DETERMINATION
for
Achieving Standards for Rangeland Health
and
Conforming with Guidelines for Livestock Grazing Management

Field Office: Sierra Front

Grazing Allotment: Pah Rah

Data Collection and Assessment Dates:
Rangeland Health Assessments: 6/10/10, 6/11/10
Riparian Proper Functioning Condition: 8/23/00, 6/10/10, 6/11/10
Photo Trend Plots Read: 7/14/77, 7/5/79, 6/10/10

Standard Determination Participants (Name and Specialty):

Nicole Cutler, Hydrologist
Ryan Leary, Range Management Specialist
Katrina Leavitt, Range Management Specialist
Dean Tonenna, Botanist
Pilar Ziegler, Wildlife Biologist

Standard 1 (Soils)

Check those that apply (one or more must be checked):

- ☐ Standard does not apply
- ☒ Meeting standard
- ☐ Not meeting standard, but making significant progress towards
- ☐ Not meeting standard, but cause still being determined
- ☐ Not meeting standard, livestock grazing practices are significant factors
- ☐ Not meeting standard, livestock grazing practices are not significant factors

Rationale:

The soils on the site are stable with little evidence of wind or water erosion. Soil crusts, compaction and percent bare ground are as expected for the site based on the NRCS Reference Sheet.

Soil and Hydrologic Processes
The major soils on the Allotment are sandy loams with varying degrees of stoniness and a precipitation level of 8-10 inches annually. Consistent with this type of site, there are no soil crusting formations in shrub interspaces and no soil compaction observed. For this type of site, the range of soil stability values is 3-6. Tested values were 3, within the acceptable range.

As would be expected for this type of site, there was little evidence of soil movement by wind or water. There were no wind-scoured, blowout, or deposition areas observed. While rills may be common on this type of site, particularly on steeper slopes, there were fewer than expected on the site. Water flow patterns were few and no gullies were observed. Neither erosional pedestals nor terracettes were observed and bare ground compromised about 40 percent or less on the locations evaluated as would be expected for this type of site. Fine litter was present across the site rather than moved down slope and large woody debris remained in place.

Plant composition changes in some portions of the site have decreased infiltration. Where perennial grasses no longer occupy the interspaces, the ability to capture precipitation is reduced.

Plant Nutrient Cycling and Energy Flow
Plant communities have reduced diversity and recruitment from what would be expected for this type of site. Shrubs dominate much of the site instead of the deep-rooted cool season perennial bunch grasses expected on this type of site. In some parts of the site invasive shrubs such as snakeweed and desert peach are subdominant to sagebrush rather than the associated shrubs (horsebrush, rabbitbrush and spiny hopsage) expected as subdominants on this type of site. Plant decadence and mortality is appropriate for this type of site and in some areas, less than expected. Surface litter is appropriate to this type of site in some areas and less than expected in others. Invasive/increaser species including cheatgrass and amsinkia are present throughout the site, particularly in places where the deep-rooted cool season perennial bunch grasses are absent.

Overall, soils on the site are stable with aggregate stability within the range expected for these types of soils and landforms.

Standard 2 (Riparian Zones/Wetlands)

Check those that apply (one or more must be checked):

- ☐ Standard does not apply
- ☐ Meeting standard
- ☐ Not meeting standard, but making significant progress towards
- ☐ Not meeting standard, but cause still being determined
- ☐ Not meeting standard, livestock grazing practices are significant factors
- ☒ Not meeting standard, livestock grazing practices are *not* significant factors

Rationale:

The springs on the site lack the vegetative cover and diversity expected in properly functioning water bodies. The noxious plant species tamarisk (*Tamarisk ramosissima*) was found at one site. Hoof action which breaks down banks and shears off plant roots, was observed at two of the three springs assessed.

Sinuosity, Width/depth Ratio and Gradient are Adequate to Dissipate Streamflow Without Excessive Erosion or Deposition

Perry Creek, originating at the top of Perry Canyon, is an intermittent stream that flows on the surface and subsurface over its 5.7 mile reach. Lack of streamflow dissipation was evidenced by a knickpoint observed on private land in Perry Canyon. As related to hydrological processes, a knickpoint is an abrupt step in the channel bottom. Knickpoints increase erosive energy, as they propagate toward the source water, and can drain the system. Dependent factors on the rate of erosion include channel geology and volume of water. Continued monitoring is necessary to establish a record of the knickpoint's mobility upstream from private land toward BLM land.

Overall the Allotment has minimal surface water expression. Out of four springs on the Allotment, only three had water at the surface to support riparian vegetation at the time of the field visits. Table 1 provides basic data for each analyzed location, and summarizes the condition ratings for the 2010 field dates.

Table 1. 2010 Riparian Assessment Data for the Pah Rah Allotment

Name	Date Assessed	UTM Northing	UTM Easting	Rating[1]	Acres[2]
Perry Spring	6/10/10	4413361	279386	PFC	0.24
Mullen Pass Spring (also referred to as Pah Rah Spring)	6/11/10	4417107	277767	FAR-UP	0.03
Tamarisk Spring	6/11/10	4416384	277089	FAR-UNK	0.1

Riparian Vegetation is Adequate to Dissipate High Flow Energy and Protect Banks from Excessive Erosion

Both Mullen Pass and Tamarisk Springs were previously dug out, causing water to pool instead of flow. Impacts from wild horse hoof action were also noted as disturbances that altered flow paths on these springs. The surface disturbance has challenged riparian vegetation in composition, vigor, and cover.

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[1] Rating key: PFC = Proper Functioning Condition
FAR-UP = Functional-At-Risk with an Upward Trend
FAR-DN = Functional-At-Risk with an Downward Trend
FAR-UNK = Functional-At-Risk with an Unknown Trend
NF = Nonfunctioning

[2] Acres were determined in GIS in 2012.

The Mullen Pass Spring and pool are contained within a 0.3 acre exclosure fence built in 2001. In the 2010 field assessment, a hole in the fence was observed. The riparian/wetland area was noted to be in better condition than 10 years prior, when a lentic assessment was completed. The riparian area is functional at risk with an upward trend. The noted trend pertained to an improvement in present vegetation around the water hole.

Plant Species Diversity is Appropriate to Riparian-Wetland Systems
The aptly named Tamarisk Spring was supporting the noxious species tamarisk, an allopathic plant that disproportionately uses water. The unknown trend at Tamarisk Spring is due to lack of previous data. The spring at the top of Perry Canyon has saturated soils, but lacks diverse riparian vegetation, a lack of willow age-class diversity was noted.

Standard 3 (Water Quality)

Check those that apply (one or more must be checked):

- ☐ Standard does not apply
- ☐ Meeting standard
- ☐ Not meeting standard, but making significant progress towards
- ☐ Not meeting standard, but cause still being determined
- ☐ Not meeting standard, livestock grazing practices are significant factors
- ☒ Not meeting standard, livestock grazing practices are *not* significant factors

Rationale:

Descriptive or narrative Water Quality Standards address bottom deposits, floating materials, and color or turbidity when they are severe enough to be unsightly, odorous, or affect the taste of the water. These Standards are not being met in the three analyzed lentic systems due to hoof action, trampling, lack of vegetative cover, and deposition of mining waste, salts, precipitates.

No water quality data (pH, temperature, specific conductivity) were recorded for Perry Canyon, Mullen Pass, or Tamarisk Springs due to the lack of water quantity for instrumentation.

Chemical Constituents Do Not Exceed the Water Quality Standards
Orange and green deposits were observed under and alongside the water flowing down Perry Canyon, onto public lands. These deposits are a result of historic mining operations and discharging adits on private land. The orange deposits observed in the creek bed appear to be settling out of the water. The green precipitates (or efflorescent mineral salts) were observed along the edge of the water flow, and contribute to heavy metal loading during storm events.

Physical Constituents Do Not Exceed the Water Quality Standards
Surface disturbance, mentioned above, has challenged riparian vegetation in composition, vigor,

cover, as well as water quality. Road encroachment in Perry Canyon has negatively affected water quality as well, where the creek runs over and down the two-track.

Biological Constituents Do Not Exceed the Water Quality Standards
The pooled water in Tamarisk Spring had algae growth, indicating an unbalanced system caused by too many available nutrients and low oxygen content.

The Water Quality of All Water Bodies, Including Groundwater Located on or Influenced by BLM Will Meet or Exceed the Applicable Nevada or California Water Quality Standards
Perry Creek Canyon was included in Nevada's 2008-10 303(d) list for impaired waters, however insufficient information was available to support a call for action to address beneficial use.

Standard 4 (Plant and Animal Habitat)

Check those that apply (one or more must be checked):

- ☐ Standard does not apply
- ☐ Meeting standard
- ☐ Not meeting standard, but making significant progress towards
- ☐ Not meeting standard, but cause still being determined
- ☐ Not meeting standard, livestock grazing practices are significant factors
- ☒ Not meeting standard, livestock grazing practices are *not* significant factors

Rationale:

The Nevada Department of Wildlife's (NDOW's) general recommendation for quality wildlife habitat is a vigorous and diverse perennial plant community appropriate to the soil type. The vegetation in the Allotment departs from the NRCS Reference Sheet for the site in a number of ways. The vegetation in the Allotment has less diversity in desirable plant species and shows less recruitment of new plants. The site is shrub-dominated rather than grass-dominated, and the altered shrub community has co-dominant shrubs that are increaser species representative of past disturbance. The site is invaded by cheatgrass (*Bromus tectorum*) and encroached by juniper trees. There is a high level of habitat fragmentation and each Township and Range Section is dissected by at least one road or trail.

Representation of Life Forms and Numbers of Species
While a variety of shrubs, forbs and grasses occurs throughout the Allotment, it is less diverse than expected based on the variety of species in the Ecological Site Descriptions. In addition, the proportion of shrubs to grasses is the reverse of what is expected for the site based on the Ecological Site Descriptions. All of the sites observed had changes in expected plant functional/structural groups as compared to the Reference Site. The sites were shrub-dominated with shrubs comprising an average of 60 percent of the vegetation when they should be closer to 40% based on the Reference Site. Increaser shrubs such as snakeweed and desert peach were

often sub-dominate to the sagebrush rather than the associated shrubs expected to be subdominants (horsebrush, rabbit brush, spiny hopsage) based on the Ecological Site Descriptions. The grasses are under-represented. Deep-rooted cool season perennial bunch grasses should comprise about 50 percent of the vegetation based on the Ecological Site Descriptions, but were closer to 30 percent. Increaser species cheatgrass, fiddleneck, mustards, and juniper occur throughout the Allotment and are overrepresented on all of the sites based on the Ecological Site Descriptions. The two sites where Rangeland Health evaluations were conducted had slight to moderate departure from expected conditions relative to the reference site for Biotic Integrity due to the changes in functional/structural groups and the presence of invasive and increaser plants mentioned above.

Based on the riparian assessments, the springs do not have a diverse composition of riparian-wetland vegetation and the noxious weed tamarisk was present at one spring.

Diversity of Height, Size, and Distribution of Plants
There was a diversity of height and size in some of the species present on the Allotment, both those key species indicating good land health and increaser species indicating poorer land health. There was a diversity of height and size of sagebrush on all sites observed on the Allotment. Four of the seven sites also had a diversity of rabbitbrush, three had a diversity of Thurber's needlegrass, and two had a diversity of squirreltail. Five of the seven sites observed had a diversity of juniper. Sagebrush and Thurber's needlegrass are considered key species. Rabbitbrush and squirreltail are increaser species that aid in soil retention, but tend to crowd out other species and reduce overall diversity. As juniper density increases over time, it effectively denies site resources to other plants through its disproportionate water use.

Photo plot trend data shows the percent cover of Thurber's needlegrass and Indian ricegrass is either increasing (as the plants grow larger) or remaining constant in plots.

In general, upland plant species were well distributed across the Allotment with key species (Wyoming big sagebrush, Thurber's needlegrass, desert needlegrass, and/or Indian ricegrass) observed at all upland sites.

Based on the riparian assessments, Tamarisk Spring lacked diverse age-class distribution of riparian-wetland vegetation.

Number of Wood Stalks, Seed Stalks, and Seed Production Adequate for Stand Maintenance
Based on the two Range Health evaluations there is reduced recruitment in the plant communities on the Allotment. Few juveniles were observed on the upland portions of the Allotment during assessments and monitoring visits. Photo trend plot data shows there has been no recruitment (no seedlings) of key species in plots. The presence of the invasive species, cheatgrass, and the encroachment of juniper lead to monopolization of site resources and effectively deny them to seedlings attempting to establish.

Based on the riparian assessments, Tamarisk Spring lacked diverse age-class distribution of riparian-wetland vegetation for recruitment for maintenance/recovery and the riparian plants did not exhibit high vigor. Obligates at Mullen Spring are unlikely to return naturally due to the lack

of a seed source.

Vegetative Mosaic, Vegetative Corridors for Wildlife, and Minimal Habitat Fragmentation
A number of factors have contributed to fragmentation of wildlife habitat in the Allotment including OHV use, ROWs, mining, and wildfire.

Noxious weed species are found in the Allotment and are known to occur in areas with sufficient soil moisture such as around springs and creeks. Salt cedar was found at Tamarisk Spring.

There are 15 abandoned mines, 34 mine shafts, 31 tunnels or caves and 163 prospecting locations within the Allotment.

The Allotment is at the southern end of the Virginia Mountains area where vehicles are limited to existing routes. There are 10 roads and trails coming into the Allotment which spread into a network of trails that provides access throughout the Allotment. There are no sections within the Allotment that are not accessible by a road or trail.

The northwest portion of the Allotment has approximately 1,500 acres in rights-of -way for the following entities:

- Sierra Pacific - power transmission
- NDOT- Pyramid Highway
- Nevada Bell – telephone and telegraph

There are two 40-acre NDOT material sites adjacent to Pyramid Highway on the northwest side of the Allotment.

There were 12 fires in the Allotment between 1984 and 2011. Most were an acre or less, but one of the 1984 fires was about 200 acres in size and was located in the southeast quarter of the Allotment.

Standard 5 (Special Status Species Habitat)

Check those that apply (one or more must be checked):

☐ Standard does not apply

☐ Meeting standard

☐ Not meeting standard, but making significant progress towards

☐ Not meeting standard, but cause still being determined

☐ Not meeting standard, livestock grazing practices are significant factors

☒ Not meeting standard, livestock grazing practices are *not* significant factors

Rationale:

Habitat conditions are not meeting standard and are unlikely to meet the life cycle requirements of special status species due to a number of factors mentioned in Standard 4 above. These include a lack of diversity in desirable species, lack of recruitment of new species, and habitat fragmentation.

No federally listed species or critical habitat occurs on the Allotment. The BLM sensitive species and migratory birds listed in the table below are associated with the habitat present on the Allotment and may use the habitat for all or part of the year.

Common Name	Scientific Name	BLM Sensitive Species[1]	BLM Migratory Bird
Big brown bat	*Eptesicus fuscus*	Y	-
Brazilian free-tailed bat	*Tadarida braziliensis*	Y	-
Brewer's sparrow	*Spizella breweri*	Y	Y
Burrowing owl	*Athene cunicularia*	Y	N
California myotis	*Myotis californicus*	Y	-
Dark kangaroo mouse	*Microdipodops megacephalus*	Y	-
Ferruginous hawk	*Buteo regalis*	Y	Y
Fringed myotis	*Myotis thysanodes*	Y	-
Golden eagle	*Aquila chrysaetos*	Y	Y
Greater sage-grouse	*Centrocercus urophasianus*	Y	N
Green-tailed towhee	*Pipilo chlorurus*	N	Y
Loggerhead shrike	*Lanius ludovicianus*	Y	Y
Long-eared myotis	*Myotis evotis*	Y	-
Long-legged myotis	*Myotis volans*	Y	-
Mourning dove	*Zenaida macroura*	N	N
Pale kangaroo mouse	*Microdipodops pallidus*	Y	-
Pallid bat	*Antrozous pallidus*	Y	-
Pygmy rabbit	*Brachylagus idahoensis*	Y	-
Sage sparrow	*Amphispiza belli*	N	Y
Sage thrasher	*Oreoscoptes montanus*	Y	Y
Spotted bat	*Euderma maculatum*	Y	-
Swainson's hawk	*Buteo swainsoni*	Y	N
Townsend's big-eared bat	*Corynorhinus townsendii*	Y	-
Western small-footed myotis	*Myotis ciliolabrum*	Y	-
Western pipistrelle bat	*Pipistrellus hesperus*	Y	-
Yuma myotis	*Myotis yumanensis*	Y	-

[1] Occurs on the 2011 NV BLM Sensitive Species statewide list or the Carson City District Office list.

One BLM sensitive plant species and one federally listed candidate plant species may occur or habitat may be present in the Allotment.

Common Name	Scientific Name	BLM Sensitive Species[3]	Endangered Species Status
Ames Milkvetch	*Astragalus pulsiferae* var. *pulsiferae*	Y	N
Webber's Ivesia	*Ivesia webberi*	Y	Candidate

DETERMINATIONS

I have determined that all of the applicable Standards for Rangeland Health:

☐ are ☒ are not being met.

If the Standards are not being met, I have determined that they:

☐ are ☒ are not making significant progress towards meeting those Standards.

Livestock grazing practices :

☐ are ☒ are not a significant factor in achieving Standards for Rangeland Health, and

☒ conform ☐ do not conform to the Guidelines for Livestock Grazing Management.

Leon Thomas
Field Manager
Sierra Front Field Office

3-22-13
Date

[3] Occurs on the 2011 NV BLM Sensitive Species statewide list or the Carson City District Office list.