

**U.S. Department of the Interior  
Bureau of Land Management**

**Standards for Rangeland  
Health Determination  
Document**

**Pilot-Table Mountain Allotment**

**PREPARING OFFICE**

U.S. Department of the Interior  
Bureau of Land Management  
Stillwater Field Office

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## Executive Summary

This document summarizes the findings of the 2018 Rangeland Health Assessment and Evaluation Report (RHA/ER) for the Pilot-Table Mountain Allotment (PTMA) dated 07-16-2019. Furthermore, this document is the authorized officer’s determination regarding whether or not current livestock grazing management practices are a significant causal factor in not meeting or making significant progress towards meeting rangeland health standards for the PTMA. The PTMA is located within the Carson City District Office (CCDO), Stillwater Field Office (SFO). This allotment was assessed and evaluated for conformance with the Sierra Front-Northwestern Great Basin Standards and Guidelines for Rangeland Health.

The approved standards for rangeland health for the Sierra Front-Northwestern Great Basin Area Resource Advisory Council (RAC) that are reviewed in this determination for the PTMA are as follows:

**Standard 1. Soils:** Soil processes will be appropriate to soil types, climate and landforms.

**Standard 2. Riparian/Wetlands:** Riparian/wetland systems are in properly functioning condition.

**Standard 3. Water Quality:** Water quality criteria in Nevada or California<sup>1</sup> State Law shall be achieved or maintained.

**Standard 4. Plant and Animal Habitat:** Populations and communities of native plant species and habitats for native animal species are healthy, productive and diverse.

**Standard 5. Special Status Species Habitat:** Habitat conditions meet the life cycle requirements of special status species.

Table 1 summarizes the determination of rangeland health standards for the allotment. As required by 43 CFR 4180, this determination document also discloses whether existing grazing management practices or levels of grazing use on public lands managed by the BLM are significant contributing or causal factors in failing to achieve the standards for rangeland health and whether or not they conform to the guidelines for livestock grazing management established by the RACs for public lands managed by the BLM in Nevada. Refer to Appendix 1 for guidelines for the Sierra Front-Northwestern Great Basin Area.

**Table 1. Determination of Rangeland Conditions for PTMA**

Allotment	Are Rangeland Health Standards <sup>2</sup> Being Met? (Yes/No)					Significant Causal Factors in Failing to Achieve Standards	Guidelines Not In Conformance
	1	2	3	4	5		
Pilot-Table Mountain	No	No	No	No	No	1, historic and current grazing by livestock, introduction of non-native plant species 2, historic and current grazing by livestock 3, historic and current grazing by livestock 4, historic and current grazing by livestock and introduction of non-native plant species 5, historic and current grazing by livestock and introduction of non-native plant species	1,2,3,5,7,8,14,15,17,18,21

<sup>1</sup>

<sup>2</sup> Standards: 1 Soils, 2 Riparian and Wetland Resources, 3 Water Quality, 4 Plant and Animal Habitat, 5 Special Status Species Habitat

## Determination – Northeastern Great Basin RAC Standards

Based on my review of the PTMA RHA/ER and the interdisciplinary team's recommendations, the following are the conclusions and rationale for making determinations, in accordance with the applicable RAC standards and guidelines applicable to these allotments as summarized in table 1.

### Pilot-Table Mountain Allotment (NV03574)

The PTMA is located approximately 10 miles east of Hawthorne, Nevada in Mineral County. The allotment is 512,449 acres of BLM administered lands and 8,771 acres of private lands. Standards 1 through 5 are not being achieved.

#### Standard 1. Soils

*Soil processes will be appropriate to soil types, climate and landforms. As indicated by:*

- *Surface litter is appropriate to the potential of the site;*
- *Soil crusting formations in shrub interspaces, and soil compaction are minimal or not in evidence, allowing for appropriate infiltration of water;*
- *Hydrologic cycle, nutrient cycle and energy flow are adequate for the vegetative communities;*
- *Plant communities are diverse and vigorous, and there is evidence of recruitment; and*
- *Basal and canopy cover (vegetative) is appropriate for site potential.*

The PTMA Allotment is not achieving Standard 1 and current and historic livestock grazing practices are the causal factors with the introduction of non-native plants and wild horses as the contributing factors.

As shown in the results of the Interpreting Indicators of Rangeland Health (IIRH) assessment conducted on the allotment, Standard 1 is not being met in regard to soil and site stability, hydrologic function, and biotic integrity. The decline in soil and site stability within these sites are a result of water flow patterns, compaction layers, active erosion, and degraded soil/site stability. The decline in hydrologic function is a result of observed loss of perennial grasses in the interspaces which increases bare ground, reduced infiltration and water storage capabilities. Also observed were wind scour, pedestalling, soil surface loss, water flow patterns, presence of compaction, and decreased soil stability. The decline in biotic integrity is attributed to the change of functional/structural group, abundance of invasive plants, and low vigor of shrubs and increased decadence and mortality. The deep-rooted perennial grasses have decreased significantly and most sites have shifted to a shrub dominated state. These declines resulted in areas departing from reference state, dominated by native perennial grasses, to a shrub or annual grass ecological state.

Additionally, Assessment Inventory and Monitoring (AIM) and Landscape Management Framework (LMF) data collected on the allotment reveal that bare ground, litter, and canopy gap

indicators were not within the benchmark ranges that define functioning ecosystems. Most plots exhibiting increased litter cover also showed an increase in invasive grasses or forbs. Plots with decreased litter cover had an increase in shrub composition with little to no perennial grass composition in comparison to the ecological site reference. Decreases in litter can be a result of livestock and wild horse grazing or wind and water erosion. Additionally, a large majority of plots contained more than 20 percent of inter-canopy gaps over 200 centimeters, which can lead to increased wind and water erosion as well as an increased risk of the invasion of non-native species.

The plant community composition data comparison revealed a substantial change from the ecological site description (ESD) reference state composition with most plots shifting to the less desirable shrub with annual invasive dominated states. Some plots also had increased pinyon pine and juniper cover. Frequency and photo trend data also showed an overall reduction of deep-rooted perennial grasses and the more desirable shrubs as well as an increase in invasive species. These transitions are indicated by a reduction in deep-rooted perennial grasses such as Indian ricegrass, bottlebrush squirreltail, needle and thread, and desert needlegrass and the increase in shrubs and annual invasive species such as cheatgrass, Russian thistle, halogeton, and other annual forbs. Russian thistle and halogeton are aggressive weeds that will invade these depleted salt-desert shrub communities when desirable perennials are destroyed. They can provide soil protection and some livestock forage, but their production fluctuates greatly and are not dependable yearly (Blaisdell and Holmgren 1984).

Native, deep-rooted perennial bunchgrasses are negatively impacted by livestock grazing if the season of use, frequency, and intensity of use are not appropriate. During the critical growing period (late spring, early summer) grasses elevate their growth buds (apical meristems) for seed head development. If these buds or seed heads are grazed off, the plant either does not produce seed that year or must re-sprout from the base using stored resources from the roots. Grazing frequency, using the plant more than once, and intensity, using too much of the plant, during the critical growth period has a similar negative impact by depleting root resources (biomass) as the plant attempts to re-sprout from stored carbohydrates. If stored resources are exhausted or environmental factors occur such as drought, plant mortality is likely. Once deep-rooted perennials are lost at a site, the void is filled with early seral species such as Sandberg bluegrass or invasive species. Improper grazing practices may also increase the shrub cover that further reduces understory species.

Much of the monitoring on the PTMA has indicated a reduction in the more palatable saltbush species with an increase in the less palatable shrubs and invasive annuals. These more palatable species (winterfat, fourwing saltbush, spiny hopsage, and shadscale) are the first to be grazed before livestock move onto the less desirable, therefore if the desirable species are in short supply then it becomes severely used and ultimately kills the plant. Some research has found that the more palatable saltbush species are the most sensitive to browsing and have evolved less efficient defense mechanisms reducing their ability to cope with constant herbivory and competition successfully (Ciblis et al. 1998). Also, the time of year that saltbush species are grazed has been shown to have a higher influence on its floristic trajectories than grazing intensity. Research by Whisenant and Wagstaff (1991) suggest that grazing season was an important factor in regulating the response of saltbushes to grazing and identified March-April

grazing as an important cause of retrogression in salt desert shrub ecosystem. With no pastures or active livestock management on the allotment, livestock drift at will throughout the allotment year-long leading to grazing of certain species and in turn, negatively altering the plant community and other aspects of this ecosystem.

The 2008 Settlement Agreement set aside the 1990 Allotment Management Plan, which sought to implement a grazing management system through fencing and pastures. The agreement also imposed a temporary 25 percent decrease in the Holmgren's grazing preference until the 2013 grazing season. The Holmgrens reported a reduction in their cattle numbers to an average of 150 head year-long from 2008 to 2014. In the fall 2014, Holmgrens increased their cattle number to 350 head. To check livestock distribution and numbers, flights completed in February 2016 and July 2017 counted 480 head and 380 head, respectively, and found cattle generally concentrated near the water sources. A flight completed on October 2018 counted 554 head distributed throughout the allotment. These three flights documented livestock numbers that have been over the numbers that Holmgrens applied for and that BLM authorized from 2016 to 2018, and, with the billing information, indicate that over a period of several years cattle have been grazed year-round without numbers being reduced during the summer months.

Given the year-round use with no grazing management to allow for deferment or rest in the uplands or riparian areas in the PTMA, along with a coinciding reduction in palatable grass and shrub species indicated by the results of various data sources, it can be concluded that livestock grazing practices are a significant causal factor in this ecological decline. Turning wells on and off and water hauling has been used to distribute cattle, but the spring sources and uplands near those sources are showing signs of overuse from the constant grazing pressure. With year-long grazing many of the deep-rooted perennial grasses are being grazed during the critical growing season, reducing basal and canopy cover over time. Palatable shrubs are also suffering from constant grazing pressure and are exhibiting reduced vigor and heavy to severe utilization and a transition to a less desirable shrub and invasive annual communities has occurred. These adverse ecosystem changes are a result of the past and current livestock management practices within the PTMA, and the decline will most likely continue unless changes in grazing management are implemented.

Wild horses are also a contributing factor for not meeting this standard as they graze through the allotment at free will and have similar impacts to those of cattle. However, as documented in wild horse censuses throughout the past 10 years, wild horses are under the low range of the established Appropriate Management Level (AML) for the PTMA portion of the HMA. The highest number of wild horses reported has been approximately 225 horses.

#### Guidelines for Standard 1

Management was not in conformance with the following guidelines for Standard 1 on the PTMA. Management is in conformance with all other applicable guidelines.

Guideline 5 – “Treated areas will be rested from livestock grazing for two growing seasons or until seedlings are established or the vegetative response has achieved objective levels. Wild

horses and burros removed from Herd Management Areas will be restored after rehabilitation objectives have been met.”

Livestock management is not in conformance with Guideline 5 because treated areas such as riparian enclosures are not maintained and therefore are not rested from grazing.

Guideline 7 - “Appropriate livestock grazing treatments will be implemented to control the frequency, duration, and level of grazing use. Where livestock grazing is authorized, grazing systems will provide within any one grazing year one or more of the following treatments:

- a. Rest or deferment from livestock grazing on a specified area as appropriate to meet Standards.
- b. Systematic rotation of deferred use and/or rest from livestock grazing among two or more units.
- c. Continuous, season-long use where it has been demonstrated to be consistent with achieving identified Standards. Once season long use is determined to be unacceptable, an alternative system will be developed and implemented before termination of season long use, prior to the next grazing season.
- d. Excluding further livestock grazing within the affected use area through appropriate techniques when utilization objectives are reached.”

Livestock management is not in conformance with Guideline 7 because no grazing system has been implemented within the allotment. Cattle use has been documented above permitted levels with continuous, year-round grazing, and grazing during the critical growing season every year, which has not been consistent with achieving identified Standards.

Guideline 18 - “Implement aggressive action to reduce the invasion of exotic plant species into native plant communities. Control the spread of noxious weeds through various methods such as, grazing management, fire management and other vegetative management practices.”

Livestock management in the PTMA is not in conformance with Guideline 18 because no grazing system has been implemented within the allotment and no actions have been taken to reduce the invasion of exotic plant species into native plant communities. Increases in exotic plant species is directly impacting plant and animal species within the PTMA.

Guideline 21 - “Implement grazing management practices that sustain biological diversity across the landscape.”

Grazing management is not in conformance with Guideline 21 because the lack of a grazing system and the year round grazing at numbers above what is permitted for the allotment have been insufficient as grazing management practices to sustain biological diversity.

## **Standard 2. Riparian and Wetland Sites**

*Riparian/wetland systems are in properly functioning condition. As indicated by:*

- *Sinuosity, width/depth ratio and gradient are adequate to dissipate streamflow without excessive erosion or deposition;*



- *Riparian vegetation is adequate to dissipate high flow energy and protect banks from excessive erosion; and*
- *Plant species diversity is appropriate to riparian-wetland systems.*

Standard 2 is not being achieved, and current and historic livestock grazing practices are the significant causal factors with wild horses as a contributing factor. From August 2016 to October 2018, a total of 44 springs were visited by a BLM interdisciplinary team (IDT) to evaluate proper functioning condition (PFC) and available water for livestock and wildlife. Only 37 of the 44 springs could be assessed and rated for PFC; the remaining 7 springs were completely dry, and appeared to have very limited to no potential for recovery. These sites were determined to be dry as there was loss of hydrologic and vegetative riparian-wetland characteristics, and a site potential could not be determined to complete an assessment. These sites were primarily characterized as having no surface water or soil saturation; riparian vegetation was not present; and the sites appeared to be completely altered to an upland vegetation community, indicating a lack of potential for recovery.

Riparian and wetland assessment data collected showed that 97 percent of all the springs that were assessed for PFC were not meeting the standard. Of these assessments, 51 percent rated as non-functioning; 24 percent rated as functioning- at-risk (FAR), trend not apparent; 22 percent rated as FAR, downward trend; and 3 percent rated at PFC. Due to scheduling conflicts, 12 of the 37 total assessments did not have a hydrologist or soil scientist present at the time the original PFC assessment was conducted. The staff hydrologist and IDT reviewed the 12 PFC assessments with photos and concluded 10 of the assessment ratings were adequate and did not require a second field site visit, however two assessments (Rhodes Salt Marsh and Telephone Canyon Spring) did require a second field site visit to re-assess the PFC ratings; it was unclear through review of photos and discussion as to whether there was adequate vegetation, soil and site stability to support the original rating. The field site re-evaluation of PFC assessments on Rhodes Salt Marsh and Telephone Canyon Spring was conducted in October 2018 by the IDT with the staff hydrologist present. Based on observed bank shearing; increased hoof action, and soil compaction; increased bare ground; the presence of algae and discoloration of water, indicating poor water quality; and loss of the amount and age-class diversity of riparian vegetation, Rhodes Salt Marsh was changed from a PFC rating to a FAR with a downward trend. The IDT concluded Telephone Canyon Spring remained at a PFC rating.

Although some sites had other impacts, such as runoff and sedimentation, most of the sites throughout the allotment are being significantly affected by current livestock grazing and wild horse use in a variety of ways. Almost all of the sites had observed trampling and bank shearing, with about half of those exhibiting pedestals and hummocking from hoof action; poor water quality indicated by the presence of dead cattle and/or feces in and surrounding the water source, algae blooms, floating scum on the water's surface, bottom deposits, and discoloration to the water and soil surface; loss or replacement of functional and structural groups from extensive browsing and grazing; and encroachment of upland species and/or reduction of riparian vegetation from loss of soil saturation. Bank shearing and sloughing, and alternating areas of erosion and sediment deposition are all common, leading to channelization of spring systems and surface instability, making the systems susceptible to high-flow events and further degradation. Sedimentation from bank shearing and the presence of feces also contributes to poor water



quality; with livestock feces being the majority of (or only) fecal matter present at riparian and wetland sites. Wild horse fecal matter was present at some sites, however, when present it was not to the extent of that seen for livestock feces. PFC data has also indicated that most of the sites are experiencing year-round grazing pressure from primarily livestock and to a smaller extent wild horses, as well as loss of soil saturation allowing for encroachment of upland vegetation, further reducing the ability of these areas to recover to a functioning state with current land management practices.

Cattle and some wild horse use are continuing to reduce the hydrologic and vegetative recovery potential of water sources on the PTMA. Due to the number of cattle present on the allotment year-round, outlined in Standard 1, and unmanaged grazing use, the susceptibility of springs and riparian systems to degradation has increased significantly. Riparian impacts from livestock grazing are largely due to cattle grazing year long, in addition to numbers exceeding what is permitted during the summer months. Under current livestock management, the cattle are grazing year-round and disperse throughout the allotment in small groups dependent upon where topography and water sources distribute them. During the hot season livestock congregate at the riparian areas for extended periods of time, putting added pressure on riparian and spring systems within the allotment. Flights completed in February 2016, July 2017, and October 2018 showed cattle were concentrated around springs and riparian areas all year long, even during the colder month of February when typically cattle would distribute and graze in the lower upland-site areas. During November 1 to March 31, 900 cattle are authorized to graze within the PTMA under the existing permit, with a reduction to 150 cattle during April 1 to October 31. The flights conducted during July 2017 and October 2018 reported 380 cattle and 554 cattle, respectively, which is over the authorized number of cattle permitted during the summer months. Although only 150 cattle are authorized, BLM did bill the Holmgrens for 275 and 300 cattle in 2017 and 2018, respectively, even though those numbers were exceeded as indicated by the compliance flights. These months are typically characterized by snowmelt in spring and precipitation from summer convection storms where riparian-wetland systems are recharged hydrologically. These months are also key growing season for riparian-wetland plant species. Although the grazing permit limits summer grazing to 150 head in 2017 and 2018 BLM authorized and billed for 275 and 300 head respectively. However, compliance inspections in 2017 and 2018 show that Holmgrens' grazing use during the summer months still exceeded even those higher authorized levels. With over-authorized cattle numbers, and observations/results from PFC assessments, livestock are a significant causal factor to riparian-wetland systems not meeting Standard 2.

In addition to livestock use, wild horse use is also apparent throughout the allotment and appears to occur year round as well, increasing the pressure on some of the already degraded riparian and spring systems. The Pilot-Table Mountain HMA encompasses a large portion of the PTMA and surrounding areas, with an HMA AML of 249-415. Although wild horse use was observed at some sites, population surveys on the PTMA indicate that from 2008 through 2017, the wild horse population has been below the low-range of AML for the HMA. Wild horse numbers have consistently remained at or below AML, in contrast to the variable increase in number of livestock throughout the allotment over the past several years. Some riparian and wetland areas did show signs of wild horse use by the presence of horse feces and hoof prints, however they were not observed at all sites throughout the allotment or to the degree of observed livestock use,

suggesting that the wild horses are not a primary causal factor to site degradation. Although wild horse use and impacts were observed at some of the assessed riparian-wetland sites, wild horse numbers are below AML and therefore wild horse use is determined to only be a contributing factor to why Standard 2 is not being met.

Compliance inspections (flights) and PFC data indicate there has been heavy livestock and some wild horse use at springs. Based on combined Normalized Difference Vegetation Index (NDVI) and precipitation data, along with documented continuous year-round grazing, it is reasonable to conclude that the increasing number of livestock as well as wild horse use has contributed to increased grazing of riparian vegetation, reducing the ability for riparian plants to grow, reproduce, and revegetate these sensitive areas. As seen at the utilization cage installed at Upper Summit Spring, it appears that riparian-wetland systems with higher available water could have the potential for vegetative recovery if provided rest from grazing pressure. However, springs and riparian systems with little available water would most likely require more sustained rest from grazing for potential recovery, which may still not allow vegetation to return based on the lack of available water and soil site conditions.

Prior to 2004, NDVI data showed relatively normal increase in live vegetation (growth) with increasing precipitation at Middle Summit, Upper Summit and Warner Corral Springs, however after 2004 there has been a slow decline seen in NDVI live vegetation (growth) response to increased precipitation. After 2004, there has either been little increase or a decline in NDVI response (vegetative growth) seen at these springs, as compared to previous years. Therefore, these results in combination with the results from various data sources stated above, it is a reasonable conclusion that livestock use is a causal factor for the decline in functioning condition of wetland-riparian areas within the PTMA.

### Guidelines for Standard 2

Management was not in conformance with the following guidelines for Standard 2 on the PTMA. Management is in conformance with all other applicable guidelines.

Guideline 3 - "Management practices within allotments will maintain or promote stream channel morphology, appropriate soil organisms; adequate amounts of ground cover to support infiltration, maintain soil moisture storage, and stabilize soils; and the hydrologic cycle, nutrient cycle and energy flow."

Livestock management is not in conformance with Guideline 3 because Guideline 7 has not been met. Riparian and wetland areas are not allowed adequate time to recover from grazing pressure. Under current management, cattle and wild horses graze riparian areas year-round without adequate time for rest and recovery of stabilizing riparian vegetation. Destabilization of banks and compaction of soils, through increased trampling and hoof action, have reduced the water holding capacity and available water in these systems, leading to increased erosion, channelization and degradation. NDVI data has shown that there is an overall decline in the amount of ground cover and revegetation of springs and riparian areas, reducing the ability of these systems to support water infiltration, maintain soil moisture storage, and stabilize soils.

Guideline 7 – “Appropriate livestock grazing treatments will be implemented to control the frequency, duration, and level of grazing use. Where livestock grazing is authorized, grazing systems will provide within any one grazing year one or more of the following treatments:

- a. Rest or deferment from livestock grazing on a specified area as appropriate to meet Standards.
- b. Systematic rotation of deferred use and/or rest from livestock grazing among two or more units.
- c. Continuous, season-long use where it has been demonstrated to be consistent with achieving identified Standards. Once season long use is determined to be unacceptable, an alternative system will be developed and implemented before termination of season long use, prior to the next grazing season.
- d. Excluding further livestock grazing within the affected use area through appropriate techniques when utilization objectives are reached.”

Livestock management is not in conformance with Guideline 7 because Standard 2 has not been met. Spring and riparian systems are not allowed adequate time to rest for recovery of supporting vegetation to promote bank stabilization and allow for the protection of surfaces from erosion caused by runoff and overland flow. Livestock grazing treatments, as defined for this guideline, have not been implemented as appropriate to meet the standard, resulting in increased use on sensitive spring and riparian systems.

Guideline 16 – “The development of springs and seeps or other projects affecting water and associated resources shall be designed to maintain the associated riparian area and assure the attainment of Standards.”

Range improvement maintenance is the responsibility of the permittee. Range improvements (wells, troughs, pipeline, etc.) have not been maintained and are barely functioning or not functioning at all. Because range improvements are functional or are not being maintained, cattle and wild horses are utilizing the springs and riparian areas at a higher rate than if range improvements were functional and being maintained. This is causing shearing and sloughing of banks, loss of protective vegetation, and soil compaction that is leading to an increase in erosion and a decrease in the water holding capacity of the spring and riparian systems.

### **Standard 3. Water Quality**

*Water quality criteria in Nevada and California State Law shall be achieved or maintained. As indicated by:*

- *Chemical constituents do not exceed the water quality Standards;*
- *Physical constituents do not exceed the water quality Standards;*
- *Biological constituents do not exceed the water quality Standards; and*
- *The water quality of all water bodies, including ground water located on or influenced by BLM lands will meet or exceed the applicable Nevada and California water quality Standards. Water quality Standards for surface and ground waters include the designated beneficial uses, numeric criteria, and anti-degradation requirements set forth under State law, and as found in Section 303(c) of the Clean Water Act.*

Standard 3 is not being achieved, and historic livestock grazing practices are the causal factors with wild horses as a contributing factor. Riparian and wetland assessment data collected August 2016 through October 2018, showed that most springs and water sources within the PTMA were not meeting the standard for water quality. Upon site evaluations during PFC assessments, most spring systems had standing and stagnant surface water present, some of which had a slight odor emanating from the water. The waters had observed turbidity, where the water appeared cloudy and murky, some with a black or bluish-grey color; there was discoloration to the water and to the soil surface; bottom deposits and sludge was forming on the soil surface underneath the water, appearing to acquire a slimy film; deceased cattle, livestock and some horse fecal matter, and debris were sitting and floating within open water; algae blooms and thick algae mats were present; and there was a lack of aquatic insects present; all of which are indicators of poor water quality.

Most springs and riparian systems had observed bank shearing and sloughing, with increased loss of stabilizing riparian vegetation leading to areas of bare ground exposed throughout the springs and riparian systems. Areas where soil is exposed leads to increased soil loss and potential soil deposition into open or standing water, and increased turbidity. Some springs had observed areas where erosion is a factor in contributing sediment into open and standing water. Increased sediment, deceased livestock, and fecal matter in water will contribute to poor water quality by increasing the nutrient load into these systems, typically leading to increased nitrogen and phosphorous levels, as well as aiding in the formation of algae blooms, sludge and bottom deposits.

In comparison to measurements and photos taken during July 2018 and August 2012 at Upper Summit Spring (location 1), it appears overall water quality has declined. There was a visual increase in the amount of algae growth within the pond, as well as discoloration to the water and soil surface, sludge and bottom deposits, and turbidity that was not noted in the 2012 WRI. Photos also show an increase in the presence of primarily livestock fecal matter within the water and riparian area, most likely contributing to the increase in large, thick algae mats seen in July 2018. At location 1, the temperature has increased 14.6° F from 2012 to 2018; pH increased by 0.47; electrical conductivity (EC) increased 17 µS/cm; and total dissolved solids (TDS) increased 14 ppm. When 2012 water quality data is compared to 2018 measurements collected in the pond, there is an increase in all data fields. Temperature increased 23.6° F; pH increased 0.53; EC increased 398 µS/cm; and TDS increased 283 ppm. An increase in water temperature suggests dissolved oxygen (DO) has reduced, as evidenced by the significant growth of algae blooms that utilize DO to grow. The temperature increase is likely a result of a reduction in riparian vegetative cover which provides some shade to the pond, and areas where water appears to be shallower than previous years. Temperature increase is not presumed to be attributed to season, time of day or air temperature changes as sample collection in 2012 and 2018 were during the summer (one month apart), and both at midday. Flow rate has also decreased by 1 gpm, indicating there may be less water available to the spring system. A reduction in vegetative cover and water quantity could result from year-long grazing within the wetland area, leading to lower reproductive capability of wetland vegetation, and soil compaction which reduces infiltration and increases runoff. Overall, there has been a decrease in all measured fields of water quality from 2012 to 2018, therefore it is a reasonable conclusion that increased livestock

is a causal factor, and wild horse use is a contributing factor to the decline in water quality of wetland-riparian areas within the PTMA.

### Guidelines for Standard 3

Management was not in conformance with the following guidelines for Standard 3 on the PTMA. Management is in conformance with all other applicable guidelines.

Guideline 1 – Waters must be free from high temperature, biocides, organisms pathogenic to human beings, toxic, corrosive or other deleterious substances attributable to domestic or industrial waste or other controllable sources at levels or combinations to interfere with any beneficial use of the water. Compliance with the provisions of this subsection may be determined in accordance with methods of testing prescribed by the State. If used as an Indicator, survival of test organisms must not be significantly less in test water than in control water.

Management is not in conformance with Guideline 1 because waters had: measurable high temperatures in areas of standing and stagnant water; increases in other measured water quality indicators such as pH, EC and TDS; and increased amounts of deleterious substances that interfere with the beneficial use of the water, including fecal waste from livestock and wild horses, deceased cattle decomposing within standing water, algae blooms, and signs of turbidity at most water sources.

Guideline 2 – Grazing management practices should be planned and implemented to meet water quality provisions in either California State water law or Nevada Administrative Code Section 445A.120-121 as applicable.

Management is not in conformance with guideline 2 because there is noticeable fecal waste from livestock and deceased cattle within water sources as well as being in close proximity to open water. The presence of livestock fecal matter and decaying cattle remains has contributed to the formation of sludge and bottom deposits that are unsightly and putrescent. Floating debris/algae blooms are also present in most water sources attributed, in part, to livestock fecal waste.

Guideline 3 – Management practices within allotments will maintain or promote stream channel morphology, appropriate soil organisms; adequate amounts of ground cover to support infiltration, maintain soil moisture storage, and stabilize soils; and the hydrologic cycle, nutrient cycle and energy flow.

Management is not in conformance with Guideline 3 because many springs and riparian areas are not in balance with maintaining a functioning nutrient cycle, thus affecting water quality. Most water sources have: the presence of bare ground, leading to increased erosion and sedimentation, thus supplying excessive amounts of nutrients such as nitrogen and phosphorous, into the water; fecal matter and deceased cattle sitting in open water, also contributing to increased nutrients into the water.

## **Standard 4. Plant and Animal Habitat**

*Populations and communities of native plant species and habitats for native animal species are healthy, productive and diverse. As indicated by:*

- *Good representation of life forms and numbers of species;*
- *Good diversity of height, size, and distribution of plants;*
- *Number of wood stalks, seed stalks, and seed production adequate for stand maintenance; and*
- *Vegetative mosaic, vegetative corridors for wildlife, and minimal habitat fragmentation.*

The PTMA Allotment is not achieving Standard 4 and historic livestock grazing practices are the causal factors with the introduction of non-native plants and wild horses as the contributing factors. In order to achieve Standard 4, Standard 1, 2 and 3 must be also be achieved as healthy soils and riparian areas provide critical habitat for plants and wildlife.

The Nevada Department of Wildlife's (NDOW) general recommendation for quality wildlife habitat is a vigorous and diverse perennial plant community appropriate to the soil type for the site. As described under Standard 1, the vigor and diversity of plant communities are not as vigorous or diverse as expected. Standard 1 indicates that the vegetation community has transitioned from reference state to less desirable shrub and annual plant communities. This transition shows a reduction in understory perennial grasses and forbs and an increase in annual invasive species. Because upland habitat values have changed to a less desirable vegetation state, this allotment is failing to provide adequate habitat conditions for wildlife and therefore is not meeting Standard 4.

It was determined that current and historic livestock grazing management is the causal factor and the presence of invasive annual vegetation and wild horses are contributing factors for not achieving the standard. The reduction in deep-rooted perennial grasses and forbs, can be associated with livestock grazing year-round including during the critical growth period (May 1 to July 15). Perennial plants do not have the ability to complete their life cycle and therefore are not able to maintain or increase in composition.

The evaluation of data for Standard 2 identified riparian and wetland areas that are not properly functioning due to current livestock grazing practices and wild horse use. Ninety-seven percent of assessed riparian systems were rated as non-functioning and FAR. Only one spring out of the 37 assessed springs was at PFC. Springs that are non-functioning or FAR, with a downward trend or where the trend is not apparent, are lacking adequate riparian vegetation composition and height to provide the structure and function to support functioning wildlife habitat. Additionally, a majority of these springs were considered to have low water quality due to issues such as the presence of algae and livestock feces. If Standard 2 is not being achieved, riparian habitat conditions are not adequate to support viable aquatic and terrestrial species, and therefore this allotment is not achieving Standard 4.

AIM and LMF plots assessed within the PTMA show similar trends: declining occurrence or absence of perennial grass species and a transition to shrub and invasive grass or forb dominated states. Many of the key grasses and shrubs valuable to migratory birds for foraging, nesting, and protection from predators are decreasing across the PTMA. Standards 2 and 3, were not achieved



in the PTMA due to all but one spring being rated as non-functional or FAR. These riparian areas are essential habitat for bird species of the arid and semiarid west, including upland birds, waders, shorebirds, raptors, and passerine species.

AIM and LMF plot data evaluated current mule deer habitat conditions, including vegetation height for hiding cover on shrub-steppe rangeland. In reviewing the average sagebrush height at each of the AIM plots, three of the plots within mule deer habitat had average sagebrush heights that did not meet these benchmark values of preferred mule deer habitat characteristics. The quality of limited water sources are also a crucial component to wildlife habitat. Water sources evaluated for PFC across the PTMA showed that most water sources were either dry, non-functioning, or FAR. Therefore, further degradation of spring habitats that are not meeting the standards, will increase competition with livestock and wild horses for limited water sources or further limit mule deer populations.

AIM and LMF plot data that were assessed against preferred pronghorn habitat plant composition components including forbs, grasses, and shrubs and results showed that 91 percent of plots did not meet the benchmark ranges for forb composition; 86 percent of plots did not meet the benchmark ranges for grass composition; and 77 percent of plots did not meet the benchmark range for shrub composition. Perennial grasses are beginning to recede and shrubs are increasing and dominating on these sites. Additionally, freestanding water is very important for pronghorn during the hot summer months or during drought; however, a majority of the springs are either non-functioning or are FAR, increasing competition for water with livestock and wild horses within the PTMA.

#### Guidelines for Standard 4

Management was not in conformance with the following guidelines for Standard 4 on the PTMA. Management is in conformance with all other applicable guidelines.

Guideline 5. “Treated areas will be rested from livestock grazing for two growing seasons or until seedlings are established or the vegetative response has achieved objective levels. Wild horses and burros removed from Herd Management Areas will be restored after rehabilitation objectives have been met.”

Existing range improvements (riparian exclosures) within the PTMA that were established to restore vegetation and water resources are not currently being maintained and grazing has degraded these critical resources. The maintenance for most of these range improvements is the permittee’s responsibility.

Guideline 7 - “Appropriate livestock grazing treatments will be implemented to control the frequency, duration, and level of grazing use. Where livestock grazing is authorized, grazing systems will provide within any one grazing year one or more of the following treatments:

- a. Rest or deferment from livestock grazing on a specified area as appropriate to meet Standards.
- b. Systematic rotation of deferred use and/or rest from livestock grazing among two or more units.



- c. Continuous, season-long use where it has been demonstrated to be consistent with achieving identified Standards. Once season long use is determined to be unacceptable, an alternative system will be developed and implemented before termination of season long use, prior to the next grazing season.
- d. Excluding further livestock grazing within the affected use area through appropriate techniques when utilization objectives are reached.”

Livestock management is not in conformance with Guideline 7 because no cattle management strategy has been implemented within the allotment. Cattle use has been documented above permitted levels during the summer months with continuous, year-round grazing, including grazing during the critical growing season every year.

Guideline 14. “Recognizing State Water Law requirements, wildlife and wild horses/burros within their Herd Management Areas will have access to surface water they customarily use.”

The permittee is not in compliance with Guideline 14. According to NRS 533.367 “There is a requirement to ensure access of wildlife to water it customarily uses; waiver. Before a person may obtain a right to the use of water from a spring or water which has seeped to the surface of the ground, the person must ensure that wildlife which customarily uses the water will have access to it. The State Engineer may waive this requirement for domestic use of water.” Natural springs and developed range improvements are currently not functioning as needed for the use of wildlife that are accustomed to using them in the PTMA and therefore, an increased competition for water exists between wildlife, livestock, and wild horses.

Guideline 15. Design of water facilities will incorporate features to ensure safe access and escape for small animals and birds.

Water tanks, troughs and ponds maintained for livestock often double as critical resources for a broad array of wildlife. The permittee is not in conformance with guideline 15 as there are currently no functioning BLM-approved wildlife escape ramps in existing range improvements (i.e. troughs, tanks) within the PTMA. Existing older riparian exclosures are generally not constructed with wildlife friendly fencing or improvement designs. These range improvements are a hazard to wildlife within the PTMA by trapping and drowning wildlife as well as a collision hazard with fencing and other incompatible range designs.

Guideline 17. “Grazing management practices shall be planned and implemented to allow for habitat requirements of wildlife and wild horses and burros within Herd Management Areas.”

Livestock management in the PTMA is not in conformance with Guideline 17 because no grazing system has been implemented within the allotment. Livestock use has been documented above permitted levels during the summer months with continuous, year-round grazing, including grazing during the critical growing season every year. The appropriate management level (AML) for the entire Pilot Mountain HMA has been set at a range of 249-415 wild horses. Table 4.3.3 in the RHA shows the historic and present numbers of wild horses on the PTMA. Habitat requirements for many general plant and animal species are not being met due to incompatible grazing practices (year-round grazing).

Guideline 18 – “Implement aggressive action to reduce the invasion of exotic plant species into native plant communities. Control the spread of noxious weeds through various methods such as, grazing management, fire management and other vegetative management practices.”

Livestock management in the PTMA is not in conformance with Guideline 18 because no grazing system has been implemented within the allotment and no actions have been taken to reduce the invasion of exotic plant species into native plant communities. Increases in exotic plant species is directly impacting plant and animal species within the PTMA.

Guideline 21. “Implement grazing management practices that sustain biological diversity across the landscape.”

Grazing management is not in conformance with Guideline 21 because current grazing management is insufficient to sustain biological diversity. A substantial shift in the plant community composition as well as the decrease in critical, high quality water sources undermines the resistance and resilience of plant and wildlife species. Where there is potential for the highest diversity within the PTMA, these water sources and associated riparian areas are severely degraded by livestock and wild horses, decreasing the biological diversity and integrity of these critical systems.

### **Standard 5. Special Status Species Habitat**

*Habitat conditions meet the life cycle requirements of special status species. As indicated by:*

- *Habitat areas are large enough to support viable populations of special status species;*
- *Special status plant and animal numbers and ages appear to ensure stable populations;*
- *Good diversity of height, size, and distribution of plants;*
- *Number of wood stalks, seed stalks, and seed production adequate for stand maintenance; and*
- *Vegetative mosaic, vegetative corridors for wildlife, and minimal habitat fragmentation.*

The PTMA is not achieving Standard 5 and current and historic livestock grazing practices are the causal factors with the introduction of non-native plants and wild horses as the contributing factors. In order to achieve Standard 5, Standard 1, 2 and 3 must be also be achieved as healthy soils and riparian areas provide critical habitat for special status species.

Results from the assessment of Standard 1 indicate that the vegetation community in the PTMA has transitioned from a reference state to less desirable shrub and annual communities. This trend was revealed in the assessment of multiple data sources including IIRH assessment, LPI plant community composition, and the frequency and photo plot assessments. This transition shows a reduction in understory perennial grasses and forbs and an increase in annual invasive species, which in turn reduces effective nesting, escape, hiding, travel, and foraging cover values for all special status species associated with the dominant ecological communities within the allotment. Moreover, litter and canopy gap benchmarks were not achieved. Changes in litter composition as well as increases in canopy gaps can lead to increases in wind and water erosion negatively impacting hydrologic function which in turn negatively impacts biotic function.

It was determined that current and historic livestock grazing management are the causal factors and the presence of invasive annual vegetation and wild horses are contributing factors for not achieving the standard. The reduction in deep-rooted perennial grasses and forbs, can be associated with livestock grazing year-round during the critical growth period (late spring to early summer). In turn, native perennial plants do not have the ability to complete their life cycle and therefore are not able to maintain or increase in composition. Because upland habitat values have changed to less desirable vegetation states as well as indicate increases in litter and canopy gaps, this allotment is failing to provide adequate upland habitat conditions for special status species and therefore is not meeting standard 5.

The evaluation of data for Standards 2 and 3 identified riparian areas within the PTMA that are not properly functioning and many of the springs have low water quality, with current and historic livestock grazing practices as the causal factor. Over half of the springs evaluated were rated as non-functioning. Non-functioning riparian areas and springs that are FAR, with a downward trend or where the trend is not apparent, have large amounts of bare ground and are lacking adequate riparian vegetation composition to provide the structure and function to support a productive environment. Water quality is also an issue at most of the springs that were assessed. In general water sources are an important component of high quality wildlife habitat, however, in this desert ecosystem, they are even more critical to special status species such as desert bighorn sheep and bats that reside in the PTMA. If Standards 2 and 3 are not being achieved, riparian habitat conditions are not adequate to support viable aquatic and terrestrial special status species, and therefore this allotment is not achieving Standard 5.

The evaluation of Standard 5 also included the assessment of special status species habitat needs. For the Hiko White River springfish, population numbers are stable, however, a noticeable decline in the function of the Blue Link Spring was observed and is due to issues including increased bareground and a decline in vegetation. Water quality is also a noticeable concern that could negatively impact this species. For desert bighorn sheep, AIM plots within the PTMA passed the preferred average shrub height but most did not meet the percent foliar cover benchmark. This can lead to a reduction in effective foraging and escape capabilities. For bats, functioning riparian areas are a significant habitat component. Loss of vegetation, increases in large canopy gaps, reduced hydrologic function, and water quality issues can lead to loss of these sources which also are a source for feeding. In general, impacts of excessive livestock grazing are a threat to desert bighorn sheep and bats, and based on the evaluation of the data, this has been found to be the case within the PTMA. Moreover, Blue Link Spring is currently FAR (Hiko White River springfish habitat) and management is needed to protect this refugia population within the PTMA.

#### Guidelines for Standard 5

Management was not in conformance with the Guidelines 7, 8, 15, 17, 18, 20, 21 for standard 5 on the PTMA. Management is in conformance with all other applicable guidelines.

Guideline 7 - "Appropriate livestock grazing treatments will be implemented to control the frequency, duration, and level of grazing use. Where livestock grazing is authorized, grazing systems will provide within any one grazing year one or more of the following treatments:

- a. Rest or deferment from livestock grazing on a specified area as appropriate to meet Standards.
- b. Systematic rotation of deferred use and/or rest from livestock grazing among two or more units.
- c. Continuous, season-long use where it has been demonstrated to be consistent with achieving identified Standards. Once season long use is determined to be unacceptable, an alternative system will be developed and implemented before termination of season long use, prior to the next grazing season.
- d. Excluding further livestock grazing within the affected use area through appropriate techniques when utilization objectives are reached.”

Livestock management is not in conformance with Guideline 7 because no cattle management strategy has been implemented within the allotment. Cattle use has been reported above permitted levels during the summer months with continuous, year-round grazing, including grazing during the critical growing season every year.

Guideline 8 – “Conservation of Federal threatened or endangered, proposed, species of concern (formally Category One and Two) and other special status species is promoted by the restoration and maintenance of their habitats.”

Management is not in conformance with Guideline 8 because habitat for special status species is declining and thus not being maintained. Grazing pressures have led to a decline in perennial grasses and increase in shrubs and invasive species which are detrimental to special status species habitats. Riparian resources within the allotment are also under heavy grazing pressure undermining the viability of these critical wildlife resources.

Guideline 14. “Recognizing State Water Law requirements, wildlife and wild horses/burros within their Herd Management Areas will have access to surface water they customarily use.”

The permittee is not in compliance with Guideline 14. According to NRS 533.367 “There is a requirement to ensure access of wildlife to water it customarily uses; waiver. Before a person may obtain a right to the use of water from a spring or water which has seeped to the surface of the ground, the person must ensure that wildlife which customarily uses the water will have access to it. The State Engineer may waive this requirement for domestic use of water.” Natural springs and developed range improvements are currently not functioning as needed for the use of wildlife, including desert bighorn sheep and bats, that are accustomed to using them in the PTMA and increased competition exists between livestock and special status species.

Guideline 15 – “Design of water facilities will incorporate features to ensure safe access and escape for small animals and birds.”

Water tanks, troughs, and ponds maintained for livestock often double as critical resources for a broad array of wildlife. The permittee is not in conformance with Guideline 15 as there are currently no functioning BLM-approved wildlife escape ramps in existing range improvements (i.e. troughs, tanks) within the PTMA. Existing older spring enclosures are generally not constructed with wildlife friendly fencing or improvement designs. These range improvements

are a hazard to wildlife (including special status migratory birds and bats) within the PTMA by trapping and drowning wildlife as well as a collision hazard with fencing and other incompatible range designs.

Guideline 17 - “Grazing management practices shall be planned and implemented to allow for habitat requirements of wildlife and wild horses and burros within Herd Management Areas.”

Livestock management in the PTMA is not in conformance with Guideline 17 because no grazing system has been implemented within the allotment. Livestock use has been reported above permitted levels during the summer months with continuous, year-round grazing, including grazing during the critical growing season every year. The Appropriate Management Level (AML) for the entire Pilot Mountain HMA has been set at a range of 249-415 wild horses. Table 4.3.3 shows the historic and present numbers of wild horses on the PTMA. Habitat requirements for many special status species are not being met due to incompatible grazing practices (year-round grazing).

Guideline 18 – “Implement aggressive action to reduce the invasion of exotic plant species into native plant communities. Control the spread of noxious weeds through various methods such as, grazing management, fire management and other vegetative management practices.”

Livestock management in the PTMA is not in conformance with Guideline 18 because no grazing system has been implemented within the allotment and no actions have been taken to reduce the invasion of exotic plant species into native plant communities. Increase in exotic plant species is directly impacting special status plant and animal species within the PTMA.

The PTMA is currently not achieving Standards, which in turn impacts special status species habitats. With the current rangeland health assessment and determination document, the goal will be to promote healthy rangelands and achieve standards.

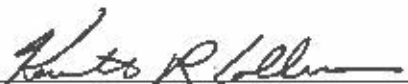
Guideline 21 - “Implement grazing management practices that sustain biological diversity across the landscape.”

Grazing management is not in conformance with Guideline 21 because current grazing management is insufficient to sustain biological diversity. A substantial shift in the plant community composition as well as the decrease in critical, high quality water sources undermines the resistance and resilience of special status species. Where there is potential for the highest diversity within the PTMA, these water sources and associated riparian areas are severely degraded by livestock and wild horses, decreasing the biological diversity and integrity of these critical systems.


## Authorized Officer's Signature

Pursuant to 43 CFR 4180.2(c), the authorized officer shall take appropriate action as soon as practicable but not later than the start of the next grazing year upon determining that existing grazing management practices or levels of grazing use on public lands managed by the BLM are significant factors in failing to achieve the standards and conform with the guidelines that are made effective under this section. Appropriate action means implementing actions that will result in significant progress toward fulfillment of the standards and significant progress toward conformance with the guidelines. Practices and activities subject to standards and guidelines include the development of grazing-related portions of activity plans, establishment of terms and conditions of permits, leases and other grazing authorizations, and range improvement activities such as vegetation manipulation, fence construction, and development of water.

A National Environmental Policy Act document with a reasonable range of alternatives necessary to address or correct identified resource concerns, is being prepared.



Kenneth R. Collum  
Field Manager  
Stillwater Field Office



Date



## **Appendices**

### ***Appendix 1. Guidelines for the Sierra-Front Northwestern Great Basin RAC***

1. Waters must be free from high temperature, biocides, organisms pathogenic to human beings, toxic, corrosive or other deleterious substances attributable to domestic or industrial waste or other controllable sources at levels or combinations to interfere with any beneficial use of the water. Compliance with the provisions of this subsection may be determined in accordance with methods of testing prescribed by the State. If used as an Indicator, survival of test organisms must not be significantly less in test water than in control water.
2. Grazing management practices should be planned and implemented to meet water quality provisions in either California State water law or Nevada Administrative Code Section 445A.120-121 as applicable.
3. Management practices within allotments will maintain or promote stream channel morphology, appropriate soil organisms; adequate amounts of ground cover to support infiltration, maintain soil moisture storage, and stabilize soils; and the hydrologic cycle, nutrient cycle and energy flow.
4. After a range fire or other natural catastrophic event, vegetation should be returned to the native species as rapidly as possible, to afford forage and habitat for native animals. If a nurse crop is needed to protect the land from erosion, all native nurse crops should be used first.
5. Treated areas will be rested from livestock grazing for two growing seasons or until seedlings are established or the vegetative response has achieved objective levels. Wild horse and burros removed from Herd Management Areas will be restored after rehabilitation objectives have been met.
6. Alternative solutions (e.g., reseeding, funding, labor, equipment use or rental) to facilitate fire rehabilitation may be included in cooperative agreements involving qualified groups and individuals who want to participate.
7. Appropriate livestock grazing treatments will be implemented to control the frequency, duration, and level of grazing use. Where livestock grazing is authorized, grazing systems will provide within any one grazing year one or more of the following treatments:
  - a. Rest or deferment from livestock grazing on a specified area as appropriate to meet Standards.
  - b. Systematic rotation of deferred use and/or rest from livestock grazing among two or more units.
  - c. Continuous, season-long use where it has been demonstrated to be consistent with achieving identified Standards. Once season long use is determined to be unacceptable, an alternative system will be developed and implemented before termination of season long use, prior to the next grazing season.
  - d. Excluding further livestock grazing within the affected use area through appropriate techniques when utilization objectives are reached.



8. Conservation of Federal threatened or endangered, proposed, species of concern (formally Category One and Two) and other special status species is promoted by the restoration and maintenance of their habitats.
9. Salt and/or supplements will be placed at least ¼ mile from live waters (springs/streams) and outside of associated riparian areas, permanent livestock watering facilities, wet or dry meadows, and aspen stands. Also salt should not be placed in known historic properties.
10. Night bedding of sheep will be located at least ¼ mile from live waters, streams, springs, seeps, associated riparian areas, wet or dry meadows, and aspen stands.
11. Encourage the use of prescribed and natural fires, meeting prescription objectives, for the restoration and maintenance of healthy rangelands.
12. Departure from traditional grazing management practices may be authorized by BLM to achieve Standards on a case by case experimental basis for rangeland restoration and rehabilitation.
13. The best available science and technology will be utilized in monitoring and assessing the condition of rangelands from the pasture to the BLM District level.
14. Recognizing State Water Law requirements, wildlife and wild horses/burros within their Herd Management Areas will have access to surface water they customarily use.
15. Design of water facilities will incorporate features to ensure safe access and escape for small animals and birds.
16. The development of springs and seeps or other projects affecting water and associated resources shall be designed to maintain the associated riparian area and assure the attainment of Standards.
17. Grazing management practices shall be planned and implemented to allow for habitat requirements of wildlife and wild horses and burros within Herd Management Areas.
18. Implement aggressive action to reduce the invasion of exotic plant species into native plant communities. Control the spread of noxious weeds through various methods such as, grazing management, fire management and other vegetative management practices.
19. Riparian structural developments (i.e., gabions, dams, etc.) designed to achieve improvement in riparian and wetland conditions shall only be implemented in conjunction with changes in existing grazing management practices, where grazing is a significant factor causing the riparian condition needing such attention. Where grazing is not a significant factor causing a riparian condition needing attention, structural developments designed to achieve improvement in riparian and wetland conditions may be implemented independent of changes in existing grazing management practices.
20. The utilization, monitoring and evaluation process will be used as a tool to promote healthy rangelands and achieve Standards.
21. Implement grazing management practices that sustain biological diversity across the landscape.

22. To prevent transmission of disease between domestic and bighorn sheep, adopt and implement the "Guidelines for Domestic Sheep Management in Bighorn Sheep Habitats" contained in Mountain Sheep Ecosystem Management Strategy in the 11 Western States and Alaska.

23. Rangeland management plans will consider listings of known historic properties and new eligible properties as they become known.

## **Literature Cited**

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