2 Horse Lake Allotment Pastures/Use Areas & Water Improvements	32

MAP 3 Composite Livestock Utilization.....	33
MAP 4 Rangeland Health Assessment and Riparian Functional Assessment Sites.....	34
APPENDIX B Resource Management Plan Management Actions & Objectives.....	35
RMP Objectives	35
RMP Management Actions.....	38

Purpose

The purpose of this evaluation and determination is to evaluate recent livestock grazing practices for the Horse Lake Allotment to:

- Determine the relative success of the grazing practices in meeting
 - 1983 Allotment Management Plan (AMP) objectives
 - 2000 Rangeland Health Standards
 - 2008 Surprise Resource Management Plan (RMP)
 - Greater Sage-Grouse Conservation Plan for Nevada and Eastern California, First Edition (2004), including the Vya and Massacre Conservation Strategies
- Assess the AMP objectives based upon:
 - Compliance with Rangeland Health Standards & Guidelines (S&Gs), RMP, Other Plans
 - Consistency with current Ecological Site Descriptions and State & Transition Models
 - Other scientific research on important resources found in the allotment
- Develop new objectives for the allotment that include:
 - Realistic and achievable Desired Plant Community (DPC) descriptions
 - Other grazing and non-grazing related objectives
- Identify assessment schedule and protocols to evaluate new objectives
- Develop Grazing Management Practices to meet the objectives in the final evaluation
- Develop other management actions needed to meet DPCs and other objectives in the final evaluation

The need for the evaluation and determination is to support efforts to evaluate new livestock grazing permits with appropriate resource objectives, terms and conditions, and other management activities that could allow livestock grazing to be authorized in a sustainable manner on the allotment.

Evaluation Period

For the purposes in this document, the evaluation period will be 1997-2014, and will review trend information from 1977 to 2014.

Allotment Profile

The Horse Lake Allotment is located approximately twenty-three (23) air miles east of Fort Bidwell, California, in northern Washoe County, Nevada (Map 1). The allotment includes 29,874 acres; approximately 26,823 acres are public lands, and 3,051 acres that are privately owned. Elevation ranges from 5,600 feet in the bottomlands to 6,500 feet in the northern uplands. Rainfall averages 6 -10 inches annually depending upon elevation.

The allotment contains three unfenced use areas and one fenced pasture as shown on Map 2. The Rim Rock Pasture was created following installation of a fence that was constructed after the 2005 Barrel Fire. The purpose of the fence was to allow vegetation in the Rim Rock area to recover following the wildfire.

Livestock Management

The 1983 Horse Lake Allotment Management Plan (AMP) established interim and final grazing systems. The allotment was to be managed under the Interim Grazing System until a number of range improvement projects were completed, including a fenced seeding and pasture division fences. The seeding and pasture fences have not been completed for several reasons including changing emphasis for grazing management and budget; therefore the allotment has been managed under the Interim System. Currently there are 2,119 AUMs of cattle active use under four livestock grazing permits. Seasons of use, use areas and total available AUMs for each permittee are shown in Table 1.1.

Table 1.1: Interim Grazing System

Operator*	Maximum Season	Use Area	AUMS
Ed Hill & Toy Pryor	April 16 to October 15	Middle Lake and Horse Lake (Rock Springs)	1,618
Alice Iveson	June 1 to August 31	Warm Springs	391
Pat Fitzgerald ls Sagebrush Org	April 16 to May 15	Middle Lake and Horse Lake (Rock Springs)	110
Total AUMs			2,119

* Operators based upon current permits

Table 1.2: Current permittees, livestock numbers and season of use for the Horse Lake Allotment (#01126)

Operator	Livestock number/class	Season of use	Public AUMs	Percent Federal Range
Ed Hill	105/C	4/16-5/31	835	100%
	160/C	6/1-8/31		
	130/C	9/1-10/15		
**Toy Pryor ls Hill	100/C	4/16-5/31	783	100%
	150/C	6/1-8/31		
	120/C	9/1-10/15		
Alice Iveson	65/C	4/16-10/15	391	100%
Pat Fitzgerald ls Sagebrush Org	112/C	4/16-5/15	110	100%
Total			2,119	

** In 2011, Ed Hill leased approximately 50% his base property and associated AUMs to Toy Pryor.

The interim grazing system identified turnout areas and season of use of each permittee and established a maximum utilization of moderate use 40 to 60% of current year’s growth on perennial grasses.

Actual use

Table 1.3 and Figure 1 below display actual grazing use on the allotment from 1997 to 2013; the average for the seventeen year period was 1,391AUMs, 65% of total permitted use. One permit has been in non-use status for all but the last year. The trendline on Figure1 indicates a decline in reported actual use since 1997.

Table 1.3: Horse Lake Allotment Actual Use History

YEAR	ED HILL			ALICE IVESON			STEWART or FITZGERALD			Total Active Use AUMs on the Allotment: 2,119	
	No. of cattle	Actual Use AUMs	Percent of Active	No. of cattle	Actual Use AUMs	Percent of Active	No. of cattle	Actual Use AUMs	Percent of Active	TOTAL USE AUMs	Percent TOTAL USE
2013	Hill 121 Pryor 99	Hill 441 Pryor 353	49%	71	399	102%	non-use			1,193	56%
2012	Hill 73 Pryor 147	Hill 384 Pryor 755	70%	72	192	49%	25	48	44%	1,379	65%
2011	Hill 88 Pryor 116	Hill 483 Pryor 504	61%	68	331	85%	non-use			1,318	62%
2010	103	620	38%	66	243	62%	non-use			863	41%
2009	194	946	66%	68	221	57%	non-use			1,167	55%
2008	201	1,059	74%	68	260	66%	non-use			1,319	62%
2007	201	1,133	79%	81	240	61%	non-use			1,373	65%
2006	266	1,481	104%	62	249	64%	non-use			1,730	81%
2005	226	1,282	90%	65	282	72%	non-use			1,564	74%
2004	225	1,119	78%	68	279	71%	non-use			1,398	66%
2003	210	673	47%	38	133	34%	non-use			806	38%
2002	306	1,333	93%	43	165	42%	non-use			1,498	70%
2001	221	935	65%	54	289	74%	non-use			1,224	58%
2000	240	838	52%	58	158	40%	non-use			996	47%
1999	288	1,552	96%	55	197	50%	non-use			1,749	82%
1998	290	1,529	94%	101	423	108%	non-use			1,952	92%
1997	284	1,443	89%	94	472	121%	non-use			1,915	90%
							Average use			1,391	65%

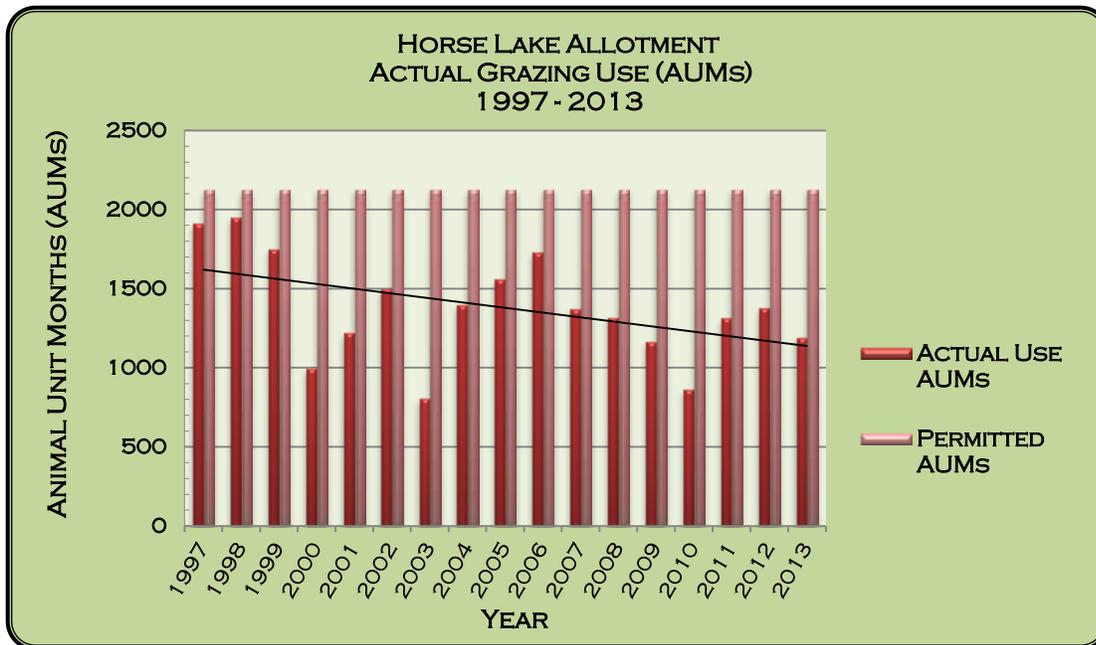


Figure 1: Horse Lake Allotment Actual Use 1997-2013

Water Sources

There are approximately twelve reservoirs or stock ponds on the allotment. One perennial stream and approximately thirteen undeveloped spring and spring complexes (private & public) also exist. Water sources are shown on Maps 2 and 4. One windmill located on public land provides water for the Horse Lake and Calcutta Allotments.

The graph below displays annual precipitation measured by the Catnip Mountain RAWS (Remote Automated Weather Station) located approximately 16 miles east of the Horse Lake Allotment. Annual precipitation averaged 6.16 inches from 1998 to 2013.

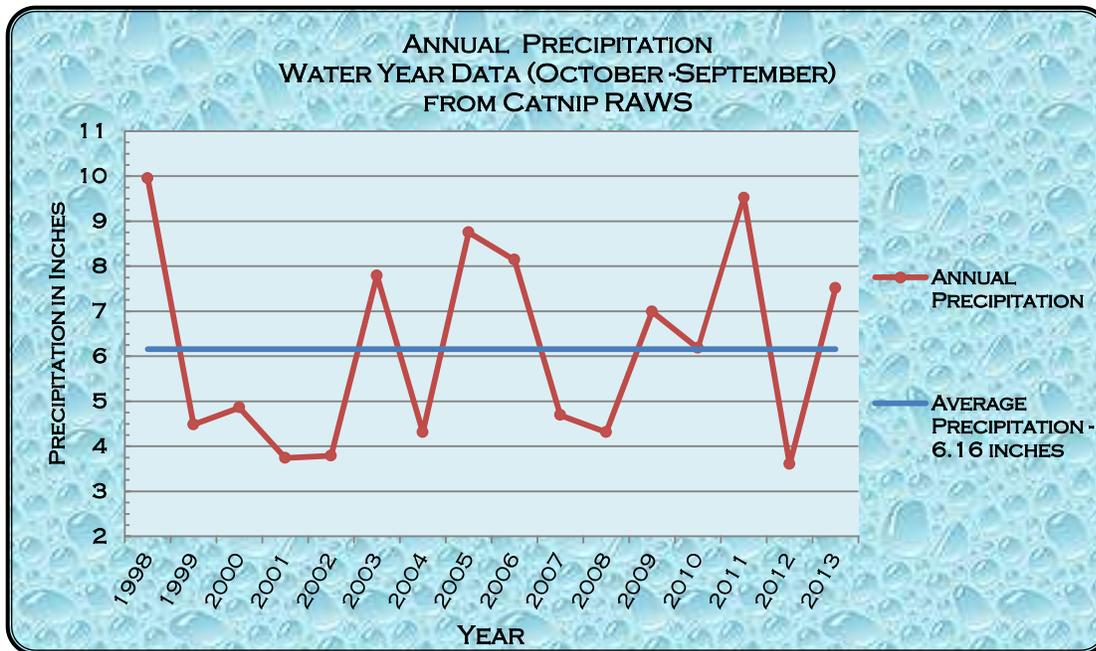


Figure 2: Annual Precipitation data from Catnip Mountain RAWS

Wildfires & Prescribed Burns

Wildfires- There have been two large wildfires within the allotment. In 1979, the Jeep Fire, which was started in the adjoining Calcutta Allotment, burned 138 acres within the Horse Lake Allotment; and the 2005 Barrel wildfire burned 1,151 acres within allotment. Seventeen small wildfires ranging in size from 0.1 acres to 5 acres have also burned within the allotment.

Wildlife

Sage-grouse- There are no sage-grouse leks within Horse Lake Allotment; however, the allotment contains suitable nesting and brood rearing habitats for sage-grouse. Nearby allotments have active sage-grouse leks with the nearest lek located approximately 2.5 miles away from the edge of the Horse Lake Allotment. The allotment is located within the Vya Sage-grouse Population Management Unit (PMU). Table 1.4 displays sage-grouse habitat values using two different methods. The first is the “R” value method which assigns values to habitat based on restoration potential classes (R-values) (Sather-Blair et al. 2000). These R-values were established based on existing vegetation, soils and ecological site potential information, and information on burned areas. R-value maps were developed for the entire state by the BLM with cooperation from the Nevada Department of Wildlife (NDOW) biologists between 2002 and 2004.

In 2011, NDOW modified the R-value maps using information on core breeding density developed by Doherty et al (2010), lek location data, telemetry data, and incidental sage-grouse sightings collected by NDOW field biologists and other qualified observers. These results were categorized into five “categories” of habitat values. These categories were then used in part by BLM to develop two habitat delineations necessary for the new BLM planning efforts related to the USFWS finding for sage-grouse of “warranted but precluded” (see Table 1.5). The following is a brief overview of these new delineations:

Preliminary Priority Habitat (PPH) - PPH consists of a combination of NDOW’s essential and irreplaceable (Category 1) and important (Category 2) habitats. These areas include breeding habitat (lek sites and nesting habitat), brood-rearing habitat, winter range, and important movement corridors. PPH primarily consists of sagebrush, but may also include riparian communities, perennial grasslands, agriculturally-developed land, and restored habitat, including recovering burned areas. The BLM and the USFS defines PPH as having the highest conservation value to maintaining sustainable sage-grouse populations.

Preliminary General Habitat (PGH) - PGH consists of habitat of moderate importance (Category 3). PGH provides some benefit to greater sage-grouse populations but, in many instances, lacks a key component, such as adequate shrub height or density or sufficient herbaceous understory, which prevents it from meeting its full ecological potential. PGH also may include areas recently burned that have not sufficiently recovered or sagebrush communities with pinyon-juniper encroachment. PGH has the potential to be reclassified as PPH if restoration efforts enhance the habitat quality or ongoing field efforts document sage-grouse use.

Table 1.4: Sage-grouse R values for the Horse Lake Allotment

R Values for sage-grouse habitat	ACRES
Non sage-grouse habitat	13,405
R0 - Intact Habitat	5,131
R1 - Sagebrush limited with good understory composition	141
R2 - Sagebrush with limited understory composition	6,486
R3 - Juniper encroached	4,711
TOTAL SUM	29,874

R-0 – Areas with desired species composition that have sufficient, but not excessive, sagebrush canopy and sufficient grasses and forbs in the understory to provide adequate cover and forage to meet the seasonal needs of sage-grouse (nesting, early brooding, summer, fall/winter).

R-1 – Areas with potential to produce sagebrush plant communities that have good understory composition of desired grasses and forbs, but lacks sufficient sagebrush canopy. These areas could be characterized by native perennial grasslands post fire or seeded perennial grass rangelands.

R-2 – Existing sagebrush plant communities with insufficient desired grasses and forbs in the understory.

R-3 – Areas dominated by pinyon/juniper woodland that may have the potential to produce sagebrush plant communities. These areas include sagebrush sites that have been encroached by pinyon/juniper woodlands, as well as other pinyon/juniper dominated sites that may provide potential value to sage-grouse.

Table 1.5: Sage-grouse priority habitat values for the Horse Lake Allotment

Priority habitat	ACRES
Non sage-grouse habitat	14,532
PPH – Preliminary Priority Habitat	2,102
PGH – Preliminary General Habitat	12,124
TOTAL SUM	28,758

Note: total acres differ between both tables due to different datasets being used and the R-value map did not subtract all private lands in the allotment.

Pygmy Rabbit- Active pygmy rabbit burrow systems have been identified within the Horse Lake Allotment. Two sites were identified during the 2006 Larrucea survey and another site was identified during surveys for the Ruby Pipeline. Several more active sites were identified during field visits in 2013. There are also additional areas within the allotment that contain suitable vegetation components; i.e. big sagebrush species and loamy soils that characterize typical pygmy rabbit.

Carson wandering skipper (CWS) - No CWS were observed during field visits to the allotment, although 1,034 acres of potential habitat (saltgrass) and nectar sources could potentially occur within the allotment based on soils and vegetation data. No CWS have ever been located within the boundaries of the Surprise Field Office (SFO).

Migratory bird species - One golden eagle nest site is known to have occurred within the Horse Lake Allotment. This site was last visited in 2002 and found not to be active. Golden eagles do however, forage within the allotment. Various songbirds and migratory birds use the allotment during different seasons throughout the year. Commonly observed species include killdeer, American robin, sage-sparrow, and sage-thrasher.

Native Large Ungulates - Mule deer and pronghorn antelope are the most common species that exist within the allotment and the habitat is defined as year-long. Data from NDOW indicates that a portion of the east slopes of the allotment (2,770 acres) are occupied California bighorn sheep habitat.

Monitoring

- **Trend**

In 1977, seven vegetation *condition* studies were completed on the allotment; five of the sites were rated “poor” and two were rated “fair”. Four of the sites were established as permanent - three *condition* and one *cover & frequency*. In 1986, data was collected at the cover & frequency site; however, no trend was determined. Currently, the transect sites are being reviewed and the results will be incorporated in the final evaluation.

- **Utilization Information**

Utilization monitoring and use pattern maps that cover most of the allotment have been completed for eight years dating back to 1984. Utilization mapping evaluates the amount of native, perennial grass forage removed by grazing. A composite use pattern map was developed

based on maps from 1984, 1994, and 2007-2012 (see Map 3). The mapping indicates that 1,242 acres (6 % of the mapped area) had utilization less than 20%, 2,957 acres (15 %) had utilization of 20-40%, 10,295 acres (53 %) had utilization of 40-60%, and 5,090 acres (26 %) had utilization of 60-80%.

Current conditions on the allotment

The current conditions described below are based on rangeland health assessments, line point intercept data and BLM staff observations during utilization monitoring.

▪ **Lower elevations – Warm Springs and Middle Lake use areas:**

The lower elevations are comprised of salt/desert shrub and basin big sagebrush communities. The Warm Springs use area is dominated by greasewood and basin big sagebrush with little perennial grass understory. The Middle Lake use area is dominated by big sagebrush with scattered patches of greasewood and a modest amount of perennial bunchgrasses.

▪ **Middle elevation – Horse Lake use area:**

Vegetation consists of basin big, Wyoming, and low sagebrush communities with some juniper expansion occurring. With the exception of the southernmost part, the perennial grass composition is much greater than in the lower elevations. Perennial grasses include bluebunch wheatgrass, Thurber's needlegrass, squirreltail, Great Basin wildrye and Sandberg's bluegrass.

▪ **Rim Rock Pasture:**

This pasture was created as the result of a wildfire restoration fence. Native perennial grasses have fully recovered from the 2005 Barrel Fire that burned a portion of the far north end of the allotment. Vegetation is dominated by low sagebrush communities with some juniper expansion. A good diversity and composition of perennial grasses and forbs exist in this use area.

Evaluations of Land Health Standards

Land Health Standards are descriptions of physical and biological condition or degree of function required for the land to sustainable environmental health. The standards describe on-the-ground conditions in relation to the four fundamentals of healthy, properly functioning rangelands as described in 43 CFR § 4180 and are:

- Watersheds in properly functioning physical condition.
- Ecological processes, including hydrologic, nutrients and energy cycles, are maintained.
- Water quality complies with State water quality standards and meets local objectives.
- Habitats are restored and maintained for special status species.

The Land Health Standards developed locally to allow assessment of the above fundamentals are:

- **Soils Standard:** Upland soils exhibit infiltration and permeability rates that are appropriate to soil type, climate, and landform, and exhibit functional biological, chemical and physical characteristics.
- **Stream Standard:** Stream channel form and function are characteristic for the soil type, climate and landform.
- **Water Quality Standard:** Water will have characteristics suitable for existing or

potential beneficial uses.

- **Riparian-Wetland Standard:** Riparian and wetland areas are in properly functioning condition and are meeting regional and local management objectives.
- **Biodiversity Standard:** Viable, healthy, productive and diverse populations of native and desired plant and animal species, including special status species, are maintained.

Uplands

Uplands are areas outside riparian, wetlands and streamside zones. In the Horse Lake Allotment, uplands represent over 98% of the allotment. Evaluation of uplands is based upon a comparison of site specific data collected at field monitoring sites with Ecological Site Descriptions (ESD) prepared by the Natural Resource Conservation Service (NRCS) for the specific ecological site where the data was collected. An Ecological Site is a distinctive kind of land with specific physical characteristics that differs from other kinds of land in its ability to produce a distinctive kind and amount of vegetation (USDA 1997). ESDs include information on:

- **Site characteristics**—Identify the site and describe the physiographic, climate, soil, and water features associated with the site.
- **Plant communities**—Describe the ecological dynamics and common plant communities comprising the various vegetation states. The disturbances that cause a shift from one state to another are described.
- **Site interpretations**—Interpretive information pertinent to the use and management of the site.

The Horse Lake Allotment includes upland areas mapped in 23 distinct Ecological Sites ranging in size from 4 to over 5,300 acres. Six sites represent greater than 5% of the allotment and in total account for almost 80% of the upland area within the allotment. An additional 8.7% of the allotment is associated with playa areas for which there is no Ecological Site described. Table 1.6 summarized the dominant ecological sites within the allotment by Use Area.

Table 1.6: Horse Lake Allotment Dominant Ecological Sites by Use Area

Ecological Site	Horse Lake		Middle Lake		Rim Rock		Warm Springs		Total Acres
	Acres	%	Acres	%	Acres	%	Acres	%	
CLAYPAN 10-14 P.Z.	3,543	53.2	2	0.01	1,050	100	0	0	4,594
LOAMY 10-12 P.Z.	2,604	39.1	1,122	10.9	0	0	0	0	3,727
Playa	5	0.1	1,547	15.0	0	0	664	15	2,216
SALINE BOTTOM	156	2.3	2,209	21.4	0	0	883	21.1	3,248
SODIC FLAT 8-10 P.Z.	0	0	269	2.6	0	0	1,549	37.0	1,818
SODIC TERRACE 8-10 P.Z.	354	5.3	3,861	37.4	0		1,096	26.1	5,311
SOUTH SLOPE	0	0	1,322	12.8	0	0	0	0	1,322

12-16 P.Z.									
Site Totals	6,663	100	10,332	100	1,050	100	4,191	100	22,236

Allotment Objectives

Allotment specific management goals and objectives were developed for the Horse Lake Allotment and are contained in the 1983 AMP, the 2000 Standards for Rangeland Health Record of Decision and the 2008 Surprise Field Office Record of Decision. These goals and objectives are summarized below:

AMP Land Use Goals

- Develop an intensive livestock grazing management plan for this Allotment.
- Moderate use (40-60%) will be the upper limit for livestock use for the native range.
- Turnout on native range will be May 1 +/- 15 days depending on range readiness.
- Provide habitat in satisfactory condition to support reasonable numbers of mule deer and antelope.

Horse Lake Objectives

1. In the short term, provide livestock forage to satisfy the operators' current active use and current season of use (2,119 AUMs).
2. In the long term, provide livestock forage to satisfy the operators' full preference (2,654 AUMs).
3. Manage to attain good ecological condition (50-70% of climax) of the native range.

2008 RMP Objectives and Management Actions can be found in Appendix B.

Land Health Standards

The Surprise Field Office Resource Management Plan (RMP) and Record of Decision of April 2008 adopted the Northeastern California and Northwestern Nevada, Standards for Rangeland (Land) Health and Guidelines for Livestock Grazing Management of July 2000.

Standards for Rangeland Health

Upland Soils - Upland soils exhibit infiltration and permeability rates that are appropriate to soil type, climate and landform, and exhibit functional biological, chemical and physical characteristics.

Streams – Stream channel form and function are characteristic for the soil type, climate, and landform.

Water Quality – Water will have characteristics suitable for existing or potential beneficial uses. Surface and groundwater complies with objectives of the Clean Water Act and other applicable

water quality requirements, including meeting the California and Nevada State standards, excepting approved variances.

Riparian and Wetland Sites - Riparian and wetland areas are in properly functioning conditions and are meeting regional and local management objectives.

Biodiversity – Viable, healthy, productive and diverse populations of native and desired plant and animal species, including special status species are maintained.

2011 Land Health Determination

Five upland sites were evaluated using the Interpreting Indicators of Rangeland Health Technical Reference (BLM 2005) which measures 17 physical and biological indicators to determine land health status when compared to the applicable ESD. The sites were chosen to represent the dominant ecological sites within the allotment on major use areas for livestock but not immediately adjacent to water.

SITE #1 is located at the north end of the Horse Lake use area just south of Sage Reservoir. The site is within the Loamy 10-12” precipitation zone Ecological Site and is found on approximately 15% of the Horse Lake Allotment. This ecological site is typically found on rolling uplands and lake basin terraces. Slopes range from 2-20% but are typically less than 10%. The soils on this site range from 10 to 40 inches deep and are well drained. There is 15 to 60% rock fragment component covering the surface and 35 to 60% rock fragments in the subsurface. The reference (minimum disturbance) plant community is a Thurber’s needlegrass-big sagebrush community with 400 to 800 pounds of production per acre depending upon precipitation (NRCS 2012). The site as measured was not at or near reference condition.

Past abusive livestock grazing practices starting over 100 years ago have altered the soil/vegetation potential. Based upon field observations, the site is currently in NRCS State 2-Shrub Steppe with Annuals, specifically Community Phase 2.2: Big Sagebrush-Squirreltail-Annuals (NRCS 2012). This Phase exists when:

- invasive annuals, particularly cheatgrass for loamy soils, has invaded the community
- squirreltail or Sandberg’s bluegrass is the dominant native bunchgrass
- Thurber’s needlegrass is still present in the community.

The primary factors in the transition from reference conditions to State 2 communities are past heavy grazing. Overgrazing leads to an increase in sagebrush and a decline in the deep-rooted Thurber’s needlegrass which is replaced by shallow rooted squirreltail and Sandberg’s bluegrass. Cheatgrass also increases in composition and competes with native grasses for water and nutrients. Based upon the NRCS ESD, the presence of cheatgrass prevents this phase from returning to a reference condition and makes it likely that a future wildfire or insect outbreak that defoliates sagebrush would move the site to an annual dominated phase without a transition path back to a sagebrush dominated phase.

Field evaluation of the overall vegetation at the site and collection of line intercept data measured vegetation composition of the site. Line intercept data is summarized in Table 1.7

below. There were no observations of Thurber’s needlegrass or squirreltail in the 300 points, although Thurber’s needlegrass was observed in the evaluation area.

Table 1.7: Site #1 Summary of Line-Point Intercept Data

Species	Line 1	Line 2	Line 3	Average % Composition
Big sagebrush	28	37	16	27
Sandberg’s bluegrass	45	32	27	34.7
Cheatgrass	3	20	20	15.3

Observation at the site and line-intercept transects allowed evaluation of the 17 Land Health Indicators (BLM 2005). Nine of the indicators were rated none to slight, 2 were rated slight to moderate, 4 were rated moderate, and 2 were rated moderate to extreme. Moderate departure ratings were based on increased bare ground, excessive amounts of cheatgrass present at the site, increased levels of litter related to cheatgrass, and decreased vegetation production potential. Moderate to extreme departures were associated with the effective loss of deep-rooted cool season perennial grasses and increased composition of cheatgrass.

Based upon the evaluation, this site does meet the Soils Standard, but does not meet the Biodiversity Standard. While historic livestock grazing is considered the primary cause of changing the site from a reference condition of Thurber’s needlegrass-bluebunch wheatgrass-big sagebrush to a big sagebrush-Sandberg’s bluegrass-cheatgrass site, current livestock grazing management practices are a factor in not meeting the Biodiversity Standard. Specifically the trace amounts of Thurber’s needlegrass found at the site are receiving heavy grazing which reduces vigor, decreases reproductive ability and places the plant community at risk of crossing a biological threshold from a Big Sagebrush-Squirreltail-Annuals phase into Cheatgrass Shrub phase.

SITE #2 is located in the Rock Springs use area north of Fergy Pit Reservoir. The site is within the Claypan 10-14” precipitation zone Ecological Site and is found on approximately 18% of the Horse Lake Allotment. This ecological site is typically found on nearly level to moderately steep tablelands and alluvial fans. Slopes range from 0-70% but are typically less than 30%. The soils on this site are shallow, less than 10 inches deep, over a strongly developed claypan or shallow bedrock. There is often a high percentage of rock covering the surface with less rock fragments in the subsurface. The reference (minimum disturbance) plant community is a bluebunch wheatgrass-low sagebrush community with 500 to 900 pounds of production per acre depending upon precipitation (NRCS 2005). The dominant perennial grass can change from bluebunch wheatgrass to Thurber’s needlegrass on site with more gravel in the subsoil. The site as measured was not at or near reference condition.

Past abusive livestock grazing practices starting over 100 years ago have altered the soil/vegetation potential. Based upon field observations, the site is currently in Disturbance Phase 1 in which the deep rooted perennial grass functional groups are lost or greatly decreased (NRCS 2005). This Phase exists when:

- Sandberg’s bluegrass is the dominant native bunchgrass
- Bluebunch wheatgrass or Thurber’s needlegrass are missing or present in trace amounts

- Low sage and forb cover increase

The primary factors in the transition from reference conditions to Disturbance Phase 1 communities are past heavy grazing. Overgrazing leads to a decline in the deep-rooted bunchgrasses, an increase in sagebrush and shallow rooted Sandberg’s bluegrass. Based upon the NRCS ESD, the loss of deep rooted perennial grasses prevents this phase from returning to a reference condition.

Field evaluation of the overall vegetation at the site and collection of line intercept data measured vegetation composition of the site. Line intercept data is summarized in Table 1.8 below. There were no observations of Thurber’s needlegrass, Idaho fescue, or bluebunch wheatgrass in the 300 points, although all three species were observed in the evaluation area.

Table 1.8: Site #2 Summary of Line-Point Intercept Data

Species	Line 1	Line 2	Line 3	Average % Composition
Low sagebrush	14	10	22	15.3
Sandberg’s bluegrass	23	23	24	16.7

Field evaluation of the overall vegetation at the site and collection of line intercept data allowed evaluation of the 17 Land Health Indicators. Of the 17 rangeland health indicators, 9 were rated none to slight, 4 were rated slight to moderate, 3 were rated moderate and 1 rated moderate to extreme. The moderate departure rating for Soil surface loss or degradation was based upon evidence of soil loss on lower elevation parts of the site; the moderate rating for Plant Community Composition and Distribution Relative to Infiltration was based on the lack of deep rooted grasses at the site. The moderate to extreme rating was associated with the lack of bluebunch wheatgrass, or Thurber’s needlegrass which should be the dominant grass species; Thurber’s was present only in localized patches on deeper soils. Small amounts of bluebunch wheatgrass was found on the higher elevations of the site. These species play major roles in increasing infiltration of water and providing greater cover than shallow rooted species.

Based upon the evaluation, this site does meet the Soils Standard, but does not meet the Biodiversity Standard. While historic livestock grazing is considered the primary cause of changing the site from a reference condition of Thurber’s needlegrass-bluebunch wheatgrass - low sagebrush to a low sagebrush-Sandberg’s bluegrass site, current livestock grazing management practices are a factor is not meeting the Biodiversity Standard. Specifically the trace amounts of Thurber’s needlegrass and bluebunch wheatgrass found at the site are receiving heavy grazing which reduces vigor and decreases reproductive ability.

While the evaluation site did not have juniper trees, the observers noted that juniper was present and expanding on other portions of this site. Juniper removal projects are being planned on the Horse Lake Allotment. These projects are addressed in the *Vya PMU Habitat Restoration and Fuels Reduction Project* programmatic environmental assessment.

SITE #3 is located in the uplands on the south-west side of the Middle Lake use area. Site 3 is a Loamy 10-12” precipitation zone Ecological Site. As described for Site #1 above, this site is not

in reference condition. Field observations indicated that the site was in the same community phase as Site #1: Big sagebrush-Squirreltail-Annuals, but there were differences in the community composition. Site #3 had more big sagebrush cover with substantial sagebrush reproduction. The native bunchgrass was squirreltail with minimal cheatgrass or Sandberg's bluegrass. Thurber's needlegrass was not observed at the site.

Field evaluation of the overall vegetation at the site and collection of line intercept data measured vegetation composition of the site. Line intercept data is summarized in Table 1.9 below. There were no observations of Thurber's needlegrass in the 300 points, and no Thurber's needlegrass was observed in the evaluation area.

Table 1.9: Site #3 Summary of Line-Point Intercept Data

Species	Line 1	Line 2	Line 3	Average % Composition
Big sagebrush	32	24	34	30
Squirreltail	2	3	1	2

Field evaluation of the overall vegetation at the site and collection of line intercept data allowed evaluation of the 17 Land Health Indicators. Of the 17 rangeland health indicators, 13 were rated none to slight, one was rated slight to moderate, 1 was rated moderate and 2 were rated moderate to extreme. The moderate departure rating for Reproductive Capability of Perennial Plants was based on the lack of an herbaceous understory, specifically perennial bunchgrasses. Squirreltail and basin wildrye were the only perennial grasses observed at the site. Squirreltail was mainly found under and within shrub cover; basin wildrye was found in trace amounts. The moderate to extreme ratings were for Plant Community Composition and Distribution Relative to Infiltration, Functional/Structural Groups, again associated with the missing deep rooted perennial grasses.

Based upon the evaluation, this site does meet the Soils Standard, but does not meet the Biodiversity Standard. While historic livestock grazing is considered the primary cause of changing the site from a reference condition of Thurber's needlegrass-bluebunch wheatgrass-big sagebrush to a big sagebrush-squirreltail site, current livestock grazing management practices are a factor is not meeting the Biodiversity Standard. Specifically the low levels of squirreltail found at the site are receiving heavy grazing which reduces vigor, decreases reproductive ability and places the plant community at risk of crossing a biological threshold from a Big Sagebrush-Squirreltail-Annuals phase into Cheatgrass Shrub phase.

SITE #4 is located at the south end of the Middle Lake use area. Site #4 is a Sodic Terrace 8-10" precipitation zone Ecological Site and is found on approximately 21% of the Horse Lake Allotment. Sodic Terrace sites are found near valley bottoms on fans and alluvial flats. Slopes are generally less than 2%. The site has an appearance of micro playettes surrounded by low hummocks that accumulated at the base of shrubs. Soils are deep but depth to the water table is less than 5 feet which allows deep rooted shrubs and bunchgrasses to access water during the dry season. The reference plant community is a big sagebrush-black greasewood-basin wildrye community with the balance of sagebrush and greasewood determined by sodic conditions of the soils. Annual production ranges from 350 to 800 pounds per acre. The site as measured was not in reference condition but has the potential to return to reference condition.

Past abusive grazing practices which started more than 100 years ago have altered the vegetation composition and current practices are maintaining that alteration. Field observations indicate that all major plant species are still represented; however species composition has been altered to favor shrubs over native bunchgrasses. Frequency data indicated 30% shrub cover compared to 5% cover of Great Basin wildrye. The ESD for the site indicates that while this is a shrub dominated site, basin wildrye should represent a greater part of the composition than measured.

Field evaluation of the overall vegetation at the site and collection of line point intercept data measured vegetation composition of the site. Line point intercept data is summarized in Table 1.10 below.

Table 1.10: Site #4 Summary of Line-Point Intercept Data

Species	Line 1	Line 2	Line 3	Average % Composition
Shrubs	33	25	32	30
Great Basin wildrye	3	7	5	5

Field evaluation of the overall vegetation at the site and collection of line intercept data allowed evaluation of the 17 Land Health Indicators. Of the 17 rangeland health indicators, 10 were rated none to slight, 2 were rated slight to moderate, and 5 were rated moderate. The moderate departure rating for Soil surface loss or degradation was related to increased physical soil crusts and decrease biophysical crusts. The moderate ratings for Plant Community Composition and Distribution Relative to Infiltration, Functional/Structural Groups, Annual Productivity, and Reproductive Capability of Perennial Plants were based on the reduced composition and productivity of an herbaceous understory, specifically Great Basin wildrye.

Based upon the evaluation, this site does meet the Soils Standard, but does not meet the Biodiversity Standard. Specifically, the Great Basin wildrye found at the site is receiving heavy grazing which reduces vigor, decreases reproductive ability and places the plant community at risk of crossing a biological threshold to a site lacking native bunchgrasses.

Site #5 is located near the power line in the Warm Springs Use Area. Site #5 is a Sodic Flat 8-10" precipitation zone Ecological Site and is found on approximately 7% of the Horse Lake Allotment. Sodic Flat sites are found on valley bottoms near stream floodplains and terraces. Slopes are generally less than 2%. Soils are deep but depth to the water table is less than 5 feet which allows deep rooted shrubs and bunchgrasses to access water during the dry season. The reference plant community is a black greasewood-basin wildrye community. Annual production ranges from 200 to 700 pounds per acre. The site as measured was not in reference condition but has the potential to return.

Field evaluation of the overall vegetation at the site and collection of line point intercept data measured vegetation composition of the site. Great Basin wildrye is almost completely missing from the sites. Line intercept data is summarized in Table 1.11 below.

Table 1.11: Site #5 Summary of Line-Point Intercept Data

Species	Line 1	Line 2	Line 3	Average % Composition
Greasewood	21	6	22	16.3
Squirreltail	0	0	2	2
Sandberg's bluegrass	16	8	12	12
Great Basin wildrye	0	0	1	0.3

Field evaluation of the overall vegetation at the site and collection of line intercept data allowed evaluation of the 17 Land Health Indicators. Of the 17 rangeland health indicators, 11 were rated none to slight, 2 were rated slight to moderate, 2 were rated moderate, and 2 were rated moderate to extreme. The moderate departure rating for Litter was based upon lack of litter compared to reference condition. The moderate departure rating for Annual Production was based upon the lack of deep rooted Great Basin wildrye. The Moderate to Extreme ratings for Plant Community Composition and Distribution Relative to Infiltration and Functional/Structural Groups were based upon the lack of Great Basin wildrye.

Based upon the evaluation, this site does meet the Soils Standard, but does not meet the Biodiversity Standard. Specifically Great Basin wildrye, the primary bunchgrass for the site, is missing.

Riparian Assessment

Eleven sites consisting of single riparian sites or complexes within the Horse Lake Allotment (see Table 1.11 below) were assessed under protocols for Riparian Functional Assessments (RFA). Assessments took place in 2008, 2011, and 2013. All sites were assessed using the lentic protocols (BLM 1999) except for a reach of Willow Creek which was assessed using the lotic protocols (BLM 1998). Livestock use was considered excessive at several sites with active erosion and hoof shearing and widespread hummocks leading to a Functional at Risk (FAR) rating for many sites. All sites showed signs of current heavy grazing on riparian vegetation with stubble heights being below 4 inches except in the wettest areas or where convex fen-like topography had formed. Some sites also showed evidence of heavy browsing of shrubs adjacent to riparian areas.

Lentic A is an unnamed spring located near the bottom of Long Valley approximately one mile west of Middle Lake. The spring is representative of a number of valley bottom springs in the western part of the Middle Lake and Warm Springs use areas. The assessment of this spring indicated a rating of Functional at Risk with no apparent trend. There is ongoing heavy cattle grazing resulting in adverse soil alteration and hoof action on meadow soils and vegetation.

Rock Flat Spring (Lentic B) is located in the Rim Rock Pasture north of Horse Lake. The spring is representative of upland springs in the Rim Rock Pasture and Middle Lake use area. The site was rated in Properly Functioning Condition. The assessment did note young juniper becoming established near the spring source that potentially could lead to decreased water flow due to increased transpiration as the junipers increase in size. Hoof action and hedging of rose plants was also noted.

A reach of Willow Creek (Lotic A) within the Horse Lake use area was rated as FAR with no apparent trend due to excessive erosion, and lack of riparian vegetation. The assessment noted the presence of Canada and bull thistle which are both noxious weeds.

PYRA meadow was rated as PFC. Although hummocks were noted, this meadow was rated at PFC due to its plant species diversity and good water holding capacity as evidenced by the “spongy” or “fenny” feel of the surface and abundance of water at its surface.

Spring 3a is a small flowing spring and brook system about 170 feet in length and terminating in a playa lakebed. The rated section was only to the termination at the lakebed and did not include the area in the lakebed. This spring was rated as FAR with no apparent trend due to excessive hummocks, shearing and erosion along the riparian, and the presence of upland species.

Spring Complex 3b is a series of nine small seeps/springs situated in an approximate southwest to northeast direction along the same playa lakebed as Spring 3a. Some had surface water; however most were dry. These springs were rated as FAR with a downward trend due to excessive hummocks and evidence that some sites were shrinking in size.

Powerline Spring is a small wet spring located along the powerline road. This spring shows impacts from cattle, the powerline road, and the Ruby pipeline. During pipeline construction, this spring was partially dug up to put in the pipeline. This spring was rated as FAR at the low end with a downward trend. Although it first appeared that the pipeline had permanently negatively impacted the site, a subsequent field trip indicated that the damage may not have been as severe as first thought. Excessive hummocks at the site show evidence of heavy cattle use and the powerline road appears to be having some effect on expansion of the site.

Warm Springs NE is a series of four springs/seeps located on the edge of a playa lakebed. These springs are situated in a north to south orientation and separated by no more than 600 feet between the northern and southern most sites. All had surface water, one had many snails (unknown species) and riparian plants were diverse at all sites. All were very hummocky from cattle use, had greater than 50% bare ground around the water sources, and signs of soil loss near the springs which contributed to the FAR rating. There was no apparent trend.

Two Springs is a small complex of two small springs located about 75 feet from each other. These two springs were rated as PFC. The springs are very different from each other; one having Nebraska sedge and no surface water and the other having no Nebraska sedge and surface water (as a pool). Both had diverse vegetation species, vegetated hummocks, and were “fenny” when walked on.

Wet meadow SW ¼ of Section 18 is a large wet meadow located within an old fenced pasture. Only the 15 acres of the meadow on public land was rated. The rating was PFC. Although hummocks were located throughout the wetter portions of the field, they were generally well vegetated. Most of the meadow had dense riparian vegetation with several areas being “fenny” when walked on.

Warm Springs 1 and 2 were rated together as FAR on the high end with no apparent trend. Both are wet meadows with surface water near their springs. Both had very diverse riparian plant representation; however some high cut backs, erosion, and hummocks covering most of their surface area was noted and was the reason for the FAR at the high end rating.

Based upon the assessments at the above sites, the Stream Health Standard, the Riparian-Wetland Standard, the Water Quality Standard, and the Biodiversity Standard are not being met. Further, RFAs indicated that livestock grazing is a causal factor in not meeting these standards. Table 1.12 below summarizes Riparian Functional Assessments on the Horse Lake Allotment.

Table 1.12: Summary of the 2008 Riparian Functional Assessments for springs and riparian areas in the Horse Lake Allotment

Horse Lake Allotment Riparian Functional Assessments			
Source Name	Riparian Functional Rating	Comments	Recommendations
2008			
Lentic A: Unnamed Spring in SW ¼ of Section 4, T44N R20E	FAR with a downward trend.	Moderate amount of running water, heavy hoof action and soil alteration.	Limit amount and timing of grazing.
2011			
Lentic B: Rock Flat Spring	PFC	Juniper encroaching on spring source.	Propose juniper removal project
Lotic A: Willow Creek	FAR, no apparent trend	Canada and bull thistle present; not all point bars vegetating, excessive erosion noted, juniper invading riparian zone.	Need thistle and juniper treatments.
2013			
Spring 3a	FAR, no apparent trend	Spring with short brook, hoof shearing, bare ground, excessive erosion noted.	Limit amount and timing of grazing
Spring Complex 3b	FAR, with a downward trend	Nine small seeps, signs of shrinking size, hummocks.	Limit amount and timing of grazing
Powerline Spring	FAR with a downward trend	Impacts from road and Ruby pipeline. Pipeline went through one side of spring. Extensive hummocks from livestock.	Limit amount and timing of grazing. Monitor spring for pipeline impacts. May need to address ROW.
Warm Springs NE	FAR, no apparent trend	Series of four springs with varying amounts of surface water, one with prevalent snails. About 50% bare ground around water sources, lots of hummocks in wet areas.	Limit amount and timing of grazing
Two Springs	PFC	Two separate springs, both maybe “fen” meadows; diverse species, with	Limit amount and timing of grazing

		vegetated hummocks about 6-8 inches tall.	
PYRA meadow	PFC	Hummocks but meadow “fenny”, and diverse species.	Limit amount and timing of grazing
Wet meadow SW ¼ of section 18	PFC	Large wet meadow, surface is “spongy” with diverse species, some areas with 6-8 inch hummocks.	Limit amount and timing of grazing
Warm Springs 1 and 2	FAR, no apparent trend	Two similar springs. Many hummocks at both sites but sites very diverse.	Limit amount and timing of grazing

FAR=Functioning at Risk; PFC=Proper Functioning Condition

Achievement of Standards Summary

Table 1.13: Achievement of Standards Summary

<i>Rangeland Health Standard</i>	<i>Meets Standard</i>	<i>Does Not Meet Standard</i>	<i>Current livestock are a causal factor for not meeting Yes or No</i>	<i>Remarks (locations, etc.)</i>
Upland Soils	✓			Data from five representative Upland Health Assessments rated Soil/Site Stability as stable; the allotment has adequate total cover to protect the soil from wind and water (raindrop and surface flow) impacts and the soil stability ratings are within the range of variability of the reference sites.
Stream Health		✓	<i>Yes</i>	There is one stream in the allotment (Willow Creek) that was rated as FAR due to stream bank trampling from cattle.
Riparian/Wetland		✓	<i>Yes</i>	Ten RFAs were conducted in the allotment using the lentic protocol with four sites rated at PFC and six sites rated as FAR.
Water Quality		✓	<i>Yes</i>	Riparian-Wetland Standard is not being met; therefore, water quality standard is also not being met.

<p>Biodiversity</p>		<p>✓</p>	<p><i>Yes</i></p>	<p>Vegetation communities and functional/structural groups at 5 sites have moderate or moderate to extreme departures and are not meeting the needs for plant and wildlife community biodiversity. Six lentic and one lotic site are not in Properly Functioning Condition which also prevents these sites from meeting needs for plant and wildlife community biodiversity.</p>
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The Standard for Upland Soils

Data from five representative Upland Health Assessments rated Soil/Site Stability as stable. Transect data collected at the upland health assessments support the determination that the allotment has adequate total cover to protect the soil from wind and water (raindrop and surface flow) impacts and the soil stability ratings are within the range of variability of the reference sites. However, hydrologic function was rated non-functioning at two of the five sites due to a lack of herbaceous vegetation in shrub interspaces that is negatively affecting water infiltration and decreased cover of biophysical crusts on the soil surface.

The Standard for Stream Health

The standard for stream health is not being met. A riparian functional assessment was conducted on the one perennial stream, Willow Creek, which lies within the allotment. The stream was rated as FAR with no apparent trend due to excessive erosion and areas not revegetating along the reach. Additionally, lack of overhanging riparian vegetation and heavy utilization in some areas is likely contributing to higher water temperatures than expected due to less stream shading. Casual factors influencing this stream system include livestock grazing, road impacts, a pit reservoir near the top of the reach, and a large Canada thistle infestation. The Canada thistle infestation has been treated in the past two years and is considerably smaller in size now.

The Standard for Riparian Wetland Areas

The Standard for Riparian Wetland Areas is not being met. Ten riparian sites/complexes were rated within the Horse Lake Allotment (see Table 1.11). RFAs were conducted in the allotment using the lentic protocol with four sites rated at PFC and six sites rated as FAR, three with downward trends. Livestock grazing was a causal factor for not meeting PFC. Impacts to riparian areas included excessive utilization on riparian plants, hummocking of soils, and excessive erosion.

Exceptions and Exemptions to Standard 4 (where Standard 4 is not applicable)

Structural facilities constructed for livestock/wildlife water or other purposes are not natural wetland and/or riparian areas. Examples are: water troughs, stock ponds, flood control structures, tailings ponds, water gaps on fenced or otherwise restricted stream corridors, etc.

The Standard for Water Quality

The Standard for Water Quality is not being met. Although water is suitable for existing and potential beneficial uses, riparian standards are not being met, and therefore the Water Quality Standard is not being met. Excessive erosion and heavy utilization contributes to increases in sediments and water temperatures.

The Standard for Biodiversity

The standard for Biodiversity is not being met. The Horse Lake Allotment is generally providing habitat for a myriad of different wildlife species; however, all of the five sites rated during the RHA process were missing key perennial grass species that provide a diverse vegetation community that is important for site protection, nutrient cycles, and replenishment of soil nutrients. Additionally, deep rooted perennial bunchgrasses that were missing at the sites provide important wildlife habitat and are crucial in the ability of these sites to resist potential exotic annual grass and weed invasions following disturbances. The single stream reach assessed as well as most spring and spring complexes assessed were not in properly functioning condition, which is also important for meeting the Standard for Biodiversity.

Rangeland Health Assessment Conclusions

Rangeland health assessments and recent utilization monitoring indicate a lack of perennial grass understory, including Thurber's needlegrass, bluebunch wheatgrass, and Great Basin wildrye, throughout the allotment. Assessments in the uplands of the lower to middle elevations of the allotment show a lack of key deep rooted perennial grasses in some areas. The lack of perennial grasses is likely due to historic as well as current livestock grazing.

Although the uplands in the higher elevations of the Rim Rock Pasture were not assessed, BLM staff observations suggest that plant communities have recovered from the 2005 Barrel Fire.

The majority of riparian areas assessed in the allotment have been negatively impacted by livestock grazing. Although at one spring the Ruby pipeline and a road were identified as causal factors for not meeting standards, in all cases livestock were identified as causal factors leading to not meeting riparian standards.

Evaluation of Applicable Resource Goals and Objectives

Table 1.14: Allotment Management Plan Goals and Objectives

Goal/Objective	Status	Notes
Develop intensive livestock grazing management plan (goal)	Not met	Plan developed but not implemented. Projects not implemented due to higher priority projects and a change in management philosophy.
Moderate use (40-60%) will be upper limit for livestock use (goal)	Not met	17 % of mapped areas had use greater than 60%.
Turnout on native range May 1 ± 15 days based upon range readiness (goal)	Not met	Currently operating under Interim Grazing System; authorized turnout date for Hill, Pryor and Fitzgerald is April 16 th
Provide habitat for “reasonable #s” of mule deer and antelope (goal)	Not measureable	Reasonable #s concept now considered obsolete by BLM and NDOW
Provide 2,119 AUMs livestock use in short-term (objective)	Met	
Provide 2,654 AUMs livestock use over long-term (objective)	Not met	Based on use pattern mapping and actual use data, the forage necessary to meet this goal is not available.
Maintain good ecological condition (50-70% of climax) of the native range (objective)	Not met	Based upon obsolete concept of succession of vegetation communities

Table 1.15: Surprise Resource Management Plan Objectives

Objective	Status	Notes
Adequate forage would be produced to support sustainable levels of livestock grazing...to ensure that a vigorous plant community is sustained in combination with livestock grazing.	Not met	17 % of allotment has heavy utilization; 4 of 5 Health Standards not being met and livestock is a causal factor.
Maintain areas that meet standard for soils.	Met	
Prevent or eliminate erosion and sedimentation in sensitive aquatic environments	Not met	Willow Creek not in Properly Functioning Condition
Noxious weeds will be extirpated	Progressing towards	Canada thistle infestation in Willow Creek being treated.
Identify and protect all species and populations of special status plant species	N/A	Field inventories have not identified any Special Status Plant Species in the allotment

Ensure that the natural hydrologic function of uplands, springs, riparian areas, streams, and wetlands is achieved (or preserved) so the requirements of beneficial uses and state water quality standards are met.	Not Met and not progressing towards	Majority of riparian areas were rated as FAR.
Manage important ecosystems and habitats of special status wildlife according to recovery or other applicable plans.	Not met	17 % of allotment has heavy utilization; 4 of 5 Health Standards not being met and livestock is a causal factor.
Manage wild ungulate populations to maximize site potential.	Not Met	17 % of allotment has heavy utilization; 4 of 5 Health Standards not being met and livestock is a causal factor.

Table 1.16: Vya PMU Sage-Grouse Goals & Objectives

Goal/Objective	Status	Notes
Promote habitat conditions that support wintering, breeding, nesting, and brood-rearing success. (goal)	Partially met	Habitat conditions on Loamy 8-10” site meet winter range requirements. Requirements for other seasons not met due to lack of herbaceous cover in uplands, areas of heavy livestock utilization.
Provide secure sage-grouse winter, breeding, and nesting habitat with minimal disturbance and harassment. (goal)	Partially met	see above
Permit no net long-term loss of sage-grouse habitat as a result of actions authorized by federal and state agencies; minimize habitat losses resulting from natural disturbances (wildland fire, insects, disease, etc.); work with landowners to minimize habitat losses on private lands. (goal)	Partially met	Area of 2005 Barrel Fire was placed into a separate pasture. Monitoring indicates a good recovery of perennial herbaceous vegetation. Ongoing weed treatments along Willow Creek and in the Horse Lake area.

Summary

Horse Lake AMP

Other than maintaining 2,119 AUMs of livestock use (e.g. no reduction in livestock numbers) the Goals and Objectives from the AMP were not met. Specifically the proposed projects and livestock grazing system were not implemented, substantial portions of the allotment had heavy grazing, there was no effective change in livestock turnout for the largest permit, and “good” ecological condition was not maintained. The objective to maintain “good” ecological status was not met, but analysis of current vegetation status indicates that on a large part of the allotment that objective is not realistic because of changes in site potential.

Surprise RMP

The RMP contains dozens of goals and objectives by program area with direct or indirect applicability to livestock grazing in the allotment. But if evaluation of Land Health Standards indicates that the Standards are met or progress is being made toward meeting those standards, then the grazing use will generally be in compliance with applicable RMP goals and objectives. Since Standards are not being met or progress being made toward meeting the Standards, the current livestock grazing practices for the Horse Lake Allotment are not likely to result in achievement of the RMP Goals and Objectives.

Vya PMU Sage Grouse Conservation Strategy Plan

Evaluation of the upland and riparian sites in the allotment indicate that Land Health Standards are not being met and there are substantial areas of sage-grouse habitat within the allotment with heavy livestock use. Therefore, the PMU goals related to habitat for nesting and brooding habitat are not being met.

Conclusion

The 1983 Horse Lake AMP was not fully implemented because proposed water developments and a seeding were not completed. Higher priority projects in other allotments and changes in range improvement philosophy regarding seedings were the primary reasons the projects were not completed. As a consequence, the allotment has been managed under the Interim Grazing System. The result was that livestock grazing practices except for stocking have not measurably changed in decades. Reported actual use data since 1997 shows an overall downward trend in stocking rates.

Evaluation of utilization data and field observations at eight sites indicates that 4 of 5 Land Health Standards are not being met and that livestock stock grazing is a causal factor. Extrapolating this information to evaluate Goals and Objectives from the 1983 AMP, the Surprise RMP, and the Vya Sage-grouse PMU Plan indicate that livestock grazing practices are not consistent with meeting key goals and objectives. However, many of the goals and objectives are either not realistic based upon site potential or so vague as to prevent meaningful evaluation.

Because of the identified lack of deep rooted perennial grasses on all the RHA sites, the process of increasing native bunchgrasses will not be rapid and expected to be episodic in nature as

interactions between seed production, specific weather patterns and wildlife activities periodically result in pulses of seedlings. Therefore, changes to livestock grazing practices should be designed to take advantage of relatively rare events that have the potential to change vegetation community dynamics.

Recommendations

Goals and Objectives

- Develop a set of goals and objectives based upon RMP section Desired Future Condition statements that apply to the Allotment and NRCS ESDs.
- The goals should be the minimum necessary to support S.M.A.R.T. objectives.
- Objectives should function as Desired Plant Community descriptions (DPCs).
- Develop sage-grouse habitat objectives that are consistent with current management guidance.
- Develop an adaptive management strategy for the allotment.

Vegetation

Goal: Maintain healthy, productive, native plant species and communities commensurate with NRCS site potentials. Support maintenance of the most diverse and productive plant community phases possible and processes that would allow transitions to more desirable phases.

Objectives:

On Loamy 8-10" sites:

- Maintain greater than 10% sagebrush cover on 80% of the ecological site for the next 20 years.
- Establish a minimum of three perennial grass plants/meter², excluding bluegrass species.
- Approximately 66 % (2/3) of native perennial plants root systems are vigorous as demonstrated by plants not able to be pulled out by hand (excluding *Poa* species).
- Increase frequency of deeper rooted perennial bunchgrasses (e.g. squirreltail, Thurber's needlegrass) to greater than 1% within 20 years.

On Claypan 10-14" sites:

- Maintain greater than 10% sagebrush cover on 80% of the ecological site for the next 20 years.
- Maintain a minimum of three perennial grass plants/meter², including bluegrass species.
- Approximately 66 % (2/3) of native perennial plants root systems are vigorous as demonstrated by plants not able to be pulled out by hand (excluding *Poa* species).
- Increase frequency of deeper rooted perennial bunchgrasses (e.g. squirreltail, Thurber's needlegrass, or Idaho fescue) to greater than 1% within 20 years.

On Sodic Terrace 8-10" sites:

- Maintain at least 25% composition as measured by line intercept of sagebrush and black greasewood on 80% of the ecological site for the next 20 years.

- Increase basin wildrye frequency to a minimum of 0.5 grass plants/meter² within 20 years.
- Maintain vigor of native grasses by limiting defoliation so that an 8 inch stubble on basin wildrye and a 4 inch stubble on other species remains at the end of the livestock grazing season.

On Sodic Flat 8-10" sites

- Maintain at least 15% composition as measured by line intercept of black greasewood on 80% of the ecological site for the next 20 years.
- Increase basin wildrye frequency to a minimum of 0.25 grass plants/meter² within 20 years.
- Maintain vigor of native grasses by limiting defoliation so that 8 inch stubble on basin wildrye and 4 inch stubble on other species remains at the end of the livestock grazing season.

Wildlife

Goal: Manage critical ecosystems and habitats of special status wildlife according to recovery plans, habitat management plans, conservation plans, and conservation recommendations. Employ 'best management practices' (BMPs) for habitat restoration and maintenance according to specific management guidelines established for these species.

Objectives:

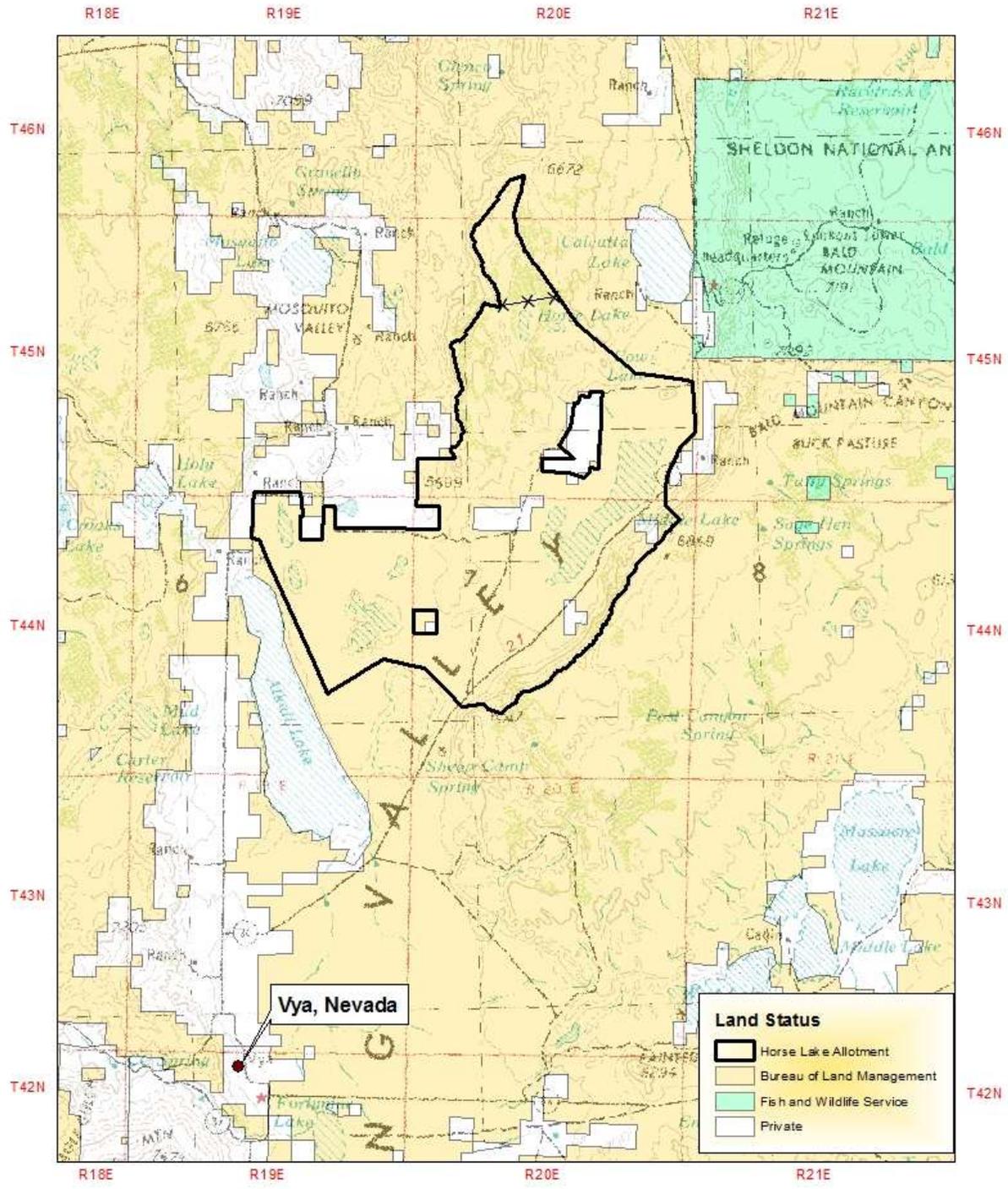
- Maintain or increase where appropriate, the length and width of wetted riparian habitats for sage-steppe species in the allotment, specifically sage-grouse. Key riparian sites will be determined in coordination with stakeholders and interested publics.
- Upland stubble heights as measured on key grass species in the drip line of sagebrush in Loamy 8 -10" RHA ecological sites are at least 4 inches by the end of the grazing season to provide residual cover for ground nesting birds.
- Maintain a minimum of 4 inches stubble height throughout the grazing season in key riparian sites to provide hiding cover and forage for sage-steppe obligates.
- Maintain at least two riparian obligate grasses or grass like species at riparian sites and a minimum of three forb species per site at key riparian sites for wildlife cover and forage.
- Maintain or increase where appropriate, a minimum of three perennial grass plants per square meter between shrub interspaces at RHA sites to provide screening and hiding cover for sage-steppe obligates.
- All riparian sites at FAR progressing towards PFC in 5 years.
- All riparian sites except the Powerline spring will achieve PFC within 10 years.

Livestock Management

Livestock grazing management practices including stocking rate, duration, frequency, intensity and season of use that support achieving the goals and objectives described above would be expected to also lead toward meeting the Land Health Standards. The following grazing management objectives were developed to achieve resource objectives and Land Health Standards and constrain grazing management practices that are realistic and feasible.

- Livestock utilization in the major use areas of any pasture cannot exceed 40% of current year's growth of identified key species measured at the end of the grazing season (Grazing Guideline 16)
- Minimum riparian stubble heights will be 4 inches. Stubble heights will be assessed on 5 or more sites (springs or complexes of springs) within the allotment.
- Grazing practices in the Warm Springs and Middle Lake use areas would be structured to allow Great Basin wildrye plants to support root development and transfer of nutrients to roots annually.
- Grazing practices in the Rim Rock Pasture would allow deep rooted perennial grasses to set seed annually.

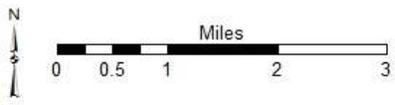
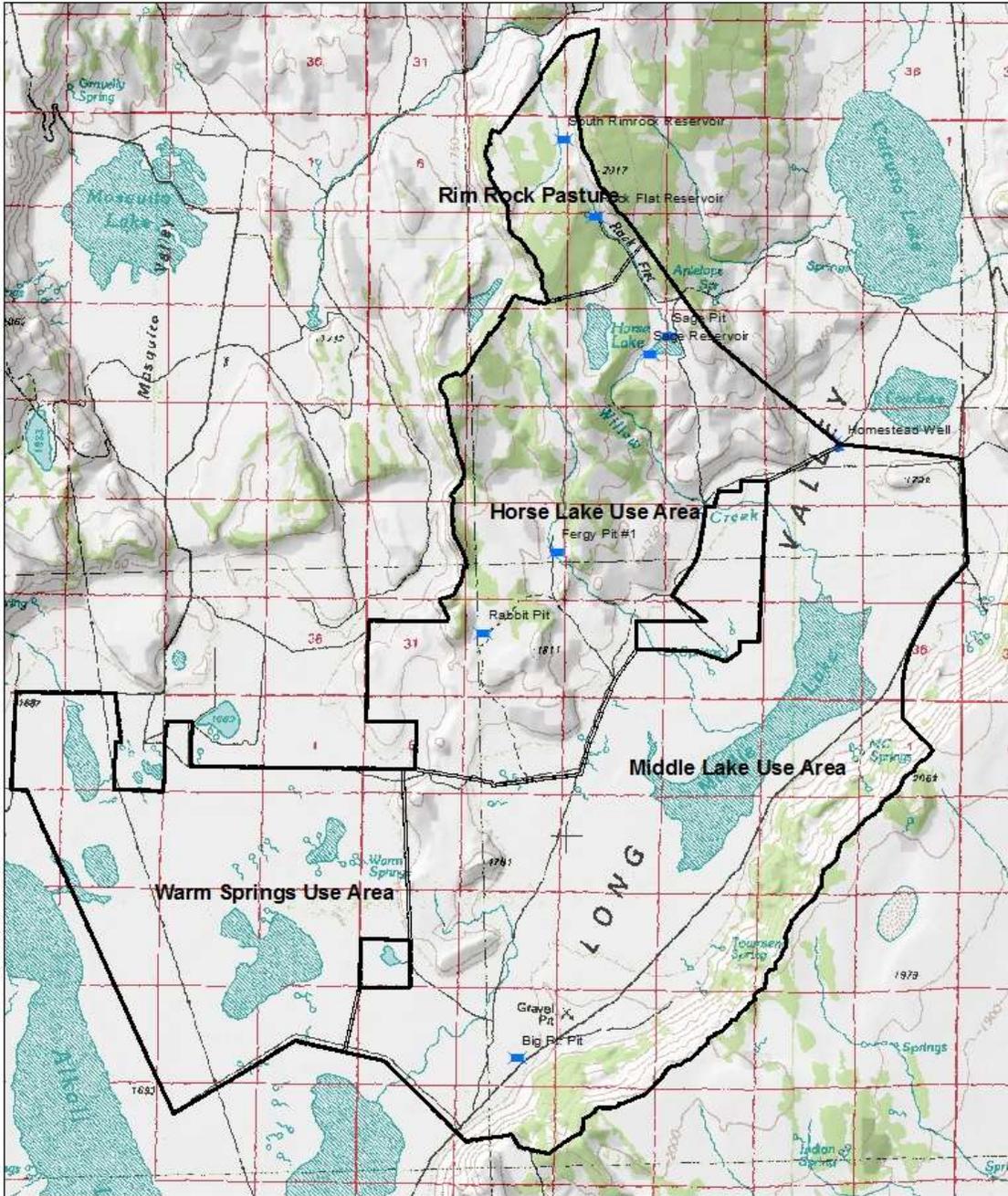
APPENDIX A MAPS
MAP 1 Horse Lake Allotment Land Status



**Horse Lake Allotment
 Land Status**



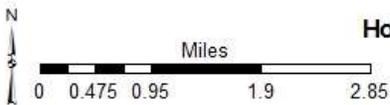
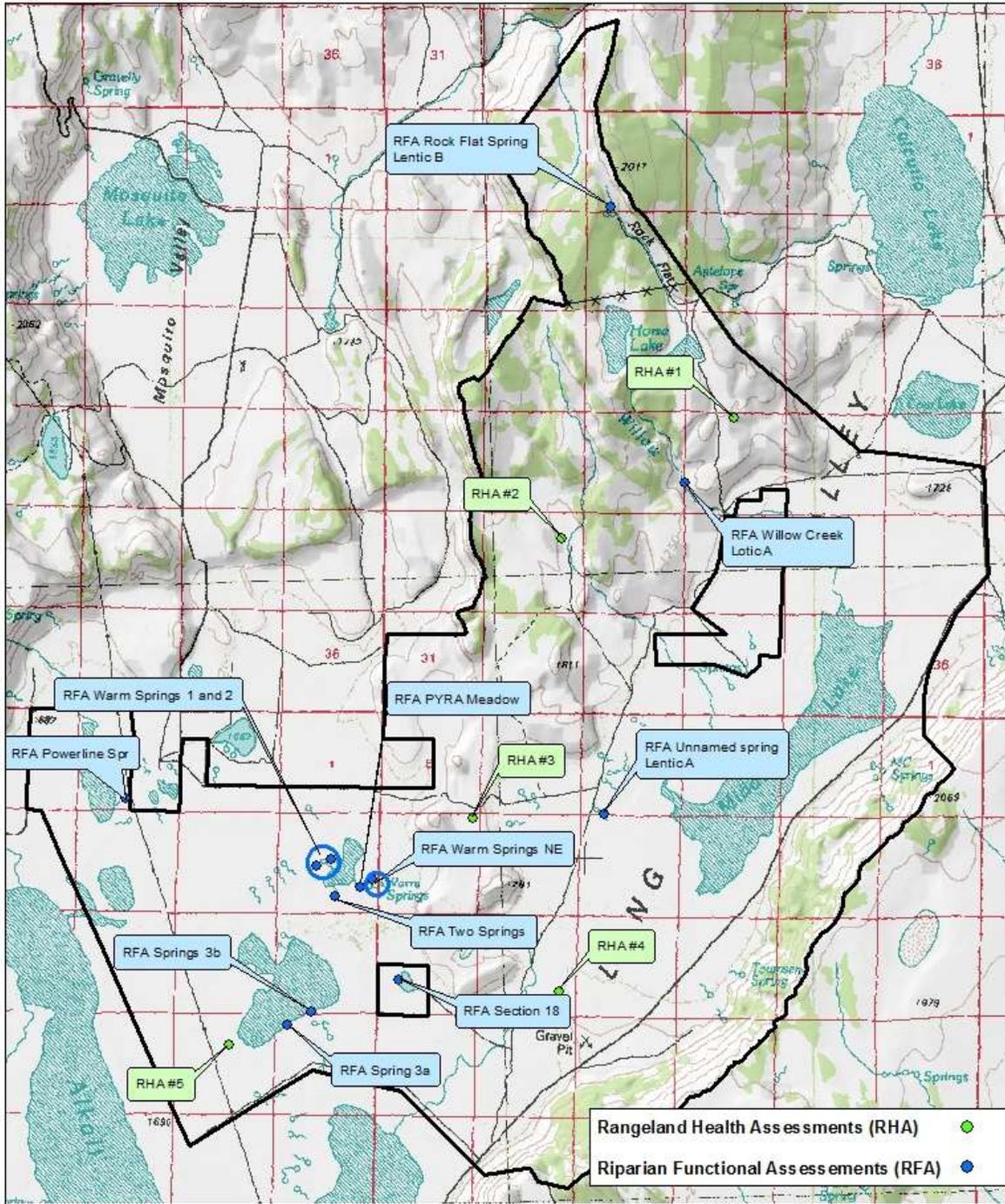
MAP 2 Horse Lake Allotment Pastures/Use Areas & Water Improvements



Horse Lake Allotment Pastures/Use Areas & Water Improvements


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 Date Prepared: 02/27/2013
 Map 2

MAP 4 Rangeland Health Assessment and Riparian Functional Assessment Sites



Horse Lake Allotment Rangeland Health & Riparian Assessment Sites



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 Map 4

APPENDIX B Resource Management Plan Management Actions & Objectives

RMP Objectives

Livestock Grazing (P 2-35)

Adequate forage would be produced to support sustainable levels of livestock grazing where compatible with objectives for other resources and resource users. Continue to modify and adjust grazing management within individual grazing allotments to ensure that a vigorous plant community is sustained in combination with livestock grazing. Adjustments would be prioritized for allotments or areas where plant communities are at risk or have greater potential for improving before they become degraded and less productive. Adjustments may involve:

- development of an improved grazing strategy as implemented through an allotment management plan (AMP), or
- adjusting the season of use with associated actions to improve livestock distribution (fences, water) in allotments without formal management plans.

Work cooperatively with ranchers and other stakeholders to implement treatments to reduce juniper encroachment in sagebrush/grassland communities, with the goal of restoring sagebrush communities to a healthy condition, and thereby maintaining (or potentially increasing) forage production of native grasses, forbs, and shrubs.

Soil Resources (P 2-43)

- Maintain areas that currently meet the land health standard for soils. Improve (or mitigate where this is not feasible) the productivity and/or stability of soils not meeting this standard to such a degree that soil health is achievable.
- Prevent or eliminate erosion and sedimentation in sensitive aquatic (or other sensitive) environments to ensure there is no threat to property or human health.
- Confine development (e.g., roads, trails, facilities) to areas with suitable soils.
- Provide sufficient earthen materials to meet the needs of county and state road departments.

Noxious Weeds and Invasive Species (P 2-67)

Noxious weeds will be extirpated whenever possible. Where this is not feasible, infestations will be contained and numbers reduced to manageable levels. Special attention would focus on highly invasive species such as cheatgrass and medusahead—on sites where infestation is below the threshold level (for sight conversion) and aggressive treatment is likely to succeed. Measures will be taken to reduce introductions and proliferation by increasing public awareness and imposing stipulations on management activities.

Special Status Plants (P 2-69)

Identify and protect all species and populations of special status plants in the management area. Take action to maintain reproductive viability and ensure that BLM management actions, and those of its permittees, do not contribute to the decline of any special status plant. Protect these plants in the following order of priority:

1. Federally listed endangered and threatened species
2. Species proposed for federal listing
3. Possible candidates for federal listing

4. State-listed (CA, NV, or OR) endangered and threatened species
5. BLM 'sensitive' species
6. BLM 'special interest' species

Water Quality and Hydrologic Function (P2-76)

On a priority basis, take action to improve hydrologic function and/or water quality in areas not meeting State standards – especially where hydrologic function and/or water quality problems are major factors inhibiting the success of other resource programs. Ensure that hydrologic function and water quality are preserved in areas where standards have been met.

Actions will be guided by the following objectives from the Standards for Rangeland Health and Guidelines for Livestock Grazing Management on BLM-Administered Lands in Northeastern California and Northwestern Nevada:

- “Maintain the physical, biological, and chemical integrity of waters flowing across underlying the lands it [BLM] administers”.
- “Protect the integrity of these waters where it is currently threatened.”
- “Insofar as is feasible, restore the integrity of these waters where it is currently impaired.”
- “[BLM must] not contribute to pollution and take action to remedy any pollution resulting from its actions that violates California and Nevada water quality standards, tribal water quality standards, or other applicable water quality requirements.” (e.g., requirements adopted by state or regional water quality control boards in California or the Environmental Protection Agency [EPA] pursuant to Section 303(d) of the Clean Water Act or the Coastal Zone Reauthorization Act)
- “Where action related to grazing management is required, such action will be taken as soon as practicable but not later than the start of the next grazing year (in accordance with 43 CFR 4180.1).”
- “Be consistent with non-degradation policies identified by the States.”
- “Develop and execute a management agency agreement with the States of California and Nevada for the efficient protection of water quality associated with BLM’s management.”
- “Work with the State’s water quality administrative agencies and the EPA to establish appropriate beneficial uses for public waters, establish appropriate numeric targets for 303(d)-listed water bodies, and implement applicable requirements to ensure that water quality on public lands meets objectives for the designated beneficial uses of this water.”
- “Develop and implement ‘best management practices’ 1/ (BMPs) approved by the States to protect and restore the quality and beneficial uses of water, and monitor both implementation and effectiveness of the BMPs. These BMPs will be developed in full consultation, coordination, and cooperation with permittees and other interests.”
- “State or tribal approved variances or exceptions to water quality standards may be applicable within their ‘basin plans’ for specific types of activities or actions. BLM will follow state or tribal administrative procedures associated with variances.”

Wildlife and Fisheries (P 2-88 to 2-97)

Manage critical habitats of endangered and threatened wildlife according to recovery plans or habitat management plans.

State-Listed and BLM Sensitive Species

Manage critical ecosystems and habitats of special status wildlife according to recovery plans, habitat management plans, conservation plans, and conservation recommendations. Employ ‘best management practices’ (BMPs) for habitat restoration and maintenance according to specific management guidelines established for these species.

Ungulates

Manage wild ungulate habitats to maximize site potential. Activities permitted, funded, or conducted by BLM must comply with (BLM) land health standards, especially Standard 5 (biodiversity). Ensure that viable (genetically diverse and reproductively successful) populations of healthy native ungulates—and the vegetation and water resources on which they depend—are adequately restored and maintained.

- Manage wild ungulate habitats according to CDFG and NDOW management plans, where these exist. Cooperate with state wildlife agencies to amend and update herd management plans for deer, sheep, elk, and pronghorn (where and when appropriate).
- Complete GIS mapping of wild ungulate habitats, and update obsolescent material, in concert with state wildlife agencies. Prioritize identification and mapping of reproductive habitats (kidding, calving, lambing, and fawning grounds).
- Monitor habitat conditions in key ungulate habitats (e.g., aspen, mountain mahogany, and bitterbrush).

Sagebrush-Obligate and Associated Species

- Use BLM conservation plans and guidelines, especially “Partners in Flight—Birds in a Sagebrush Sea” and related strategies specifically developed for the sagebrush biome. Employ ‘best management practices’ developed for sagebrush-obligate and sagebrush associated wildlife and associated vegetation.
- Cooperate with other federal and state agencies to develop joint strategies and actions capable of restoring sagebrush-steppe habitats.
- Assess sagebrush-steppe habitats and identify management requirements. Prioritize key areas for restoration, maintenance, or enhancement.

Other Native Wildlife Species

Habitat for native wildlife species will be managed in such a manner that forage, water, and cover, of appropriate diversity and structure, will be present and sufficient to meet their life-cycle requirements.

Surveys will be conducted to determine the occurrence, distribution, and abundance of native wildlife species, as qualified personnel and time may allow.

Proposed reintroductions, augmentations, and translocations of native species will be evaluated according to BLM policy and directives, as well as habitat management goals and objectives. These projects will be coordinated with state agencies, under existing MOUs which outline the process and prior planning procedures.

Native and Non-Native Fish and Other Aquatic Species

- Manage aquatic, riparian, and upland habitats to meet BLM standards for rangeland health. Use riparian functional assessments and employ BMPs to improve springs and streams that are not in ‘proper functioning condition’ (PFC) or fail to meet state water quality standards. Ensure that the measures employed achieve, or make significant progress toward achieving, required standards.
- Cooperate with state and federal agencies to monitor fish and other aquatic fauna, as well as riparian and in-stream conditions (e.g., riparian vegetation height/condition, bank stability, stream cover/shading, water quality, and stream cross-sectional analysis).
- Update and revise fisheries plans when no longer accurate or relevant. Employ the latest, most accurate information for this purpose and coordinate planning and actions with the appropriate state wildlife agency.
- Improve degraded upland, riparian, and aquatic habitats to re-create suitable habitable conditions for indigenous sport-fish.

Desirable Non-Native Species

- Maintain populations of desirable non-native game fish and animals within their current areas of distribution.
- As a general rule, do not encourage state fish and wildlife agencies to introduce or translocate “desirable,” but non-native, fish or game. However, where appropriate (under circumstances enumerated in BLM Manual 1745), cooperate with state fish and wildlife agencies to augment, translocate, or introduce populations of desirable, non-native game fish or animals according to BLM policy and current MOUs.

RMP Management Actions

Livestock Grazing

- Comply with the Approved Northeastern California and Northwestern Nevada Standards for Livestock Grazing.
- Livestock salting would not be allowed within ¼ mile of springs, meadows, NRHP-quality archaeological sites, streams, and aspen areas. Location of salting stations would be determined by the BLM in consultation with livestock permittees.
- Utilization levels will not exceed 40%–60% on key species of grasses, forbs, and shrubs. Guideline number 16 of the *Standards and Guidelines for Livestock Grazing* would be implemented on allotments not meeting Standards for Rangeland Health at current forage utilization levels.

Soils

- Implement management practices to promote recovery of 49,894 acres of upland soils not meeting Standards for Rangeland Health.
- Ensure all management activities result in no net loss of soil mass or productivity within the management area.
- Livestock grazing would be managed to promote healthy watersheds as evident by productive soils, natural hydrologic function, biological integrity, and the preservation of biological crusts.

Noxious Weeds

- Integrated Weed Management (IWM) will continue to promote education and prevention as well as cultural, physical, biological, and chemical treatments.
- Conduct IWM inventories in coordination with adjacent weed management areas for early detection of new infestations.

Special Status Plants

- Manage all special status species habitats or populations so that BLM actions do not contribute to the need to list these species as federally threatened or endangered.
- Special management considerations and permit stipulations that would be applied to protect populations of special status plants would apply equally for special interest species to prevent them from becoming listed as special status plants.

Water Resources

- Apply restoration treatments to improve hydrologic function and water quality, including bioengineering treatments, improved livestock grazing strategies, planting woody riparian vegetation, and installing in-stream structures.
- Maintain existing water sources and manage to promote wildlife habitat, improve distribution of livestock and wild horses, and provide for recreational uses.

Wildlife and Fisheries

Federally Listed Species

- Follow management guidelines within applicable biological opinions and conservation strategies.

Carson wandering skipper

- Conduct surveys to determine habitat suitability and cooperate as a partner in recovery plans.

Ungulates

- Implement treatments to remove invasive juniper from important wildlife habitats on 250 – 2,500 acres/year. Reduce invasive juniper where it threatens meadow systems and quaking aspen stands, to improve ungulate habitat.
- If Rocky Mountain elk become established within the field office area, coordinate with state wildlife agencies and other cooperators, including livestock operators, to develop and implement management plans.

Sagebrush Ecosystems and Sagebrush Obligate/Associated Species

- Locally developed conservation strategies or plans developed for sage-grouse, pygmy rabbit, burrowing owl and other special status species would be used to identify high-priority treatment and fire suppression areas.
- Implement the *Greater Sage-Grouse Conservation Plan for Nevada and Eastern California*, First Edition (2004), including the Vya and Massacre Conservation Strategies.
- Implement juniper reduction to enhance sagebrush ecosystems; focus on providing diverse composition and age classes of shrubs and healthy understory vegetation.

Other Native Wildlife Species

- Protect known raptor nesting trees from removal during project activities.

- Manage migratory birds in accordance with the Migratory Bird Treaty Act and Migratory Bird Executive Order 13186, *Responsibilities of Federal Agencies to Protect Migratory Birds*.
- Design and locate new livestock water developments to avoid dewatering natural springs or wetland areas. Outfit all livestock troughs with wildlife access ramps. Strive to provide water at ground level for wildlife at all developments, as feasible.