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# Elko District Office

# Management and Mitigation for Drought Impacted Rangelands

Environmental Assessment


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**Management and Mitigation for Drought Impacted Rangelands**

**Environmental Assessment**
**DOI-BLM-NV-E000-2013-0001-EA**

# I. INTRODUCTION/PURPOSE AND NEED FOR ACTION

## 1. Introduction

The Bureau of Land Management (BLM) Elko District Office (ED) has prepared this Environmental Assessment (EA) to address potential environmental consequences associated with livestock and wild horse management during drought. The ED manages approximately 7.4 million acres of public land within Elko, Eureka, and Lander Counties in Nevada, which is administered in two field offices, the Tuscarora Field Office (TFO) and the Wells Field Office (WFO) (see Map 1). The ED also administers twenty five grazing allotments for the Winnemucca, Battle Mountain, Ely, Salt Lake, Boise, Vale, and Twin Falls BLM Districts.

This EA analyzes a range of management alternatives that may be implemented to mitigate the effects of drought and to address emergency situations. Emergency situations include but are not limited to wild horse, livestock, and wildlife starvation, water depravation and death, major soil erosion events, rangeland degradation, adverse impacts to cultural resources, and other associated negative impacts.

### 1.1 Purpose for this Analysis

The purpose of the EA is to analyze the effects drought in order to alleviate the impacts of authorized uses and activities on natural and cultural resources that are at risk of being adversely affected by drought.

Drought has been defined by the Society of Range Management as, "(1) A prolonged chronic shortage of water, as compared to the norm, often associated with high temperatures and winds during spring, summer, and fall. (2) A period without precipitation during which the soil water content is reduced to such an extent that plants suffer from lack of water." (Bedell 1998).

The effects of drought are often far reaching, impacting the environment and economy of an area. This EA will focus primarily on the environmental impacts of drought. Specific impacts depend on drought severity but often include:

- Increased number and severity of fires
- Lack of forage and drinking water
- Decreased vigor and production of plants
- Damage to plant species
- Increased wind and water erosion of soils

- Reduction and degradation of fish and wildlife habitat
- Increased mortality of wildlife, wild horses and livestock
- Increased erosion of soils containing eligible cultural resources
- Increased invasion of invasive and noxious weeds
- Increased erosion of soils containing paleontological resources

Drought is a recurring, unpredictable, environmental feature which must be included in planning (Thurow and Taylor 1999). The degree to which drought impairs rangelands depends on the intensity, frequency and timing of grazing (Howery 1999).

## 1.2 Need for Action

Several areas across the Elko District have already been impacted by drought in combination with livestock and/or wild horse overuse. Photograph 1 was submitted to the BLM by a hunter. It was taken during the 2012 grazing season after livestock were removed. It shows how easily an area can become over-utilized during drought by keeping stocking levels the same as during normal precipitation years. The area shown in Photograph 1 now has very limited resource value; for example, there is no forage or habitat for most wildlife species, making the area virtually unusable. The area in Photograph 1 is also now more vulnerable to cheatgrass (*Bromus tectorum*) invasion compared to if the area was grazed in a more sustainable manner.

Photograph 1. An area within the ED that has been over-utilized by livestock in combination with drought conditions.

Drought mitigation of livestock and wild horse overuse on rangelands has never been addressed by the ED. Therefore, the need for action is to ensure that livestock and wild horse management during drought does not adversely impact rangelands and compromise the ability of the land administered by the ED to meet the fundamentals of rangeland health as mandated by the Land Use Plans and Policies brought forward in Sections 1.3 and 1.4 of this document. The following three goals have been established by the ED to allow for the prompt mitigation and management of drought impacted rangelands:

1. Provide for the early detection of and rapid response to drought conditions.
2. Promptly identify and prevent further degradation of affected resources on lands affected by drought administered by the ED.
3. Provide for the rapid implementation of Drought Response Actions in order to alleviate the impacts of authorized uses and activities on natural resources that are at risk of being adversely affected by drought.

## 1.3 Conformance with Land Use Plans and Other Plans

The Proposed Action and Alternatives described below are in conformance with the following plans:

- Wells RMP ROD, 1985
- Wells RPS, 1985
- Elko Resource Management Plan Record of Decision, 1987
- Elko RMP Rangeland Program Summary, 1987
- Wells RMP Wild Horse Amendment, 1992
- Northeastern Great Basin Resource Advisory Council Standards and Guidelines, 1997, as amended
- Elko RMP Wild Horse Amendment, 2004

## 1.4 Relationship to Statutes, Regulations, Policy or other Environmental Analysis

The Proposed Action and Alternatives would be in conformance with the following Federal and BLM regulations:

- Migratory Bird Act of 1918
- Taylor Grazing Act of 1934
- Wilderness Act of 1964
- National Historic Preservation Act of 1966, as Amended (NHPA)
- National Environmental Policy Act of 1969 (NEPA)
- Wild Free-Roaming Horses and Burros Act of 1971 (WFRHBA)
- Endangered Species Act of 1973
- Federal Land Policy and Management Act of 1976 (FLPMA)
- Public Rangelands Improvement Act of 1978
- 43 CFR §4100 and §4700

## 1.5 Additional Guidance

Guidance on the development and implementation of responsive management actions when it is anticipated or evident that temporary measures are necessary to protect public land resources due to the impacts of drought are found in the BLM Nevada Handbook NV H-1730-1 Resource Management during Drought.

# II. DESCRIPTION OF THE PROPOSED ACTION & ALTERNATIVES

## 2.0 Proposed Action

The Proposed Action is to implement, both separately or in combination, Drought Response Actions (DRAs) identified below and described in the Drought Monitoring and Mitigation Plan (DMMP) (Attachment 1) in degraded areas (or potentially degraded areas) during drought. The DMMP would be used to facilitate the early detection and monitoring of drought conditions.

DRAs are designed to reduce the impacts of authorized uses and activities on natural resources that are at risk of being adversely affected by drought. The early detection and prompt response to drought is intended to prevent further degradation to affected resources within the ED. DRAs would be implemented through the issuance of full force and effect decisions pursuant to 43 CFR §4110.3-3(b), after consultation with, or a reasonable attempt to consult with, affected permittees or lessees, the interested public, and the state having lands or responsible for managing resources within the area. Decisions would be implemented within all appropriate laws, regulations and policies.

Full force and effect decisions would be supported by site-specific monitoring data collected as outlined in the DMMP and recorded on the attached Drought Monitoring Summary Form. Justification for wild horse and/or burro drought gathers would be thoroughly documented within a site-specific drought gather plan (see Attachment 2 for a sample Drought Gather Plan Outline). If it is determined that wild horse and/or burro removal from a Herd Management Area(s) (HMA) is warranted, pursuant to 43 CFR §4710.5, areas of allotment(s) that overlap with the HMA(s) would be temporarily closed to livestock grazing.

The implementation of DRAs would be activated by the drought indicators and drought response triggers identified below and described in Attachment 2:

### A. Drought Indicators

Drought indicators are observations signaling the start or continuation of a drought. The following discussion identifies the indicators that the ED would use to determine the onset and/or continuation of a drought.

A two-part drought definition was provided within the purpose and need for the Proposed Action section of this document (page 1). The first part of the definition describes drought as, "a prolonged chronic shortage of water, as compared to the norm, often associated with high temperatures and winds during spring, summer, and fall." Tracking weather conditions provides an early indication of drought. The U.S. Drought Monitor (http://droughtmonitor.unl.edu/) would be consulted to determine if weather conditions indicate drought and to identify affected areas. Site visits to allotments and Herd Management Areas (HMAs) within drought-afflicted areas would be used to evaluate the current condition of water resources and determine if water shortages exist.

Part two of the drought definition describes drought as, "A period without precipitation during which the soil water content is reduced to such an extent that plants suffer from lack of water". The U.S. Drought Monitor and the Vegetation Drought Response Index (VegDRI) (http://vegdri.unl.edu/) would be consulted to determine drought afflicted areas and vegetation condition as it pertains to drought stress. Site visits to allotments and HMAs within drought-afflicted areas would be used to evaluate the current condition and production of key forage species as described in the associated Ecological Site Descriptions (ESDs) for the area. In instances where key species referenced in the ESD are absent, key species would be identified using site-specific and/or past monitoring data. Evaluations would be used to determine if plants are exhibiting signs of drought stress and if forage shortages exist. Signs of drought stress include reduced shoot and leaf growth, reduction in seed head development, induced senescence (i.e., premature aging) and plant death.

**B. Drought Response Triggers**

Drought Response Triggers (Triggers) are thresholds associated with forage and water resources that indicate the need for site-specific drought response. Triggers would be used separately or in combination to activate DRAs. These Triggers have been placed into two categories: water and forage. The following is a list of the triggers for both categories, a more detailed description of the triggers is included in Attachment 1:

**1. Water**

This Trigger is based on the presence or absence of available water. Field visits would be conducted in drought-afflicted areas to determine if there are adequate water sources (natural and/or developed) to provide for the management and/or distribution of wildlife, wild horses and burros and livestock while maintaining riparian area functionality or the health of upland areas surrounding developed water sources (e.g.,, wells, pipelines, guzzlers, etc.).

Water would be classified as "available" or "unavailable" within areas affected by drought. "Available" is defined as an amount of water sufficient to provide a safe and reliable source of drinking water for wildlife, wild horses and burros and livestock while maintaining resource values associated with the riparian areas and/or areas surrounding the water source. Resource values associated with riparian areas include riparian vegetation, bank stability, wildlife habitat and water

quality. Resource values associated with upland areas surrounding water sources (e.g., wells, pipelines, etc.) include vegetation, nutrient cycling, soil site stability, hydrologic function and wildlife habitat.

"Unavailable" is defined as an absence of water or an amount of water that is insufficient to provide a safe and reliable source of drinking water for wildlife, wild horses and burros and livestock while maintaining resource values.

Field observations and professional judgment would be used to determine availability. Criteria such as reduced quantity, noticeable accumulation of animal waste, and unsafe conditions due to mud or severely eroded banks would be used.

**2. Forage**

To survive, perennial plants must accumulate both above ground (shoot growth) and below ground (root growth) biomass through the process of photosynthesis, transpiration, and respiration (Howery 1999). A lack of available soil moisture usually reduces the length of the growing season. A shorter growing season directly impacts above and below ground production and ultimately forage quantity. The degree to which drought impairs the range's potential for future forage production depends on the intensity, frequency, and timing of grazing (Howery 1999). Drought afflicted rangelands are unable to support pre-drought stocking levels. Overutilization during drought can negatively impact plant health and impair the ability (in the future) to meet, or make significant progress towards fulfillment of, the standards and guidelines of rangeland health.

The following drought response triggers associated with forage are intended to ensuring proper utilization levels of upland and riparian key species, as described in the ESD associated with the site. In instances where key species referenced in the ESD are absent, key species would be identified using site-specific and/or past monitoring data). Appropriate utilization levels provide adequate residual matter for the maintenance of plant health especially during a drought. The triggers have been organized into three categories; utilization and stubble height triggers by vegetation community, livestock distribution, and plant production/drought stress.

**<u>Utilization and Stubble Height</u>**

Utilization triggers were developed using the utilization guidelines proved by Holechek et al. (1988). The guidelines provide a range of use associated with rangeland condition. For the purpose of grazing management during times of drought, the BLM has chosen to limit utilization of key species to the lower utilization level. The lower utilization levels are consistent with those suggested for ranges in poor condition. These were chosen due to the reduced vigor and production of range forage plants resulting from drought. The following utilization levels would function as drought response triggers within each respective vegetation community and would trigger the implementation of DRAs. Stubble height triggers were developed to ensure adequate residual matter remains to

maintain riparian plant communities. Generally, stubble heights of 4 inches provide effective stream bank protection, prevent sedimentation, and maintain or improve plant communities (USDI 1999-2001). Key species would be identified using the ESD for a specific area. In instances where key species referenced in the ESD are absent key species would be identified using site-specific and/or past monitoring data.

- **Salt Desert Shrub**
    - 25 % utilization of key species.
- **Sagebrush Grassland**
    - 30% utilization of key species.
- **Pinyon-Juniper Woodland**
    - 30% utilization of key species.
- **Mountain Shrub**
    - 30% Utilization of key species.
- **Riparian Zones**
    - Four inch stubble height of key riparian species.

**Livestock/Wild Horse Distribution**

A pattern of use or distribution of livestock and/or wild horses resulting in a concentration of animals, which contributes to grazing in excess of the aforementioned utilization levels and/or stubble heights, would trigger DRAs to improve animal distribution and prevent further rangeland degradation.

**Plant Production and/or Drought Stress**

The following plant production and/or drought stress indicators would trigger DRAs:

- Drought induced senescence or reduced production of key upland and/or riparian species which results in an insufficient quantity of forage for wildlife, wild horses and livestock;
- Drought induced senescence of key riparian herbaceous species which results in insufficient plant growth/height to provide for stubble heights equal to or greater than four inches within riparian areas; and
- Noticeable signs of drought stress which impede the ability of key species to complete their life cycle (e.g., drought induced senescence, reduced seed head development, etc.).

### C. Drought Response Actions

The following DRAs would be implemented either separately or in combination upon reaching the criteria described under the Drought Response Triggers section. A more in depth discussion of each action can be found in Attachment 1. DRAs have been placed in two categories: livestock and wild horses and burros. These have been separated due to the differing nature and capabilities for management of livestock and wild horses and burros. Drought response actions would be selected

based on site-specific information. In areas where livestock and wild horse use overlaps, both livestock and wild horse and burro DRAs would be implemented concurrently.

**1. Livestock**

DRAs would be selected on a case-by-case basis using site-specific monitoring data collected as outlined in the DMMP. The following process would be used for DRA selection:

> *Step 1: Conduct field visits to "drought-afflicted" areas to assess drought response triggers.* Field visits would assess water and forage availability at predetermined sites using the monitoring methods as outlined in the DMMP. All data would be recorded on the Drought Monitoring Summary Form (Appendix A of the DMMP).
>
> *Step 2: Pursuant to 43 CFR §4110.3-3(b), consult with, or make a reasonable attempt to consult with, affected permittees or lessees to determine appropriate DRA(s) to alleviate drought impacts.* DRAs would be selected using site-specific monitoring data and chosen on case-by-case basis suited to site-specific conditions. More than one DRA could be selected depending on conditions. Efforts should be made to select DRAs that could be implemented in a subsequent fashion to respond to changes in drought conditions.
>
> *Step 3: Implement DRAs in selected order.* Order would be determined based on site-specific monitoring data.
>
> *Step 4: Resort to full closure of allotment.* The ED would resort to full closure of an allotment if: 1) a permittee or lessee fails to cooperate regarding drought measures after "a reasonable attempt" (43 CFR 4.110.3-3(b)) has been made to consult with that permittee or lessee, 2) all feasible livestock DRAs have been exhausted and immediate protection of resources on the allotment is required, or 3) the allotment(s) or portions of allotment(s) overlap with an HMA(s) in which it has been determined that wild horse and/or burro removal is warranted.

The following is a list of DRAs that would be used either separately or in combination to reduce the impacts of authorized livestock grazing on natural resources during drought.

**<u>Temporary Partial Closure of an Allotment(s)</u>**

During drought, the forage resources and overall condition of affected allotments would be assessed. Portions of an allotment(s) that lack forage and/or water, are in poor condition, or are identified as critical areas to provide forage and/or water for wildlife and/or wild horses could be closed to livestock grazing for the duration of the drought (43 CFR §4710.5). Partial closures would be accomplished by employing a combination of the other DRAs such as temporary fencing, temporary water hauls, active livestock herding, strategic supplementation etc. Closures would be in effect for

the duration of the drought plus one growing season following the cessation of the drought to allow for recovery. The U.S. Drought Monitor and Vegetation Drought Response Index would be consulted to determine the cessation of the drought. Written notice signed by the authorized officer would be used to reopen areas to grazing.

**Temporary Complete Closure of an Allotment(s)**

If it is determined that drought conditions (i.e., lack of forage and/or water, poor condition, and/or critical areas that provide forage and/or water for wildlife and/or wild horses) exist over the entire allotment and all other livestock DRA options have been exhausted or deemed impractical, complete closure could occur (43 CFR §4710.5). Closure would be in effect for the duration of the drought plus one growing season following the cessation of the drought to allow for recovery. The U.S. Drought Monitor and Vegetation Drought Response Index would be consulted to determine the cessation of the drought. Written notice signed by the authorized officer would be used to reopen areas to livestock grazing.

**Temporary Partial Reduction in Animal Unit Months (AUMs)**

During drought, a reduction in livestock numbers could be necessary to ensure that adequate forage is available to meet wildlife, wild horses and livestock requirements. Reduced livestock grazing would prevent overutilization of key forage species and prevent further adverse impacts to rangeland resources that are already affected by drought.

**Temporary Change in Season of Use**

A change in the season of use could reduce livestock grazing related impacts during drought. The following modifications could be used either separately or in combination:
Changing the season of use to a time following the critical growth period (actual dates would vary with vegetation community type) of key forage species (ESDs correlated to specific locations would be consulted to determine key species. In instances where key species referenced in the ESD are absent, key species would be identified using site-specific and/or past monitoring data).

- This would allow plants to utilize available soil moisture and any additional moisture received during the critical growth period. Plants would be able to complete their life cycle thus allowing for seed dissemination and root growth and replacement. Plants could then be grazed after sufficient growth or dormancy occurs. Repeated grazing during the critical growth period does not allow plants to regrow before soil moisture is depleted; therefore, plants may not have adequate resource reserves to survive winter dormancy.
- Defer livestock grazing in riparian areas during the hot season (approximately July 1 through September 30) to avoid the degradation of riparian areas during drought.

**Temporary Reduced Grazing Duration**

Moving livestock across an allotment or pasture more quickly would increase the amount of rest individual plants are given. Reducing grazing duration would increase a plant's ability to utilize available resources to regrow foliage, store carbohydrates reserves, and maintain vigor. Plants are unable to regrow if grazed repeatedly especially during times of limited soil moisture. Periods of deferment should be varied according to the rate of growth. Range plants initiate growth from meristems (i.e., growing points), once meristems are removed, plants must grow from basal buds which requires much more of the plants energy than regrowth from meristems. Plants that are continually forced to regrow from buds may reduce or even eliminate the production of new buds, which may reduce production in subsequent years (Howery 1999). During stress periods such as drought, growth slows and plants should be rested longer (Hanselka and White 1986). Reducing the duration of grazing would provide plants more time to recover after grazing pressure is removed.

**Temporary Change in Livestock Management Practices**

The concentrated use of preferred areas in the landscape results in uneven distribution of animal impact, and periods of below average precipitation compound the effects of herbivory, providing periods of accelerated deterioration (Teague et al. 2004). Modification of grazing practices would improve livestock distribution. The following methods/tools could be used either separately or in combination to improve livestock distribution:

- Strategic placement of salt and/or mineral supplements away from water and in areas that were un-grazed or lightly grazed in previous years.
- Increased herding of livestock to previously un-grazed or lightly grazed areas.
- Concentrating livestock into a single herd in order to increase control and encourage uniform grazing. This would force livestock to utilize more of the less-preferred plants while limiting repetitive or selective grazing of preferred forage species. Herd sizes would be dependent on water availability; therefore, adequate water sources must be present to provide water to wildlife, wild horses and livestock while maintaining riparian functionality. Use would not exceed utilization and stubble heights identified in the Drought Response Triggers section of this document.

**Temporary fencing of critical areas**

During drought, temporary electric fencing could be used to exclude livestock from critical areas such as riparian areas, meadows, aspen stands, critical wildlife habitat etc. Temporary electric fences may also be used to confine livestock to areas dominated by invasive annual species. Temporary electric fences would be constructed using 3/8 inch diameter fiberglass fence posts and two strands of electric fence polywire. Posts would be spaced 16 feet apart. The height of the fence would be 30 inches (Hot wire) with the bottom wire being 20 inches (ground wire) above the ground. Signs warning of electric fence would be firmly attached to the fence at common crossing points and at ¼ mile intervals along the fence. All temporary fencing would be required to be removed once the drought is over or sooner as indicated by written notice signed by the authorized officer.

**Temporary targeted grazing of invasive annual dominated communities**

Targeted grazing of communities dominated by invasive annuals (e.g., cheatgrass) could be used to alleviate grazing pressure on other areas that are dominated by native species. On these sites, prescribed livestock grazing could be applied to achieve maximum damage to annual grasses with little concern for non-target plants (Peischel and Henry 2006). Grazing would be focused during the spring and/or fall months to take advantage of early spring and fall growth of the annuals. Livestock would be removed upon reaching a two-inch average stubble height in order to provide some protection from wind and water erosion. Animals would be confined to these areas using temporary electric fence or herding. If an existing water source is not available, the use of temporary water hauls or temporary above ground pipelines may be used. Invasive annual dominated communities would be identified through site-specific monitoring.

**Temporary change in kind or class of livestock**

According to Volesky et al. (1980), yearling cattle utilize pastures more uniformly over variable terrain than cows with calves or mixed classes. Cows and calves utilize forages nearest the water much more heavily than do yearlings. Therefore, selecting yearlings would improve grazing distribution and limit impacts to riparian areas.

Choosing a different kind of livestock could also affect how a range can be utilized. With their large mouths, cattle and horses may not select annual grasses as readily as sheep or goats because livestock prefer plants they can eat quickly and efficiently. Sheep or goats can get a full bite of annual grasses more easily than cattle or horses, especially when annual grass plants are small (Peischel and Henry 2006). Additionally, sheep and goats can be herded more effectively which allows for greater control and provides an opportunity to limit impacts to critical areas such as riparian areas, meadows, aspen stands, critical wildlife habitat, etc. Temporary changes from cattle to sheep would not be authorized in areas of known bighorn sheep habitat or areas within nine miles of know bighorn sheep habitat.

**Temporary water hauls**

Temporary water hauls could be used in circumstances where: 1) adequate forage exists to support wild horses and burros and the existing permitted number of livestock, but water resources are insufficient due to drought or 2) to improve livestock distribution in areas located long distances from existing water sources, which have received limited use by livestock in previous years or 3) to reduce or eliminate impacts to riparian and wetland areas. Additionally, the BLM could authorize the use of temporary water hauls to augment existing water sources. Whenever possible, water haul sites would be located in areas dominated by invasive annual species in order to provide for targeted grazing of those species while providing rest of native perennial vegetation. Water haul sites would consist of livestock water troughs of various size and material, placed on public lands and filled as needed with portable water tenders or water trucks. Previously disturbed sites would be selected when available. All areas would be surveyed for cultural resources prior to implementation and bird

ramps would be installed in water troughs to protect avian species. All temporary water would be required to be removed once the drought is over or sooner as indicated by written notice signed by the authorized officer.

**Temporary above ground pipelines**

Temporary above ground pipelines could be implemented in circumstances where: 1) adequate forage exists to support wild horses and burros and the existing permitted number of livestock, but water resources are insufficient due to drought or 2) to improve livestock distribution in areas located long distances from existing water sources, which have received limited use by livestock in previous years or 3) to reduce or eliminate impacts to riparian and wetland areas. Whenever possible, temporary pipelines would be located in areas dominated by invasive annual species in order to provide for targeted grazing of those species while providing rest of native perennial vegetation. Temporary pipelines would consist of an above ground pipeline, which would transport water from the end point of an existing pipeline to livestock water troughs of various size and material, placed on public lands and fitted with a float valve to prevent overflow and saturated soil conditions around the trough(s). Saturated soils are at a greater risk for compaction or erosion. Any temporary above ground pipelines would require approval from the Nevada Division of Water Resources. Previously disturbed sites would be selected when available. All areas would be surveyed for cultural resources prior to implementation and no new ground disturbance associate with the installation of a temporary pipeline(s) would be authorized. Bird ramps would be installed in water troughs to protect avian species. All temporary above ground pipelines would be required to be removed once the drought is over or sooner as indicated by written notice signed by the authorized officer.

**2. Wild Horses**

The following is a list of DRAs that would be used either separately or in combination to ensure the welfare of wild horses on public lands administered by the BLM. Wild horses could be at risk of dehydration or starvation due to drought conditions, special considerations are needed for the management of wild horses during drought. These DRAs would help reduce the impacts of wild horses and burros on natural resources adversely affected by drought while ensuring their welfare. DRAs would be selected on a case-by-case basis using site-specific monitoring data collected as outlined in the DMMP. The following process would be used for DRA selection:

> *Step 1: Conduct field visits to "drought-afflicted" areas to assess drought response triggers.* Field visits would assess water and forage availability at predetermined sites using the monitoring methods as outlined in the DMMP. All data would be recorded on the Drought Monitoring Summary Form (Appendix A of the DMMP).
>
> *Step 2: DRAs would be selected based on the evaluation of site-specific monitoring data, best available HMA specific population data and known animal behavior and distribution patterns.* DRAs would be chosen on case-by-case basis suited to site-specific conditions. More than one DRA could be selected depending on conditions. Efforts should be made to

select DRAs that could be implemented in a subsequent fashion to respond to changes in drought conditions (e.g., temporary water haul followed by water trapping, if needed).

*Step 3: Implement DRA(s) in selected order.* If a drought gather is included as a DRA, interested public would be notified with drought gather being implemented through a full force and effect decision with an attached site-specific gather plan. Site-specific data related to the drought gather would be provided in the Decision and Drought Gather Plan documents.

**Temporary Water Hauls**

In circumstances where it is determined that adequate forage exists to maintain the existing population of wild horses and/or burros, but water resources are deficient due to drought conditions, the BLM could employ temporary water hauls to augment existing water sources. Water haul sites would consist of livestock water troughs of various size and material, placed on public lands and filled as needed with portable water tenders or water trucks. Water haul locations would be determined based on animal population density and distribution, and placed in previously disturbed areas such as gravel pits or roadsides. Troughs could be placed at the existing water sources that are either dry or inadequate to maintain healthy animals. The use of water hauls would continue until the existing waters are able to support the population or a drought gather occurs. All areas would be surveyed for cultural resources prior to implementation and bird ramps would be installed in water troughs to protect avian species.

**Wild horse and burro removal**

A drought gather would be employed as a last resort and would only occur if the following conditions apply:

1) It is determined that drought conditions have resulted in insufficient amounts of forage and/or water to support the existing population of wild horses within a HMA.
2) All other feasible DRAs have been exhausted and removal is needed for immediate protection of wild horses and burros and rangeland resources.

Pursuant to 43 CFR §4710.5, areas of allotment(s) that overlap with the HMA(s) would be temporarily closed to livestock grazing if necessary to protect the health of wild horses or their habitat. The livestock grazing closure would be in effect for the duration of the drought plus one growing season following the cessation of the drought. If a livestock grazing closure is implemented, wild horses would be removed from the range at varying levels (see "removal numbers" below) in order to prevent suffering and death due to drought conditions on the range and prevent further degradation of resources affected by drought. Gathers would be completed by removing varying numbers and using the following methods, either separate or in combination (refer to attachment 2 for a more detailed discussion):

**a. Bait or water trapping**

When feasible and appropriate, bait and/or water trapping would be the primary gather technique used to capture wild horses or burros that need to be removed from the range in response to drought. Bait or water trapping would be selected unless the following circumstances apply:

- the number of water sources results in horses/burros being too dispersed;
- The location of water sources are too remote and restrict access for trap set up and animal removal;
- The urgency of animal removal requires immediate action and utilization of alternate removal methods; or
- The number of animals needing to be removed is in excess of bait or water trapping capabilities. Water or bait trapping capabilities would vary depending on site-specific conditions.

Bait and water trapping involves the construction of small pens, and baiting animals into the pens with the use of hay, water or other supplements. Specialized one-way gates are often used to prevent the animals from leaving the trap once inside. Bait and water trapping methods are usually only effective in areas where water or forage is absent, resulting in high motivation for animals to enter the trap to access them. These situations may occur during drought emergencies or severe winters. Typically, small groups of animals enter the traps at a time. This requires many days too many weeks to remove a substantial number of animals from an area. This option could be employed where small numbers of animals need to be removed, where it is deemed that the geography and resources of the HMA would ensure success, or in combination with helicopter gathers.

**b. Helicopter capture**

The helicopter-drive trapping method would be employed when bait or water trapping is not effective, feasible or appropriate. The use of roping from horseback could also be used when necessary. Multiple gather sites (traps) could be used to gather wild horses from within and/or outside the HMA boundaries.

**c. Removal numbers**

Removal numbers would be based on the assessment of forage, climate, water, rangeland health and the use of the range by wild horses or burros. Removal numbers would be identified to ensure that healthy animals remain on the range and have adequate resources for survival, and that rangeland degradation is minimized in order to allow for post drought recovery. The long term health and welfare of the wild horses and burros would be the overreaching goal of a drought gather. The removal numbers would be determined on an HMA by HMA basis. A summary of the data, and rationale for the removal numbers would be documented in the Decision and attached gather plan issued prior to a gather commencing.

**1. Removal of sufficient animals to achieve the high AML**
This situation would apply when the population is in excess of the high AML, and assessment of existing forage and water resources warrants limited removal of wild horses and/or burros to the high AML. This would also be implemented to restrict the number of animals removed due to constraints on holding space and long term holding costs. This option could be implemented in combination with temporary water hauls.

**2. Removal of sufficient numbers of animals to achieve the low range of AML**

Where the assessment of forage and water indicates that some relief is needed through removal of excess wild horses and/or burros, a gather could be conducted to achieve the established low range of AML. This would occur where the current population exceeds the low AML, and adequate resources do not exist to maintain healthy wild horses or burros at the current population level. This option could be implemented in combination with temporary water hauls.

**3. Removal of animals to a point below the low AML**

During a prolonged drought, forage and water resources could become severely limited to a point that wild horses and/or burros must be removed below the low range of AML in order to prevent widespread suffering and death. The post gather population target would be determined based on the existence and reliability of remaining resources. This option would be implemented in order to prevent subsequent emergency conditions due to ongoing or worsening drought conditions. This option could be implemented in combination with temporary water hauls.

**4. Complete removal of all animals in an HMA**

In extreme situations, the complete lack of forage and/or water in certain locations could warrant the removal of all locatable wild horses and burros to prevent their death. This situation would only apply as a last resort, and could involve holding wild horses or burros in contract facilities with release back to the range when adequate resources exist. Subsequent release of horses and/or burros would be subject to Nevada and Washington BLM office approval and could occur several months after the gather. If complete removal and subsequent release is chosen, population control methods could be implemented prior to wild horses being released back to the HMA. Population controls would not be implemented in burro populations.

Population controls applied to wild horses released back to the range could be used in order to slow population growth rates, lengthen the time before another gather is necessary and enhance post drought resource recovery. Population controls include the application of fertility control vaccine to mares, and sex ratio modification to favor studs. Fertility control would be applied to all mares released to the range. Sex ratio adjustment could be applied alone or in combination with fertility control. Sex ratio adjustment would involve the release of studs and mares in a 60:40 ratio.

It is possible that a situation may warrant the removal of only mares and foals due to the fact that 1) they are typically the most affected by the limited resources and 2) it is determined that sufficient resources exist to support a larger number of studs. In this case, mares and foals would be gathered and removed from the drought affected area and studs would be released back to the range. This scenario could result in sex ratios in the remaining population exceeding 60% studs.

**d. Type of removals**

Under normal gather operations, all located wild horses are captured. The desired number of horses for release and removal are then identified through a "selective removal" process. For drought related gathers gate cut removals would be implemented. Gate cut removals would be used to limit any additional stress on the wild horses and burros within a defined gather area. In this situation, wild horses or burros would be gathered and removed regardless of age to reach the post gather target. No animals would be returned to the range and no population controls would be implemented. The post gather target number of animals would remain undisturbed on the range. Gathers would be designed to remove animals from the areas most affected by drought and resource deficits. Gathers of burros are typically Gate Cut gathers.

### *2.1 Grazing Closure Alternative*

Under the Grazing Closure Alternative, all areas determined to be affected by drought (refer to Attachment 1) would be closed to livestock grazing for the duration of the drought and one additional growing season following the cessation of the drought. Grazing closures would remove livestock grazing from the public lands to eliminate the impacts of grazing during drought and provide one growing season of rest for plant recovery following the cessation of the drought.

### *2.2 No Action Alternative*

Under the No Action Alternative, management responses to drought would require the preparation of individual, situation specific EAs for areas or circumstances across the ED. This would increase response times and reduce the effectiveness of management during a drought. In many instances, current livestock and wild horse and burro management actions would continue with no modifications and would be poorly suited to times of below average precipitation. During drought, livestock and wild horse and burro use would be concentrated around remaining water sources and riparian areas. Without the prompt implementation of management strategies, the effects of drought could be compounded by improper livestock and wild horse and burro use. If drought conditions persist for long periods of time the amount of forage and water for wild horses and burros would become limited. If actions are not taken, emergency conditions could develop and may lead to a reduction in wild horse and burro health, severe debilitation or death. Under the No Action Alternative wild horse and burro gather operations would need to be scheduled according to National and State priorities. This would delay response times and drought affected HMAs would not be gathered in a prompt manner.

### *2.3 Alternatives Considered, but Eliminated from Detailed Analysis*

**Supplemental Feeding of Livestock and Wild Horses and Burros**

The BLM considered a Supplemental Feeding Alternative if drought conditions create insufficient forage to meet wild horse and burro and livestock needs; however, this Alternative was eliminated from detailed analysis because it would be inconsistent with 43 CFR 4700.0-6 (a) which states that, "Wild horse and burros shall be managed as self-sustaining populations of healthy animals in balance with other uses and the productive capacity of their habitat." The WFRHBA requires the BLM to manage horses and burros in a manner that is designed to achieve and maintain a thriving natural ecological balance (TNEB) on public lands (16 USC §1333(a)).

BLM Handbook H-4700-1 Wild horses and Burros Management Handbook, states that, " To achieve TNEB on the public lands, WH&B should be managed in a manner that assures significant progress is made toward achieving the Land Health Standards for upland vegetation and riparian plant communities, watershed function, and habitat quality for animal populations, as well as other site-specific or landscape-level objectives, including those necessary to protect and manage Threatened, Endangered, and Sensitive Species (TES). WH&B herd health is promoted by achieving and maintaining TNEB."

Supplemental feeding livestock or wild horses and burros on rangelands during times of drought would adversely affect areas on or near the location that feed is being supplied. Supplemental feed could contain weed seed, which could lead to the introduction of invasive and/or noxious weeds. Providing supplemental feed would concentrate animals, thereby, increasing utilization and trampling of native species; cause soil compaction in affected area(s); increase soil erosion and adversely affect water sources due increased sedimentation due to soil erosion.

Additionally, providing supplemental feed to wild horses and burros and livestock could lead to a myriad of safety and health-related impacts to the animals. For example, providing hay in areas without adequate water could lead to colic in horses and providing nutrient rich feed to cattle following low-quality feed could lead to bloat. Furthermore, supplying supplemental feed would be cost prohibitive and unsustainable due to the inability to predict when the cessation of a drought would occur.

# III. AFFECTED ENVIRONMENT/ENVIRONMENTAL CONSEQUENCES

## 3.0 General Setting

The general setting for this EA is the administrative boundary of the ED located in northern Nevada. The ED manages approximately 7.4 million acres of public land within Elko, Eureka, and Lander Counties in Nevada. The ED also administers twenty five grazing allotments for the Winnemucca, Battle Mountain, Ely, Salt Lake, Boise, Vale, and Twin Falls BLM Districts.

The ED is generally characterized as, "Basin and Range" topography with broad bedrock pediments and fault block mountain ranges predominantly running in a north-south orientation separating vast, flat playa sinks or alluvial valley bottoms. Valley and playa elevations range from 4,000-5,000 ft. with an average annual precipitation of 2-9 inches. Mountain range elevations extend from 7,500-9,500 ft. with 10-20 inches of annual precipitation.

## 3.1 Supplemental Authorities of the Human Environment

To comply with the NEPA, the BLM is required to address specific elements of the environment that are subject to requirements specified in statute or regulation or by executive order (BLM 1988, BLM 1997, BLM 2008). The following table outlines the elements that must be addressed in all environmental analyses, as well as other resources deemed appropriate for evaluation by the BLM, and denotes if the Proposed Action or No Action Alternative affect those elements.

Table 1. Supplemental authorities of the human environment.

| Supplemental Authority[1] | Not Present[2] | Present/ Not Affected[2] | Present/ May Be Affected[3] | Rationale |
|---|---|---|---|---|
| Air Quality | | | X | Please refer to Section 3.3 A. |
| Areas of Critical Environmental Concern (ACEC) | | X | | One federally designated ACEC's exists within the ED. However, no major impacts to the ACEC would occur under the Proposed Action or Alternatives. Therefore, ACECs would not be affected. |
| Cultural Resources | | | X | Please refer to Section 3.3 C. |
| Environmental Justice | X | | | The Proposed Action or Alternatives would not disproportionately impact any low income or minority populations as described in the Environmental Justice Executive Order (EO 12898). |
| Farm Land -Prime/Unique | X | | | No federally designated farmlands, prime or unique, exist within the ED. |
| Floodplains | | X | | The Proposed Action or Alternatives do not meet the definition of "Actions Affecting or Affected by Floodplains or Wetlands" as described in 44 CFR Ch. 1§ 9.4. |
| Forests and Rangelands (HFRA) | X | | | This element applies only to HFRA projects; no forest fuels reduction projects are analyzed within this EA. |
| Human Health & Safety | X | | | No herbicides would be utilized, stored, or encountered by implementing the Proposed Action or Alternatives contained in this EA. |
| Migratory Birds | | | X | Please refer to Section 3.3 B. |
| Native American Concerns | | | X | Please refer to Section 3.3 D. |
| Non-Native Invasive and Noxious Species | | | X | Please refer to Section 3.3 H. |
| Threatened/Endangered Species | | | X | Please refer to Section 3.3 B for wildlife; there are no T&E plant species within the ED. |

| Supplemental Authority[1] | Not Present[2] | Present/ Not Affected[2] | Present/ May Be Affected[3] | Rationale |
|---|---|---|---|---|
| Water Quality | | | X | Please refer to Section 3.3 J. |
| Wetlands, Riparian Zones | | | X | Please refer to Section 3.3 I. |
| Wild & Scenic Rivers | X | | | No federally designated Wild and Scenic Rivers exist within the ED. |
| Wilderness | | | X | Please refer to Section 3.3 Q. |

[1] See H-1790-1 (January 2008) Supplemental Authorities to be Considered.

[2] Supplemental Authorities determined to be Not Present or Present/Not Affected need not be carried forward for analysis or discussed further in the document.

[3] Supplemental Authorities determined to be Present/May Be Affected *must* be carried forward for analysis in the document.

**Elements Not Present/Not Affected**

The following critical elements of the human environment are not present or would not be affected by the Proposed Action or Alternatives in this EA:

- Environmental Justice
- Prime or Unique Farmlands
- Floodplains
- Forests and Rangelands (HFRA)
- Human Health and Safety
- Wastes, Hazardous or Solids
- Wild and Scenic Rivers

## 3.2 Other Resources

Other resources of the human environment that have been considered for this environmental assessment (EA) are listed in the table below. Elements that may be affected are further described in the EA. Rationale for those elements that would not be affected by the Proposed Action and Alternatives is listed in the following table.

Table 2. Other resources brought forward for analysis.

| Supplemental Authority[1] | Not Present[2] | Present/ Not Affected[4] | Present/ May Be Affected | Rationale |
|---|---|---|---|---|
| Access | | X | | Access will not be affected under the Proposed Action or Alternatives. Therefore, access would not be impacted. |
| Aquatic species | | | X | Please refer to Section 3.3 B. |
| Climate Change | | | X | Please refer to Section 3.3 F. |

| Supplemental Authority[1] | Not Present[2] | Present/ Not Affected[4] | Present/ May Be Affected | Rationale |
|---|---|---|---|---|
| Energy (Gas, Oil, Wind) | | X | | Energy resources exist within the ED; however, no major impacts to energy resources would occur under the Proposed Action or Alternatives. Therefore, energy resources would not be impacted. |
| Engineering | | X | | Engineering exists within the ED; however the Proposed Action of this EA does not directly influence any engineering decisions. |
| Fire Management | | | X | Please refer to Section 3.3 G. |
| Forestry and Forest Products | | X | | Forestry and Forest Products exist within the ED; however, no major impacts to Forestry or Forest Products would occur under the Proposed Action or Alternatives. Therefore, Forestry or Forest Products would not be impacted. |
| Lands with wilderness characteristics | | X | | Lands with wilderness characteristics are present within the analysis area; however because of the temporary nature of all proposed actions, this resource will not be affected in context or intensity on a scale that would limit these areas from consideration from wilderness classification. As the purposes of the proposed actions are to increase the health and vitality of natural communities within the district this would only serve to enhance qualifying characteristics, such as naturalness, within the analysis area and promote wilderness character for current and future generations. |
| Livestock Grazing | | | X | Please refer to Section 3.3 K. |
| Mining/Minerals | | X | | Mineral resources exist on the ED; however, no major impacts to Mining/Minerals under the Proposed Action or Alternatives would occur. Therefore, mineral resources would not be impacted. |
| Paleontological Resources | | | X | Please refer to Section 3.3 E. |
| Realty - Land Use | | X | | Reality – Land Use resources exist within the ED; however, no major impacts to Reality - Land Use activities would occur under the Proposed Action or Alternatives. Therefore, Reality – Land Use would not be impacted. |
| Recreation | | | X | Please refer to Section 3.3 L. |
| Sensitive Species | | | X | Please refer to Section 3.3 B for wildlife and 3.3 O for plants. |
| Socio-Economic | | | X | Please refer to Section 3.3 M. |
| Soils | | | X | Please refer to Section 3.3 N. |
| Vegetation | | | X | Please refer to Section 3.3 O. |
| Visual Resources | | X | | No large structures would be constructed and no major disturbances would occur under the Proposed Action or Alternatives. Therefore, visual resources would not be impacted. |

| Supplemental Authority[1] | Not Present[2] | Present/ Not Affected[4] | Present/ May Be Affected | Rationale |
|---|---|---|---|---|
| Wild Horses | | | X | Please refer to Section 3.3 P. |
| Wildlife | | | X | Please refer to Section 3.3 B. |

[2] Other Resources determined to be Not Present or Present/Not Affected need not be carried forward for analysis or discussed further in the document based on the rational provided.

## 3.3 Resources Present and Brought Forward for Analysis

### A. Air Quality

***Affected Environment***

Air quality and the emission of air pollutants are regulated under both Federal and Nevada law. The Federal Clean Air Act (CAA) requires the US Environmental Protection Agency (EPA) to identify national ambient air quality standards (NAAQS's). The CAA also requires EPA to place selected areas within the United States into one of three classes, designed to limit the deterioration of air quality. The air quality class for the entire ED is Prevention of Significant Deterioration (PSD) Class II. PSD Class II allows for temporary, moderate deterioration of air quality. The State of Nevada, Bureau of Air Quality-Department of Environmental Protection air quality standards under NRS 445B.100 closely mirror the Federal standards.

**1. Environmental Consequences of the Proposed Action**

Under the Proposed Action, DRAs would be implemented to maintain vegetation within the ED to minimize the potential for accelerated erosion events. DRAs such as temporary water hauls could result in the short-term increase of wind born particulate matter and vehicle emissions during the hauling of water. However, water hauls along with the other DRAs are designed to protect vegetation and stabilize soils and would decrease wind born particulate matter in the long-term. Any airborne particulate matter caused by the implementation of DRAs would not exceed air quality standards.

**2. Environmental Consequences of the Grazing Closure Alternative**

The Grazing Closure Alternative would remove all grazing from public lands determined to be affected by drought (refer to Attachment 1). Removing grazing during drought would benefit the growth of plants and ensure an adequate amount of cover remains. Wind velocity, and its potential to detach and transport dry soil, exponentially increases near the ground as vegetation's sheltering effect is reduced (Marshal 1973). Protection of living and standing dead plant cover provided by the Grazing Closure Alternative would have a beneficial impact on air quality.

**3. Environmental Consequences of the No Action Alternative**

Under the No Action Alternative the existing impacts to air quality would continue and the positive and negative impacts associated with the DRAs would not occur. If the drought persists, continued

management practices which are poorly suited to drought could result in increased risk of soil erosion by wind. Wind erosion increases the amount of airborne particulate matter, which could reduce air quality causing public safety issues such as poor visibility or respiratory problems. Delayed implementation of DRAs could also increase the potential for invasion of undesirable plant species, which are less likely to stabilize soils. The No Action Alternative would adversely affect air quality.

## B. Wildlife (Including Special Status Species, Migratory Birds, and Aquatic Species)

### *Affected Environment*

Drought can have complex direct and indirect adverse impacts on wildlife species. In direct response to periods of water restriction, animals often undergo physiological and behavioral changes that can have energetic, survival and reproductive costs (McNab 2002). For example, animals may devote more time to searching for water, which can be energetically expensive and expose animals to greater predation risk. Indirectly, drought-induced reductions in plant and insect productivity can potentially limit the availability of important food and cover resources. Not surprisingly, many animals are food-limited during periods of drought and experience substantial weight loss leading to starvation, greater susceptibility to disease and predators, and reductions in reproductive potential (Rotenberry and Wiends 1989). In many cases, the combined impacts of drought are most pronounced among young animals (Longshore et al. 2002; McNab 2002).

Many wildlife species in the ED are adapted to living in arid or semi-arid conditions. However, a number of these animals are susceptible to the negative impacts of drought, particularly during spring and early summer. These include animals that utilize 1) free water rather than metabolic water for the majority of their water requirements (e.g., most mammals and birds), 2) adequate supplies of surface water for all or portions of their life history (fish, amphibians, gastropods, many insects and other species), 3) riparian areas (e.g., many bird species), 4) dense understory vegetation as cover from predators, or 5) insect species, grasses, or forbs for large portions of their diet.

Within the ED, wildlife species include 259 birds, 80 mammals, 20 reptiles, and 6 amphibians (Appendix B). Of these, seven species are listed as threatened, endangered, or candidate species by the US Fish and Wildlife Service (USFWS) (Table 3)**.** In addition to federally listed species, the BLM protects, by policy (BLM Instruction Memorandum NV 2011-059; BLM Manual 6840), special status species designated as "sensitive" by the BLM Nevada State Director (Table 4). The potential impacts of drought on select groups of species found on the ED are described below.

### Fish

The ED has four native trout species found in the streams associated with the Humboldt, Columbia and Bonneville basins. The Lahontan cutthroat trout (*Oncorhynchus clarki henshawi)* is present in streams in the Pine Valley, Rock Creek, Willow Creek, Maggie Creek, North Fork Humboldt River, Dixie Creek, and Mary's River watersheds. Yellowstone cutthroat trout (*O.c. bouvieri)* are found in the Goose Creek watershed in the WFO, Bonneville cutthroat trout (*O.c. utah)* are present on the east

side of Pilot Peak in the WFO, and redband trout (*O. mykiss gairdneri)* are present in many Columbia River watershed streams in the TFO. Bull trout occur in the Jarbridge river system.

In addition, more than 20 species of non-game fish are found throughout ED streams including native dace, shiner, sucker and chub species and subspecies, two of which are on the BLM Special Status Species list (Table 3). Drought, riparian plant community degradation, high summer water temperatures, lack of connectivity, water diversions, and presence of non-native trout species are likely to negatively affect persistence of non-game fish species.

**Reptiles and Amphibians**

Five native amphibians occur within the ED, including the following: Columbia spotted frog (*Rana luteiventris;* candidate species*)*, Northern leopard frog (*R. pipiens;* sensitive species*),* Pacific chorus frog (*Pseudacris regilla*), western toad (*Bufo boreas*), Great Basin spadefoot toad (*Spea intermontana*) (Appendix A). One non-native species, the bullfrog (*R. catesbeiana)* has been introduced into many wetland habitats within the District. Several species of lizards and snakes occur within the ED (Appendix A). None are special status species.

Northern leopard frog and Columbia Spotted frogs occurs in a variety of habitats including springs, slow streams, marshes, bogs, ponds, canals, flood plains, reservoirs and lakes, usually in or near water with rooted, permanent vegetation (NatureServe 2012). They also inhabit wet fields and meadows during summer. Primary threats to the species include habitat loss and degradation. Drought has been documented to cause local extirpations when ponds dry up in fall and winter (Corn and Fogleman 1984) and lowered reproductive success when ponds dry up during the spring reproductive period (Hine et al. 1981).

**Mammals**

Mule deer (*Odocoileus hemionus*) in the ED typically occupy high elevation summer ranges where they are nutritionally dependent on shrubs and forbs characteristic of healthy and diverse mountain brush communities. Important summer plants for mule deer include bitterbrush (*Purshia tridentata*), mountain mahogany (*Cercocarpus* spp.), serviceberry (*Amelanchier* spp.), snowberry (*Symphoricarpos oreophilus*), willow (*Salix* spp.), sagebrush (*Artemisia* spp.), quaking aspen (*Populus tremuloides*), Wood's rose (*Rosa woodsii*), eriogonum, arrowleaf balsamroot (*Balsamorhiza sagittata*), penstemon (*Penstemon* spp.), sorrel (*Oxalis* spp.) and other grasses and forbs. Streamside and meadow riparian habitats with aspen stands are important fawn-rearing areas.

The normal dry season, estimated to average 120 days in 10-15" precipitation zones (Clarkson and Sturla 1990 *in* Cox et al. 2009), is a critical period for mule deer health (Cox et al. 2009). During this time mule deer must increase their intake of free water, and the combination of forage with low moisture content and decreased availability of free water can result in decreased food consumption, weight loss, and lower survival even several months later (Cox et al. 2009). The severity of these factors is exacerbated by drought.

During winter, mule deer migrate to more arid, lower elevation winter habitats containing antelope bitterbrush and other important browse species including big sagebrush (*A. tridentata*) and serviceberry. Cattle and elk forage more heavily on browse such as bitterbrush under drought conditions, which can be especially detrimental to mule deer (Dasmann and Blaisdell 1954 *in* Cox et al. 2009).
Pronghorn antelope (*Antilocapra americana*) occupy most of the intervening valleys between mountain ranges within the ED (NDOW 2003). Pronghorn are dependent on sagebrush/salt desert shrub communities with an understory of forbs, and are known to forage on at least 150 different species of grasses, forbs, and shrubs. The distribution of free water is the most limiting factor for pronghorn, and competition for water with livestock and wild horses can become acute during periods of drought (NDOW 2003). Dietary overlap with cattle is limited, but heavy use of forage by livestock during drought was reported to force pronghorn to utilize poisonous plants, resulting in direct mortality and poor reproductive performance (Hailey 1979 *in* Autenrieth et al. 2006).

Bighorn sheep (*Ovis canadensis californiana*) occupy several mountain ranges within the ED, including the Sheep Creek Range, Ruby Mountains, East Humboldt Range, Leppy Hills, Pilot Range, and the Badlands near Ellen D Mountain. During drought, adequate forage within a two-mile radius of water sources is critical to survival. Bavin (1975, 1982 *in* Beecham et al. 2007) reported that cattle may compete with bighorns for forage, especially during drought. A chronic management issue is the separation of bighorn sheep populations from domestic sheep and goats, which transmit disease to bighorns that often results in large-scale die-offs.

Rocky Mountain elk (*Cervus elaphus*) populations have increased substantially within the ED in the past 20-30 years, such that they now inhabit several mountain ranges and in some areas have become a potential or genuine nuisance to agriculture. There is the potential for resource competition with livestock, wild horses, and other big game animals, particularly during periods of drought, and particularly in areas where population targets have been met or exceeded.

**Migratory Birds**

Major avian communities within the ED occur in sagebrush, salt-desert scrub, pinyon-juniper, montane, riparian, and aspen habitats. Within each of these habitats, bird populations are likely to be negatively impacted by low annual levels of precipitation (Rich 2002; Ballard et al. 2003), and drought has been reported to change avian community structure and species assemblages (Smith 1982).

Many migratory birds are heavily dependent on riparian systems. Seventy-seven bird species have been identified as either riparian obligate or riparian dependent in the western US (Rich 2002). Willow, aspen and cottonwood (where present) provide vital riparian under-story, mid-story and canopy cover to support a diverse bird community. Species using this habitat include Northern goshawk (*Accipiter gentilis*), broad-tailed hummingbird (*Selasphorus platycercus*), Northern flicker (*Colaptes auratus*), house wren (*Troglodytes aedon*), warbling vireo (*Vireo gilvus*), yellow warbler

(*Dendroica petechia*), yellow-rumped warbler (*D. coronata*), Western wood pewee (*Contopus sordidulus*), lazuli bunting (*Passerina amoena*), yellow-breasted chat (*Ictera virens*), common yellowthroat (*Geothlypis trichas*) and Western tanager (*Piranga ludoviciana*).

Migratory birds occur in all habitats of the Elko District with nesting predominantly occurring from late-March through mid-July. Widely-distributed species in shrub habitats include sage-thrasher (*Oreoscoptes montanus*), sage (*Amphispiza belli*) and Brewer's sparrows (*Spizella breweri*), horned lark (*Eremophila alpestris*), Western meadowlark (*Sturnella neglecta*), loggerhead shrike (*Lanius ludovicianus*), and common nighthawk (*Chordeiles minor*).

**Threatened, endangered and candidate species**

In addition to federally listed species, the BLM protects, by policy (BLM Manual 6840), special status species designated as "sensitive" by the BLM Nevada State Director. The following table lists the special status animal species occurring, or likely to occur on the ED.

Table 3: Threatened (T), Endangered (E), or Candidate (C) Species

| | Common Name | Scientific Name | T | E | C |
|---|---|---|---|---|---|
| **Birds** | Greater sage-grouse | *Centrocercus urophasianus* | | | X |
| **Fish** | Lahontan cutthroat trout | *Oncorhynchus clarki henshawi* | X | | |
| | Independence Valley speckled dace | *Rhinichthys osculus lethoporus* | | X | |
| | Clover Valley speckled dace | *R.o. oligoporus* | | X | |
| | bull trout | *Salvelinus confluentus* | X | | |
| **Amphibians** | Columbia spotted frog | *Rana luteiventris* | | | X |

*Greater Sage-Grouse:* The Elko District contains 792 Greater sage-grouse (sage-grouse; *Centrocercus urophasianus*) leks, 3.88 million acres of Preliminary Priority Habitat (PPH), and 1.39 million acres of Preliminary General Habitat (PGH). PPH comprises areas that have been identified as having the highest conservation value to maintaining sustainable Greater sage-grouse populations. These areas include breeding, late brood-rearing, and winter concentration areas. PGH comprises areas of occupied seasonal or year-round habitat outside of priority habitat. These areas have been identified by the BLM in coordination with Nevada Department of Wildlife (BLM Instruction Memorandum 2012-043).

Sage-grouse occur in or historically occupied most sagebrush habitats in the ED. In general, sage-grouse in the ED breed on the edges of valleys adjacent to mountain ranges, then move up in elevation to more mesic habitats in the mountain ranges after eggs hatch and spring and summer

progress. Most sage-grouse winter in the valley bottoms and are completely dependent on sagebrush for food and cover during this time. Drought conditions are thought to play an important role in population declines across their range (Knick and Connelly 2011). Reductions in primary plant productivity and insect populations during a drought may impact sage-grouse because they depend on perennial grasses for cover, and their diet is largely comprised of forbs (Drut et al. 1994) and insects (Johnson and Boyce 1990) during the breeding and brood-rearing seasons (Barnett and Crawford 1994). In central Nevada, population declines during drought periods have been linked in part to increased mortality of young (Nonne et al. 2011).

*Columbia Spotted Frog:* Columbia spotted frog (*R. luteiventris*) is a Candidate species (USFWS 1993) found in slow-moving or ponded surface waters and in clear water with little shade. Reproductive success is affected by water temperature, depth, and pH as well as vegetative cover and the presence/absence of predators (e.g., fish, bullfrogs, etc.). The Great Basin population in Nevada is separated into three distinct subpopulations: the Jarbidge-Independence Range, Ruby Mountains, and Toiyabe Range . Only the Jarbidge-Independence and Ruby subpopulations occur within the ED. Drought is likely to reduce the sites available to these frogs and affect the connectivity of extant populations. Local extinction may eliminate source populations (Columbia Spotted Frog Conservation Agreement and Strategy 2003).

**Special status species – wildlife**

In addition to federally listed species, the BLM protects, by policy (BLM Manual 6840), special status species designated as "sensitive" by the BLM Nevada State Director. The following table lists the special status species occurring, or likely to occur on the ED:

Table 4: Special Status wildlife species.

| Scientific Name | Common Name | FWS Status* | BLM Criteria** |
|---|---|---|---|
| Amphibians | | | |
| *Rana pipiens* | Northern leopard frog | | 1,2 |
| *R. luteiventris* | Columbia spotted frog | Candidate | 1,2 |
| *Accipiter gentilis* | Northern goshawk | | 1 |
| *Aquila chrysaetos* | golden eagle | | 2 |
| *Buteo swainsoni* | Swainson's hawk | | 1 |
| *Centrocercus urophasianus* | Greater sage-grouse | Candidate | 1 |
| *Charadrius alexandrinus* | Western snowy plover | Threatened (west coast population only) | 1,2 |
| *Lanius ludovicianus* | loggerhead shrike | | 1 |
| *Leucosticte atrata* | black rosy-finch | | 2 |
| *Melanerpes lewis* | Lewis's woodpecker | | 1 |

| Scientific Name | Common Name | FWS Status* | BLM Criteria** |
|---|---|---|---|
| *Oreoscoptes* | sage thrasher | | 1 |
| Fish | | | |
| *Gila bicolor isolata* | Independence Valley tui chub | | 2 |
| *G.b newarkensis* | Newark Valley tui chub | | 2 |
| *Lepidomeda copei* | Northern leatherside chub | | 1 |
| *Oncorhynchus clarki henshawi* | Lahontan cutthroat trout | Threatened | 1,2 |
| *O.mykiss gairdneri* | inland Columbia Basin redband trout | | 2 |
| *Relictus solitarius* | relict dace | | 2 |
| *Rhinichthys osculus lethoporus* | Independence Valley speckled dace | Endangered | 1,2 |
| *R.o.oligoporus* | Clover Valley speckled dace | Endangered | 1,2 |
| *Salvelinus* | bull trout | Threatened | 1,2 |
| Mammals | | | |
| *Euderma maculatum* | spotted bat | | 1,2 |
| *Myotis californicus* | California myotis | | 2 |
| *M. lucifugus* | little brown myotis | | 2 |
| *M. yumanensis* | Yuma myotis | | 2 |
| *Brachylagus* | pygmy rabbit | | 1 |
| *Sorex preblei* | Preble's shrew | | 2 |
| *Ochotona princeps* | pika | | 1,2 |
| Reptiles | | | |
| none | | | |
| Insects | | | |
| *Euphilotes pallescens* | Mattoni's blue | | 2 |
| Molluscs | | | |
| *Anodonta californiensis* | California floater | | 2 |
| *Pyrgulopsis* | Humboldt pyrg | | 2 |

| Scientific Name | Common Name | FWS Status* | BLM Criteria** |
|---|---|---|---|
| *humboldtensis* | | | |
| *P. villacampae* | Duckwater Warm Springs pryg | | 2 |
| *P. vinyardi* | Vineyards pyrg | | 1,2 |
| *Tryonia clathrata* | Grated tryonia | | 1,2 |

**Candidate* - Species that have been studied and the US Fish and Wildlife Service has concluded that they should be proposed for addition to the Federal endangered and threatened species list. These species have formerly been referred to as category 1 candidate species. From the February 28, 1996 Federal Register, page 7597: "those species for which the Service has on file sufficient information on biological vulnerability and threat(s) to support issuance of a proposed rule to list but issuance of the proposed rule is precluded."

*Endangered* - an animal or plant in danger of extinction within the foreseeable future throughout all or a significant portion of its range, as defined in the Endangered Species Act.

*Threatened* - any species which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.

**BLM Sensitive Species:
1 - There is information that a species has recently undergone, is undergoing, or is predicted to undergo a downward trend such that the viability of the species or a distinct population segment of the species is at risk across all or a significant portion of the species' range.
2 - The species depends on ecological refugia or specialized or unique habitats on BLM-administered lands, and there is evidence that such areas are threatened with alteration such that the continued viability of the species in that area would be at risk.

### 1. Environmental Consequences of the Proposed Action

### Temporary Water Hauls and Pipelines

Augmenting existing water sources and temporarily establishing new water sources could directly benefit some wildlife species that cannot subsist entirely on metabolic water. Augmented existing water sources and new water sources are most likely to benefit mobile species that can move relatively long-distances to access water (e.g., upland game birds, some songbirds, deer, pronghorn antelope, and bighorn sheep). Conversely, these water sources would largely be unavailable and of limited benefit to relatively sedentary species (e.g., many reptiles and small mammals). Water augmentation would not directly benefit animals that subsist solely on metabolic water or do not drink from open water sources.

Indirectly, water augmentation could benefit a wide range of species by attracting livestock and wild horses, thereby reducing impacts on natural water sources and riparian vegetation. During drought in particular, livestock often concentrate in and around riparian areas which can lead to degraded water quality and reduced vegetation cover. Thus, water augmentation would reduce competition between

wildlife and livestock for these important riparian resources. Moreover, augmented water sources would reduce impacts on rangeland vegetation outside of the footprint of the augmented water source. As a result, wildlife (including sage-grouse) that relies on healthy understory vegetation during portions of their life-cycles would benefit from reduced grazing impacts throughout the allotments where these activities are implemented.
Conversely, a potential negative impact of water augmentation concerns the concentration of livestock and wild horses near the water source. Increased attendance at water sites by these animals could indirectly affect some wildlife through vegetation trampling and utilization. Some wildlife, such as bighorn sheep, are also known to avoid areas near water developments that are heavily used by livestock (McQuivey 1978, Steinkamp 1990, Leeuw et al. 2001), and these areas are thought to increase predation risk, interspecific competition, and provide avenues of disease transmission. See Appendix A for specific restrictions on establishment of new water sites related to sage-grouse lek and raptor nest concerns.

**Temporarily fencing riparian areas, wet meadows, and other critical wildlife habitat**

Ecologically functioning riparian areas, springs, aspen stands, seasonally wet meadows and other unique habitats are crucially important for Nevada's fish and wildlife. However, livestock tend to congregate and linger near water sources, particularly during drought, often having an adverse effect on the associated vegetation and wildlife communities (Saab et al. 1995). During drought, these adverse effects can be intensified. Thus, using temporary fences to restrict access by livestock to these areas during a drought is an effective management tool to prevent severe degradation and conserve or potentially improve habitat. Several studies have shown that fencing riparian zones may in fact be a rapid method of habitat improvement important for wildlife and fish (Schulz and Leininger 1991; Giuliano and Homyack 2004). These areas often contain higher elevation wet meadows important for sage-grouse brood rearing during mid- to late-summer (Beck and Mitchell 2000).

Negative impacts to wildlife include fence entanglement for big game, and avian fence-impact mortality, particularly for sage-grouse. However, these impacts can be minimized by adopting specific measures to reduce sage-grouse fence collisions (Stevens 2011; BLM IM 2013-033) and through construction of wildlife-friendly fences following specifications in BLM Handbook 1741-1. When minimization measures are used, the overall benefit of temporarily fencing critical habitats during drought would be a net positive for wildlife.

**Livestock and wild horses: changes in grazing practices, degree and timing of grazing, partial to total livestock closure, and wild horse gathers.**

Some of the livestock and wild horse management strategies outlined in the Proposed Action are designed to reduce stocking rates as a mechanism of minimizing long- and short-term adverse impacts to rangeland resources during a drought. Research has shown that reducing stocking rates during a drought is an important management tool for preventing overgrazing and maintaining

critical wildlife habitats. Moreover, to protect important sage-grouse habitat, the BLM is instructed to evaluate the season of use and stocking rate as an important management strategy (IM-2012-043). Conversely, vegetation and water resources important to sage-grouse and other wildlife can be severely degraded by the synergistic effects of overgrazing and drought.
Although the specific benefits of the Proposed Action vary depending on the wildlife species, the DRA for implementing management actions would ensure that habitat is present to maintain viable wildlife populations over the long-term. By reducing stocking rates or deferring livestock season of use to a time outside the critical growth period and/or hot season, wildlife would benefit from reduced competition for food, water, and spatial resources, particularly during critical life stages that often occur during the growing and hot seasons. In sagebrush habitats, reducing stocking rates during drought may especially benefit ground-nesting animals during the spring and early summer. Many of these animals require a minimum density of grasses and forbs for nesting cover and food. For example, sage-grouse forage predominately on a suite of cool-season forb species that can be vulnerable to the combined effects of water stress and livestock grazing (Knick and Connelly 2011).

The Proposed Action would also benefit the suite of wildlife and fish that utilize streams, riparian areas, wet meadows and aspen stands. During dry conditions, livestock often congregate near water sources, which can reduce vegetation cover by grazing and trampling and generally degrade water resources. Indeed, removing livestock from streams and riparian zones during critical periods is a key method of improving habitat for fish and wildlife (Mosely et al. 1997; Giuliano and Homyack 2004; Nelson 2010).

Wildlife and wildlife habitat would benefit indirectly from wild horse gathers. Reduction of wild horse populations during a drought would protect critical rangeland habitats from overuse and reduce drought-induced stress on wildlife. Implementing a gather would reduce the competition for forage, water and spatial resources. Habitat conditions in riparian areas, aspen stands, and uplands would be maintained, benefitting many wildlife species including sage-grouse.

Wild horse gathers in drought-affected areas would have some short-term negative impacts on wildlife. Wildlife present on or near trap sites or holding facilities could be temporarily displaced or disturbed during the gather activities. However, trap sites would typically be located in previously disturbed areas (i.e., gravel pits), and for short periods of time (1-3 days). Should a qualified biologist determine it to be necessary, trap sites would be inventoried prior to selection to determine the presence of special status species or breeding migratory birds. If potential impacts could not be sufficiently mitigated through spatial or temporal adjustments to trapping operations, these areas would be avoided. Gather activities could conflict with nesting periods for many bird species. Refer to the Standard Operating Procedures (SOPs) in Appendix A for avoidance measures utilized to minimize impacts to Greater sage-grouse, ferruginous hawks, and other species.

Within-HMA relocation of wild horses to areas that are not currently drought-afflicted or that have sufficient resources available would benefit wildlife populations in the areas where they were removed through reduced competition for food and water. However, wildlife populations in the

areas where wild horses were relocated would be negatively affected. This could occur through a number of mechanisms, including competition for food, water, and space, and/or through behavioral mechanisms whereby some wildlife species avoid or are harassed by wild horses, particularly around limited water sites.

**Temporary change in kind or class of livestock; targeted grazing of annual-dominated communities**

To the extent that temporary changes in livestock class (e.g., from cows to yearlings) or kind (e.g., cows to sheep) distribute use more evenly to make better use of available resources or alleviate pressure on threatened resources, they would benefit most wildlife species. A principal threat to wildlife includes an increased risk of disease transmission to bighorn sheep if domestic sheep are introduced to traditional cattle allotments. No conversions to domestic sheep or goats would be permitted within nine miles (BLM Instruction Memorandum 98-140) of known bighorn habitat to minimize risk of disease transmission to bighorns. However, even buffer zones up to 25 miles wide may not be effective in eliminating contact between domestic and bighorn sheep (Schommer and Woolever 2001). Conversion of cattle to domestic sheep or goats would pose a significant risk of disease transmission and subsequent die-offs of bighorn sheep within the ED, particularly without knowing specifically where such conversions would be proposed. However, there could be allotments or portions of allotments where such conversions would not pose a significant threat to bighorn populations. A decision to convert livestock kind from cattle to domestic sheep or goats would best be evaluated on a case-by-case basis in consultation with NDOW, regardless of jurisdictional boundaries (Wild Sheep Working Group 2012).

Targeted grazing of annual-dominated vegetation communities, as described in the Proposed Action, should pose minimal risk to wildlife populations. Such areas are not generally valuable wildlife habitats, and to the extent that annual vegetation is checked or reduced by targeted grazing it would be a benefit to wildlife populations. The greatest threat would come from new, temporary fences if that is the method chosen to confine livestock to these areas. However, impacts can be minimized by adopting specific measures to reduce sage-grouse fence collisions (Stevens 2011; BLM IM 2013-033) and through construction of wildlife-friendly fences following specifications in BLM Handbook 1741-1.

**2. Environmental Consequences of the Grazing Closure Alternative**

The removal of livestock under the Grazing Closure Alternative would have greater short and long-term direct benefits to wildlife and wildlife habitat because livestock would be completely removed from the range until resource conditions improve. This would eliminate all competition for food, water, and space between wildlife and livestock, and eliminate impacts of livestock to drought-stressed vegetation during this time. Complete rest "is the most effective and fastest way to achieve range recovery" following severe droughts (Howery 1999).

Potential negative impacts to wildlife from this alternative include a reduced number of water sources on the landscape if ranchers do not supply water to livestock at established watering sites. Wildlife that traditionally uses these sites would have to move farther to find available water. Also, a handful of wildlife species may indirectly benefit from some effects of livestock grazing. For example, cattle grazing can stimulate growth of food forbs for sage-grouse broods in upland meadows or make food forbs more available to grouse (Neel 1980, Klebenow 1982, Evans 1986, *in* Beck and Mitchell 2000). Despite some potential indirect negative effects to a few species during a portion of their life cycle, this alternative would be an overall net benefit to those species and the remainder of wildlife populations within the ED during drought.

**3. Environmental Consequences of the No Action Alternative**

Under the No Action Alternative, wildlife species would not benefit from the management activities outlined in the Proposed Action. Instead, wildlife would be fully subjected to the potentially adverse impacts of livestock and wild horse use during drought. These include increased competition for reduced resources between livestock, wild horses and native wildlife, with potentially severe impacts to riparian areas and other critical habitats where livestock, wild horses, and some wildlife tend to congregate. Moreover, wild horses are known to exclude some wildlife species from natural water sources. The long-term recovery of wildlife habitat could also be reduced under this alternative. Rehabilitation of rangelands that are overstocked during and following drought can be a slow and expensive process. Thus, the long-term viability of special status species and other wildlife habitat could be substantially compromised.

## C. Cultural/Historical

### *Affected Environment*

*Regulatory Framework:* Projects requiring federal funds and permits require compliance with the National Historic Preservation Act (NHPA) of 1966, as amended (16 USC 470) and its implementing regulations, Protection of Historic Properties (36 CFR 800; Section 106). Section 106 of the NHPA requires federal agencies to take into account the effects of their undertakings on historic properties (i.e., those properties deemed eligible for listing or formally listed on the National Register of Historic Places) and affords the Advisory Council on Historic Preservation, State Historic Preservation Office (SHPO), and interested tribal governments an opportunity to comment on the findings of these federal agencies, as appropriate. Regulations in 36 CFR 800 provide a process for satisfying the requirement of Section 106, namely, resource identification (inventory or survey), significance evaluation, assessment of adverse effects on the significant historic properties, and the resolution of adverse effects through consultation to avoid, minimize, or provide mitigation. Adverse effects include, but are not limited to, destruction or alteration of all or part of a property, removal from or alteration of its surrounding environment; introduction of visual, audible, or atmospheric elements that are out of character with the property or that alter its setting; transfer, sale or lease of property out of federal ownership without adequate conditions or restrictions regarding preservation,

maintenance, or use; and neglect of a property resulting in its deterioration or destruction (36 CFR 800.5).

*Background:* Nevada has been inhabited by humans for at least 12,000 years. The Western Shoshone claim this area as aboriginal territory with Northern Paiute territory cross-over documented in the oral histories of both peoples. The Euro-American settlement of this territory began with the establishment of trading posts along the California Trial from 1845-1869. Euro-American settlement of the area as well as an influx of Chinese immigrant workers began in earnest in the 1870s with the completion of the California Pacific Railroad in 1869 and the discovery of gold along the Carlin Trend in the early 1870s.

A cultural resource or cultural property is "…a definite location of human activity, occupation, or use identifiable through field inventory (survey), historical documentation, or oral evidence" (USDI-BLM Manual 8100). The term includes historic or architectural sites, structures, or places with important public and scientific uses, and may include definite locations (sites or places) of traditional cultural or religious importance to specific social and/or cultural groups" (USDI-BLM Manual 8100). Less than 10% of the ED has been inventoried for the location of cultural resources. In areas surveyed for this resource, archaeological site density averages approximately 10 sites per square mile.

Currently there are approximately 17,500 archaeological sites documented within the ED, of which only one quarter have been determined to be eligible for the National Register of Historic Places (NRHP) and another quarter are undetermined as to their eligibility status. The kinds of archaeological sites located include homesteads, transportation routes and stations, ranches, animal traps, mines and associated historic-era camps, mills and other facilities, towns, trash dumps, prehistoric (pre-contact) camps, stone tool quarries, rockshelters/caves, rock art, and open air lithic scatters. Numerous Traditional Cultural Properties have been designated through consultation with local Tribal nations.

**1. Environmental Consequences of the Proposed Action**

Over the last 35 years, nearly 3,000 intensive Section 106 compliant cultural resource inventory surveys have been conducted throughout the ED. These inventory surveys have located over 17,000 archaeological sites of which a little less than 50% are either eligible for the National Register of Historic Places (NRHP) or are protected from adverse effect until their eligibility to the NRHP can be established.

Within areas of the District not inventory surveyed, the number of potentially eligible prehistoric (pre-contact) and historic sites that have the potential of being adversely affected through changes in rangeland use and activity due to drought conditions is unknown. The complete effect of changes in rangeland use and activity due to drought conditions is unknown. Numerous studies have been conducted detailing the types and severity of adverse effects to archaeological sites due to simple

rangeland activities. Generally, archaeological sites sustain the greatest impacts (adverse effects) when any of these conditions occur within or within close proximity to archaeological sites: intensive cattle and wild horse use of water sources, intensive cattle and wild horse use of congregation and 'loafing areas', and sustained corralling of livestock. These adverse effects include erosion and the destruction of artifact resulting from the continually wetting and drying of the sites.

While it appears no data are currently available to indicate the difference between impacts during non-drought years and drought years, similar effects to archaeological sites would be expected to occur. There are multiple factors or unknowns that, once known, may alter this statement. Currently, very little work has been conducted to understand how changes in water levels and the resultant intensification of use of available live water affects cultural resources in this area. At this time, it is not completely understood what effect this fluctuation has already had on cultural resources that exist within the project area and the extent to which further fluctuations of the water may further impact resources.

Both the surface and (especially) the subsurface site soil matrix hold the non-renewable and priceless data of each archaeological site. Adverse effect to this soil matrix through cattle and wild horse use can include compaction, post holing (hammering), soil displacement, hummocking, pedestalling, trailing, trampling, chemical and biological changes to the soil structure, etc. Artifacts and features can be adversely affected. These adverse effects can include trampling which causes broken and damaged artifacts and features, artifact displacement, and feature eradication.

**2. Environmental Consequences of the Grazing Closure Alternative**

The Grazing Closure Alternative would provide rest for all drought afflicted areas, allowing for increased plant cover and reduced potential for soil erosion. The increase in vegetation and lessening soil erosion positively effects archaeological sites by maintaining surface and subsurface artifact, feature, and soil matrix integrity. Removing the ability for livestock and wild horse congregating at water sources within archaeological site boundaries protects site constituents from displacement, damage, and loss.

**3. Environmental Consequences of the No Action Alternative**

The No Action Alternative would require the completion of separate cultural resource inventory analyses and the preparation of separate EAs, both which would delay drought response times. While drought conditions are not specifically an adverse effect to archaeological sites, the intensification of aspects of rangeland use by cattle and wild horses brought about by drought conditions can lead to devastating adverse effects. Congregation and loafing of livestock and wild horses within archaeological sites, especially those that are also within riparian areas, causes irreparable damage those sites. The No Action Alternative would adversely impact cultural resources within the ED.

## D. Native American Traditional Values

### *Affected Environment*

*Regulatory Framework:* Federal law and agency guidance require the BLM to consult with Native American tribal governments concerning the identification of cultural values, religious beliefs, and traditional practices of the Native American peoples that may be affected by actions on BLM-administered lands. This consultation includes the identification of places (i.e., physical locations) of traditional cultural importance to the affected Native American tribes. Places that may be of Native American traditional cultural importance include, but are not limited to:

- Locations associated with the traditional beliefs concerning tribal origins, cultural history, or the nature of the world;
- Locations where religious practitioners go, either in the past or the present, to perform ceremonial activities based on traditional cultural rules or practice; Ancestral habitation sites; Trails; Burial sites; and Places from which plants, animals, minerals, and waters believed to possess healing powers or used for other subsistence purposes, may be taken.
- Some of these locations may be considered sacred to particular Native American individuals or tribes.
- In 1992, the National Historic Preservation Act (NHPA) was amended to explicitly allow that "properties of traditional religious and cultural importance to an Indian tribe may be determined to be eligible for inclusion on the National Register of Historic Places." If a resource has been identified as having importance in traditional cultural practices and the continuing cultural identity of a community, it may be considered a "traditional cultural property" (TCP). To qualify for nomination to the National Register of Historic Places (NRHP), a TCP must:
- Be more than 50 years old;
- Be a place with definable boundaries;
- Retain integrity; and
- Meet certain eligibility criteria as outlined for cultural resources in the NHPA (Section 3.4, Cultural Resources).

In addition to NRHP eligibility, some places of cultural and religious importance also must be evaluated to determine if they should be considered under other federal laws, regulations, directives, or policies. These include, but are not limited to, the Native American Graves Protection and Repatriation Act of 1990, American Indian Religious Freedom Act of 1978, Archaeological Resources Protection Act (ARPA) of 1979, and Executive Order (EO) 13007 (Sacred Sites) of 1996. The effects of federal undertakings on properties of religious or cultural significance to contemporary Native Americans are given consideration under the provisions of EO 13007, American Indian Religious Freedom Act, and recent amendments to the NHPA. As amended, the NHPA now integrates Indian tribes into the Section 106 compliance process and also strives to make the NHPA and National Environmental Policy Act procedurally compatible. Furthermore, under Native

American Graves Protection and Repatriation Act, culturally affiliated Indian tribes and the BLM jointly may develop procedures to be taken when Native American human remains are discovered on federal land.

*Tribal Consultation:* From the initiation of the Drought EA NEPA process in October 2012, the BLM ED has consulted and shared information with the groups listed in Table 5. Consultation and communication with these tribal governments and groups of interest have included letters, phone calls, and visits with the individual Tribal Councils.

Table 5. Summary of Native American Consultation for the Drought EA (Consultation is On-Going).

| Native American Groups | Contact Date | Type of Contact | Concerns/Comments |
|---|---|---|---|
| Shoshone-Pauite Tribe of the Duck Valley Indian Reservation | October 22, 2012 | Notification of Project From BLM: Letter | |
| Confederate Tribes of the Goshute Indian Reservation | October 22, 2012 | Notification of Project From BLM: Letter | |
| Confederate Tribes of the Goshute Indian Reservation | October 25, 2012 | Response to 10-22-12 From Tribe: Letter | "I/We do not want to conduct consultation." |
| Ely Shoshone Tribe | October 22, 2012 | Notification of Project From BLM: Letter | |
| Yomba Shoshone Tribe | October 22, 2012 | Notification of Project From BLM: Letter | |
| Duckwater Shoshone Tribe | October 22, 2012 | Notification of Project From BLM: Letter | |
| Duckwater Shoshone Tribe | November 13, 2012 | Response to 10-22-12 From Tribe: Letter | "In response to the Drought Response Planning, the BLM is making the right decision to plan for unforeseen circumstances and the Duckwater Tribe supports the planning that the Elko District will do." |
| Te-Moak Tribe of Western Shoshone | October 22, 2012 | Notification of Project From BLM: Letter | |
| Wells Band | October 22, 2012 | Notification of Project From | |

| Native American Groups | Contact Date | Type of Contact | Concerns/Comments |
|---|---|---|---|
| | | BLM: Letter | |
| South Fork Band | October 22, 2012 | Notification of Project From BLM: Letter | |
| Battle Mountain Band | October 22, 2012 | Notification of Project From BLM: Letter | |
| Elko Band | October 22, 2012 | Notification of Project From BLM: Letter | |
| Western Shoshone Descendants of Big Smokey | October 22, 2012 | Notification of Project From BLM: Letter | |
| Western Shoshone Defense Project | October 22, 2012 | Notification of Project From BLM: Letter | |
| Western Shoshone Committee | October 22, 2012 | Notification of Project From BLM: Letter | |
| Bureau of Indian Affairs, Eastern Nevada Agency | October 22, 2012 | Notification of Project From BLM: Letter | |

Tribal ethnographic resources are associated with the cultural practices, beliefs, and traditional history of a community. In general, ethnographic resources include places in oral histories or traditional places, such as particular rock formations, the geothermal water sources, or a rock cairn; large areas, such as landscapes and viewscapes; sacred sites and places used for religious practices; social or traditional gathering areas, such as racing grounds; natural resources, such as plant materials or clay deposits used for arts, crafts, or ceremonies; and places and natural resources traditionally used for non-ceremonial uses, such as trails or camping locations.

**1. Environmental Consequences of the Proposed Action**

The NEPA process does not require a separate analysis of impacts to religion, spirituality, or sacredness. As a result, references to such beliefs or practices convey only the terminology used by participants involved in the ethnographic studies and tribal consultation. This terminology does not reflect any BLM evaluation, conclusion, or determination that something is or is not religious, sacred, or spiritual in nature, but conveys only the information that has been gathered through tribal consultation and coordination and current and historic ethnographic study.

Tribal consultation was initiated in October 2012, simultaneous with the initiation of the Drought EA NEPA process. Secondarily to this, a number of effects analysis issues were identified based on information provided through the ethnographic studies conducted over the last 20 years, the background research and consultation of known and documented TCPs, and information provided through Tribal consultation for current and on-going projects across the District.

Native American traditional values identified include numerous traditional use water, plant gather (especially riparian species), and stone gathering areas; numerous identified and documented TCPs; archaeological sites; and several locations of ceremonial and non-ceremonial (cultural) significance. Impacts to Native American traditional values would be considered significant if the proposed project would result in adverse effects to TCPs or places of cultural and religious importance to Indian tribes.

**2. Environmental Consequences of the Grazing Closure Alternative**

Through the planned actions within the Grazing Closure Alternative, issues identified under Native American Traditional Values would be greatly and positively affected. A number of TCPs within the ED are springs or seeps. An increase in vegetation and lessening soil erosion through the planned actions would aid in safeguarding and preserving the Traditional Values attributed to many springs, seeps, and streams from intensive utilization during times of drought induced stress. These efforts would aid in protecting the many and varied riparian traditional use plant species, and allow for continued use of traditional ceremonial and non-ceremonial locations for their original and on-going purposes. Archaeological sites considered important or sacred would be protected from impact and adverse effect.

**3. Environmental Consequences of the No Action Alternative**

The No Action Alternative would require the completion of separate cultural resource inventory analyses and the preparation of separate EAs, both which would delay drought response times. While drought conditions are a natural phenomenon and not specifically an adverse effect to Native American Traditional Values, the intensification of aspects of rangeland use by cattle and wild horses brought about by drought conditions can lead to devastating adverse effects. Congregation and loafing of livestock and wild horses within riparian areas greatly and negatively impacts the traditional use plant species, water sources, medicinal plant species, and community ceremonial and non-ceremonial activities. The No Action Alternative would adversely impact Native American Traditional Values within the ED.

## E. Paleontological Resources

### *Affected Environment*

Paleontological resources have scientific, educational, and recreational values. Paleontological resources are a fragile and nonrenewable scientific record of the history of life on earth. Once damaged, destroyed, or improperly collected, their scientific and educational value may be reduced or lost forever.

*Regulatory Framework:* Paleontological resources are managed by the BLM in accordance with several federal laws including FLPMA Sections 310 and 302(b), which directs the BLM to manage public lands to protect the quality of scientific and other values; 43 CFR 8365.1-5, which prohibits the willful disturbance, removal, and destruction of scientific resources or natural objects; and 43 CFR 3622, which regulates the amount of petrified wood that can be collected for personal, noncommercial purposes without a permit. BLM Handbook H-8270, General Procedural Guidance for Paleontological Resource Management (BLM 1998b) guides paleontological research on BLM-administered lands.

*Background:* Paleontological resources are fossilized remains of multicellular invertebrate and vertebrate animals and multicellular plants, including imprints thereof (36 CFR 261.2). Fossilized remains are any non-manufactured evidence of prehistoric life, including skeletal remains, impressions of these remains, or their chemical signatures. The significance of paleontological resources is subjectively ranked based on the presumed scientific value of proven fossil content. Impacts to paleontological resources would be significant if the Proposed Action or Alternatives to the Proposed Action result in any of the following:

• Disturbance or loss of a unique or site-specific invertebrate, vertebrate, or paleobotanical fossil occurring in formations found in the proposed new disturbance areas; or

• Disturbance or loss of a resource that qualifies as significant or critical and requires protection under the Antiquities Act of 1906.

### 1. Environmental Consequences of the Proposed Action

Paleontological resources are known to exist, both on the soil surface and within buried deposits throughout the ED. Potential direct impacts to paleontological resources from implementation of the Proposed Action would be limited to areas of disturbance. If paleontologically unique or site-specific fossiliferous deposits (particularly vertebrate fossils) are encountered during the implementation of the Proposed Action, measures would need to be taken to evaluate the paleontological resource.

### 2. Environmental Consequences of the Grazing Closure Alternative

The effects of the Grazing Closure Alternative reflect those of the Proposed Action.

### 3. Environmental Consequences of the No Action Alternative

The No Action Alternative would require the completion of separate paleontological inventory analyses and the preparation of separate EAs, both which would delay drought response times. While drought conditions are not specifically an adverse effect to paleontological deposits, the

intensification of aspects of rangeland use by cattle and wild horses brought about by drought conditions can lead to devastating adverse effects. The No Action Alternative had the potential to adversely impact paleontological resources within the ED.

## F. Climate Change

### *Affected Environment*

Climate affects virtually every physiological aspect of the ecology of rangelands within the ED. Climate encompasses temperature, humidity, atmospheric pressure, wind, precipitation, atmospheric particle count and other meteorological elemental measurements over long periods. The present conditions of these elements and their variations over shorter periods are expressed as weather and precipitation events. A region's climate is generated by the climate system, which has five interconnected components: atmosphere, hydrosphere, cryosphere, land surface, and biosphere (Figure 4.) (Parry et al. 2007). Climate change is a very complex topic with many different variables; for the purpose of this EA, we will focus on the localized land surface, biosphere, atmosphere, and hydrosphere climate change components of the climate system.

Overuse by ungulates, in combination with drought, can change the microclimate of a land surface area, along with other climate system components (Johnston et al. 1971). A microclimate is a local atmospheric zone (land surface, atmosphere, hydrosphere, and biosphere) where climate differs from adjoining areas. Changing a microclimate of an area may result in changes to the phenological relationships between plant communities and other biotic and abiotic ecosystem functions. For example, overuse by ungulates during drought can remove all above ground plant material, creating large areas of bare ground. Above ground plant material harvests and reflects solar radiation from the sun. With no vegetative material available for harvest and reflection, the suns solar radiation is captured and reflected by soils directly. Soils that capture radiation directly, dry out faster than soils with a vegetation barrier, significantly reducing the amount of soil moisture availability for perennial seeds and plants to use and grow. Soils also reflect more solar radiation back into the atmosphere than plant material, directly changing the temperature of an area.

Changing an area’s microclimate can also directly accelerate water evaporation rates; reduce the amount of water available for consumption by livestock, wildlife, and/or wild horses; reduce soil stability and increase soil erosion by wind and water; change the hydrologic function of an area to accelerate water runoff and infiltration rates; increase the amount of sediment, nutrients and pathogens in streams; increase the abundance of invasive and non-native plants and animals; increase wildfire abundance, size, and return intervals; and alter the diversity of wildlife because of reduced vegetation/habitat conditions.

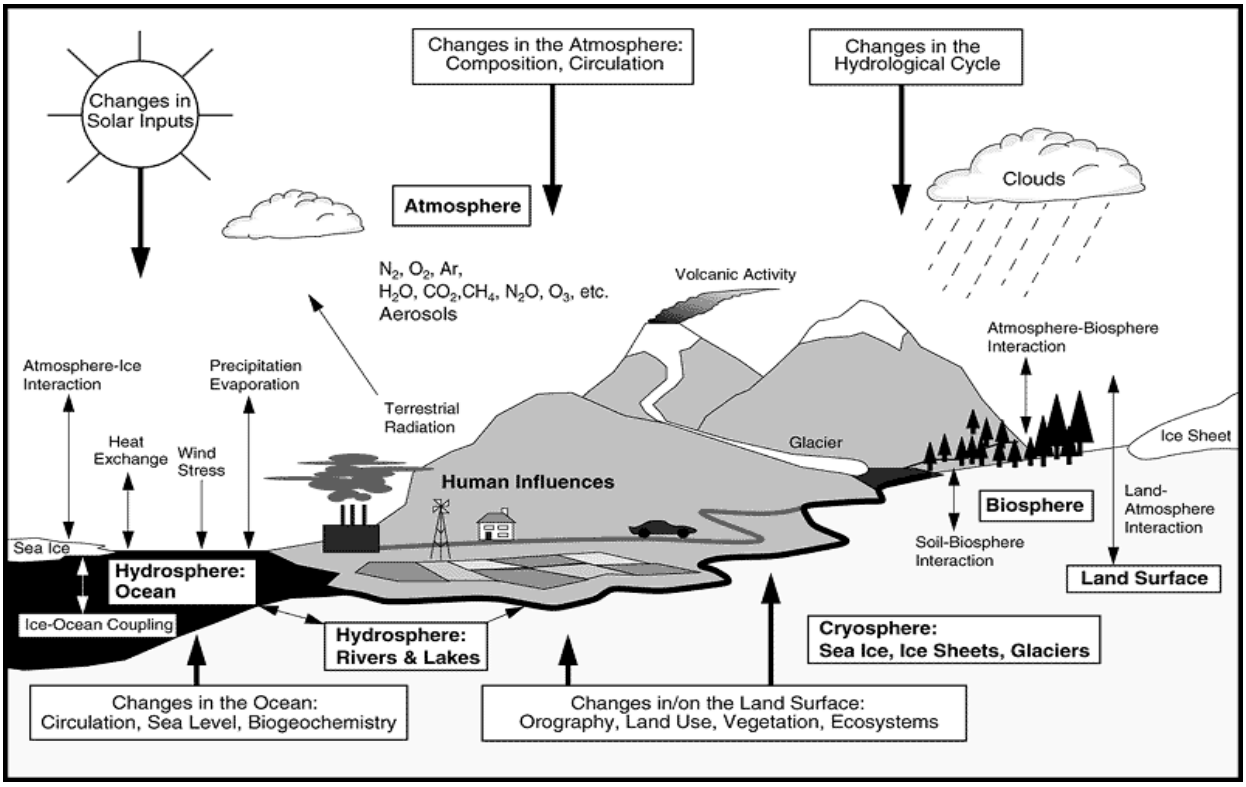



Figure 4. Schematic view of the components of the global climate system (bold), their processes and interactions (thin arrows) and some aspects that may change (bold arrows) due to human influences (Parry et al. 2007).

CEQ guidance dated 2-18-2010 (CEQ 2010) states "Agencies can use the NEPA process to reduce vulnerability to climate change impacts, adapt to changes in our environment, and mitigate the impacts of Federal agency actions that are exacerbated by climate change." The ED acknowledges, through its development of this EA, CEQ's (2010) statement "…changes in water availability associated with climate change may need to be discussed in greater detail than other consequences of climate change." Within the ED impacts that have occurred include some of those predicted in the Global Climate Change Impacts in the United States (Karl et al., 2009) (i.e., more frequent and intense heat waves; increased drought; harm to water resources, wildlife and ecosystems."

The CEQ guidance also states that "agencies should recognize the scientific limits of their ability to accurately predict climate change effects, especially of a short-term nature, and not devote effort to analyzing wholly speculative effects." This EA will provide tools necessary to adapt to environmental changes as they are identified and prioritized on the ED, with mitigation measures created for site specific areas where impacts are occurring.

**1. Environmental Consequences of the Proposed Action**

Under the Proposed Action, DRAs would be implemented to reduce degradation to upland and riparian resources and their associated microclimates during drought. Degraded ecosystems and their associated microclimates favor invasion by annual plants. By reducing degradation to land surface

microclimates, favorable conditions would benefit perennial plants, which would likely be more plentiful and available for consumption by livestock, wildlife, and/or wild horses. Establishment of perennial plants also helps decrease wind and water erosion and helps slow water runoff and infiltration rates. Perennial upland areas with their associated microclimates are less favorable to wildfire than degraded areas and their associated microclimates. Because there would be less evaporation into the atmosphere, the Proposed Action would also increase the amount of water that is available for consumption by plants, livestock and/or wild horses, and other wildlife species. The Proposed Action would also have positive impacts in riparian areas, by increasing the amount of vegetation and water holding capacity. Increased riparian vegetation also filters sediment, nutrients, pathogens, and toxins creating cleaner water for consumption.

**2. Environmental Consequences of the Grazing Closure Alternative**

The effects of the Grazing Closure Alternative reflect those of the Proposed Action.

**3. Environmental Consequences of the No Action Alternative**

The No Action Alternative would require the preparation of separate EAs, which would delay drought response times. Degraded resources and their associated microclimates would continue to be degraded, and in some areas become further degraded. Drought conditions alone can have adverse effects to land surface area microclimates, the intensification of aspects of rangeland use by cattle and wild horses brought about by drought conditions can lead to devastating effects on resources and their associated microclimates. The No Action Alternative has the potential to adversely impact degraded resources within the ED.

## G. Fire Management

***Affected Environment***

Drought affects virtually all vegetation and other fuels (combustible organic material) by decreasing moisture availability through increased evapotranspiration and transpiration. Plant and soil moisture lost earlier in the season forces plants into dormancy earlier than normal. Dry plants and fuels are more susceptible to fire than plants and fuels with available moisture. Drought in combination with dramatic increases in invasive plants (e.g., cheatgrass), unsustainable grazing by livestock and wild horses, heavy fuel loading, and fire suppression have all altered historic fire regimes to more frequent and larger than normal fires (West 1999). Increases in fire frequency and annual plant conversion from fires usually result in loss of perennial plants, increased erosion, increased fire danger to residential areas, weed invasions, and loss in biotic integrity.

The Fire Management Amendment to the Elko and Wells Resource Management Plans (hereafter FMA) provides direction for the management of fire on public lands administered by the ED. The FMA created 21 polygon types to provide resource management direction for specific geographic areas occurring within the ED.

Table 6. "Polygon Names and Acres" taken from Elko and Wells Resource Management Plans Approved Fire Management Amendment and Decision Record.

| Polygon Names and Acres | | | | | |
|---|---|---|---|---|---|
| **No.** | **Name** | **Acres** | **No.** | **Name** | **Acres** |
| A-1 | Urban Interface/ Mining Areas/Areas of Development | 497,725 | B-9 | Crucial Deer Winter Range | 600,027 |
| A-2 | Cultural Sites, Historic and Protohistoric | 79,654 | C-1 | Woodlands | 518,903 |
| A-3 | Municipal Watersheds | 50,430 | C-2 | Owyhee Desert | 821,097 |
| B-1 | District-Wide Areas of Exotic Vegetation Invasion | 331,082 | C-3 | Sage/Mountain Brush/Perennial Grass | 3,907,351 |
| B-2 | Ruby Marshes, Franklin Lake and Snow Water Lake | 110,236 | C-4 | Intermixed Woodlands, NE Corner | 422,008 |
| B-3 | Low Sagebrush & Desert Shrub | 1,023,813 | D-1 | Little Humboldt WSA | 42,213 |
| B-4 | Areas of Primarily Private Land and Urban Interface | 814,118 | D-2 | Owyhee Canyon WSA's (includes Owyhee Canyon, South Fork Owyhee, Rough Hills and Badlands WSA's) | 45,828 |
| B-5 | Aspen Areas | 30,905 | D-3 | Mixed Conifer | 68,435 |
| B-6 | Dixie | 113,346 | D-4 | Goshute, South Pequop, and Bluebell WSA's | 166,525 |
| B-7 | Badlands Allotment | 25,809 | D-5 | Cedar Ridge and Red Springs WSA's | 17,856 |
| B-8 | Early Seral Sagebrush Grasslands | 1,281,898 | | | |

* Fire Management Category and Polygon Descriptions. Grazing is discussed in general terms in the following polygon types: B-5 Aspen Areas, B-6 Dixie, C-2 Owyhee Desert, and C-3 Sage/Mountain Brush/Perennial Grass. However, the FMA does not discuss grazing allotments and wild horse HMAs specifically. Therefore, this Drought EA will consolidate fire management only in drought conditions and specific to grazing allotments and HMAs under Fire Management Category B – High Suppression[1].

### 1. Environmental Consequences of the Proposed Action

Under the Proposed Action, DRAs would be implemented to better distribute livestock and wild horse grazing for fuels management. DRAs such as temporary water hauls for livestock and wild

[1] *FMC B – High Suppression*. This category applies to areas where wildfire is likely to cause negative effects, but these effects could be mitigated or avoided through fuels management, prescribed fire or other strategies. The strategy includes a less strict acreage guideline than FMC A and vegetative treatments to reduce fuel loading as a management technique to a greater degree than in FMC A. Unplanned ignitions will be managed using the most appropriate and cost-effective suppression response based on threats to life, safety, structures, developments and other resource values. Where streams, riparian areas, or watersheds exist that provide habitat for federally listed threatened, endangered, or candidate species, suppression tactics will include appropriate standard operating procedures (SOPs) for species protection, except when a threat to human life exists.

horses, strategic placement of supplements, changes to livestock classification, changes to season of use, and prescriptive grazing of annual plant communities could all potentially aid in the reduction of fine fuels. Changing livestock classification from cattle to sheep for grazing in dense shrub ecosystems may also help reduce fuels for fires in areas that have fire high potential. Reducing heavy fuel loading, especially in areas where annual plants dominate and invade ecosystems, could reduce fire flame length, intensity, and rate of spread (Diamond et al. 2009). The grazing and herding of sheep would be a more prescriptive management tool for fuels management and could reduce fine fuels in designated areas without the construction of temporary fences. The following table describes the impacts to the 21 polygons outlines above in Section 3.3 Fire Management.

Table 7. Fire management polygons within the ED.

| No. | Name | Direct and Indirect Effects of Overall DRAs |
|---|---|---|
| A-1 | Urban Interface/Mining/Areas of Development | May have increase in fine fuels (e.g., cheatgrass) left on rangelands and fire occurrence and intensity may increase. |
| A-2 | Cultural Sites, Historic and Protohistoric | May have increase in fine fuels (e.g., cheatgrass) left on rangelands and fire occurrence and intensity may increase. Fire suppression activities may be limited in these areas. |
| A-3 | Municipal Watersheds | May have increase of fine fuels including annual and perennial grasses. This may increase fire occurrence and intensity throughout municipal watersheds. |
| B-1 | District-wide Areas of Exotic Vegetation Invasion | In areas in which DRAs have focused grazing on annual grasslands fire occurrence and intensity would decrease. In areas that have reduced grazing would allow for more fine fuels left on the rangelands and fire occurrence and intensity may increase. |
| B-2 | Ruby Marshes, Franklin Lake and Snow Water Lake | No impacts foreseen with the implementation of the DRAs. |
| B-3 | Low Sagebrush & Salt Desert Shrub | May have increase in fine fuels (e.g., cheatgrass) left on rangelands and fire occurrence and intensity may increase. Rehabilitation may be difficult and costly on these sites following a fire with annual grasses present. |
| B-4 | Areas of Primarily Private Land and Urban Interface. | In most cases DRAs would not be implemented on private lands. There are no impacts foreseen within these areas. |
| B-5 | Aspen Areas | Aspen stands would benefit from the implementation of the proposed DRAs. Aspen stands may begin to expand and would allow for greener areas that may prohibit the spread of fire through adjacent aspen stands and riparian areas. Fuel moistures would remain higher within these areas. |

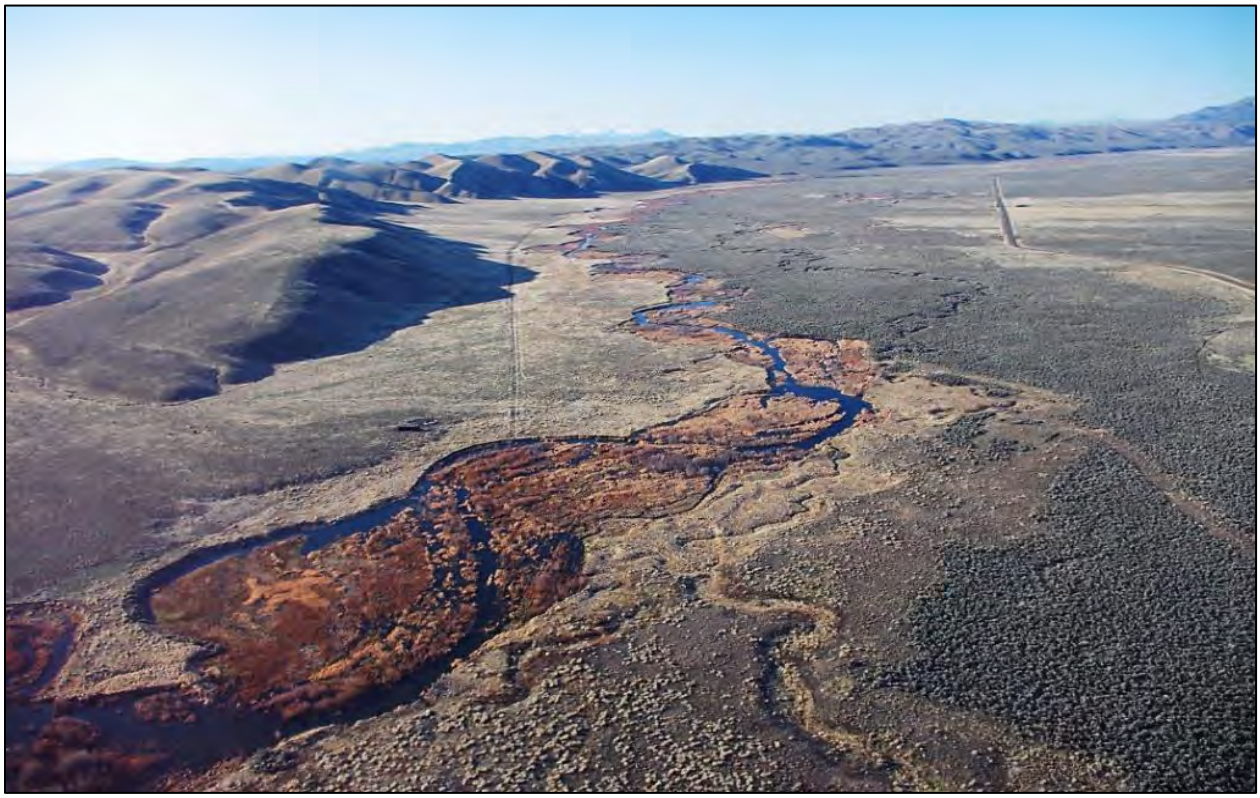
| No. | Name | Direct and Indirect Effects of Overall DRAs |
|---|---|---|
| B-6 | Dixie | In areas in which DRAs have focused grazing on annual grasslands fire occurrence and intensity would decrease. In areas that have reduced grazing would allow for more fine fuels left on the rangelands and fire occurrence and intensity may increase. |
| B-7 | Badlands Allotment | May have increase in fine fuels (e.g., cheatgrass) left on rangelands and fire occurrence and intensity may increase. |
| B-8 | Early Seral Sagebrush Grasslands | May have increase in fine fuels (e.g., cheatgrass) left on rangelands and fire occurrence and intensity may increase. These areas have historically produced larger fires. |
| B-9 | Crucial Mule Deer Winter Range | May have increase in fine fuels (e.g., cheatgrass) left on rangelands and fire occurrence and intensity may increase. |
| C-1 | Woodlands | Implementing the desired DRAs would allow for areas with desired perennial vegetation to rest or be in better shape in the event of a fire and rehabilitation efforts would be minimized due to desired native revegetation of the burned site. However, in areas where cheatgrass is present more fine fuels may be present on the site and could increase the fire occurrence, size and intensity. |
| C-2 | Owyhee Desert | In areas that have recently burned and ~~predominantly~~ are dominated by intermixed perennial/annual grasslands, implementation of DRA's would benefit recently burned areas and areas that have been reseeded. Increase in fine fuels left on the rangelands may increase fire occurrence and intensity, however, rangelands that are in good condition would revegetate naturally and rehabilitation efforts would be minimized following a burn. In areas outside of recent wild fire areas are covered with decadent sage brush with minimal understory these areas may not be impacted by the implementation of the DRAs. |
| C-3 | Sage/Mountain Brush/Perennial Grass | Historically, in drought years, areas within these polygons tend to be negatively impacted by large fires. The implementation of DRAs would benefit these areas and in the event of a fire vegetation would be in better shape and would allow for native revegetation to occur. However, if annual grasses are present within these areas and a fire occurs, much of the burn area would susceptible to annual grass invasion. The Proposed Action may leave more fine fuels on the rangeland and could increase the fire occurrence and intensity. |

| No. | Name | Direct and Indirect Effects of Overall DRAs |
|---|---|---|
| C-4 | Intermixed Woodlands, NE Corner | Although much of these woodlands have been impacted by fire within the last decade, the implementation of the DRA would benefit these areas. Much of these areas are occupied by perennial grasses with some intermixed woodlands in the overstory. The Proposed Action may leave more fine fuels on the rangelands and could increase the fire occurrence. |
| D-1 | Little Humboldt WSA | This area was impacted by the 2006 Winters Fire and has been nearly completely recovered with perennial/annual grasslands. The implementation of DRAs would benefit these areas, however increased amount of fine fuels would be left on rangelands and could increase fire occurrence. |
| D-2 | Owyhee Canyon WSAs (includes Owyhee Canyon, South Owyhee, Rough Hills and Badlands WSAs) | May have increase in fine fuels (e.g., cheatgrass) left on rangelands and fire occurrence and intensity may increase. Some of these areas are occupied by wild horses and the implementation of DRAs would benefit these areas and allow vegetation to improve. Fires occurring within these areas historically remain small due to the topographic features. |
| D-3 | Mixed Conifer | No impacts foreseen with the implementation of the DRAs. |
| D-4 | Goshute, South Pequop, and Blue Bell WSAs | May have increase in fine fuels (e.g., cheatgrass) left on rangelands and fire occurrence and intensity may increase. Some of these areas are occupied by wild horses and the implementation of DRAs would benefit these areas and allow vegetation to improve. Riparian areas would improve within these areas and may provide buffers that would not allow fire to cross over. |
| D-5 | Cedar Ridge and Red Springs WSAs | These areas were impacted by the 2006 Sneekee Fire. Much of the areas has recovered with perennial/annual grasslands with woodland overstory. Increase in fine fuels left on rangelands could increase fire occurrence within these areas. |

Under the Proposed Action, DRAs would also be implemented to improve vegetation in riparian areas. Because riparian areas have water readily available, plants typically stay green and act as natural fire barriers. Many healthy riparian areas have stopped fires from spreading into larger more uncontrollable fires (Dwire and Kauffman 2003). Photograph 2 shows a picture of the 2007 Red House Fire being stopped by a healthy riparian area during a drought year.

**2. Environmental Consequences of the Grazing Closure Alternative**

The Grazing Closure Alternative would remove all grazing from public lands determined to be negatively affected by drought conditions (Attachment 1). Removing livestock and/or wild horse grazing would allow riparian areas to recover from overuse, which would in turn allow them to heal and to act as natural fire barriers (Photograph 2). Removing grazing may also change microclimate conditions (Section 3.3 F), to be more favorable to perennial plants, which have a much longer fire return intervals that annual plant dominated communities. Removing grazing from degraded areas would likely improve the rangeland health of these areas.



Photograph 2. The Maggie Creek riparian area acted as a natural fire barrier for the 2007 Red House Fire, as shown by the fire scar on left side of creek.

### 3. Environmental Consequences of the No Action Alternative

The No Action Alternative would allow current management to continue. Degraded upland areas would continue to be degraded, opening ecological niches for annual grasses and forbs to become established, which would alter fire cycles to much shorter time frames. Degraded riparian areas would continue to be degraded, allowing fires to avoid natural barriers. The No Action Alternative would also require the preparation of separate EAs, which would delay drought response times and potentially result in a continuation of management practices that are employed during times of normal precipitation

## H. Noxious Weeds/Invasive Non-native Species

### *Affected Environment*

In Nevada, noxious weeds are designated by statute and defined as, “detrimental or destructive and difficult to control or eradicate.” BLM further defines noxious weeds as, “generally possessing one or more of the following characteristics: aggressive and difficult to manage; parasitic; a carrier or host of serious insects or disease; or non-native, new, or not common to the US" (USDI FES 2007). An invasive species is defined as, “an alien species whose introduction does or is likely to cause economic or environmental harm or harm to human health” (Executive Order 13112). In plain language, a weed is any unwanted organism.

Noxious weeds and invasive, non-native species are spread directly or indirectly by people, equipment, animals or transported by wind and water. Weed infestations rise proportionally with increased human activities like mining extraction/exploration, road maintenance, livestock grazing, recreational activities/off-highway vehicles (OHVs), and general soil disturbing activities. The BLM’s strategy for noxious weed management is to, “sustain the condition of healthy lands, and, where land conditions are degraded, to restore desirable vegetation to more healthy conditions” (USDI FES 2007). Weeds threaten public lands by spreading into and infesting sensitive riparian ecosystems, important rangelands, wildfire scars and developed lands such as rights of way and recreational areas. Threats can come in the form of reduced biodiversity, a weakened ecosystem, a higher propensity for soil erosion, increased frequency of wildfires and limited food resources for wildlife. Weeds on private lands have the potential to spread onto public lands and vice versa.

At this time, the ED’s priority weed suppression efforts are concentrated on Russian/spotted knapweed, tamarisk (salt cedar), perennial pepperweed, whitetop, various thistle species and other listed noxious weeds. The State of Nevada, Department of Agriculture (NDOA) keeps an up-to-date list of designated noxious weeds at http://agri.nv.gov/nwac/PLANT_NoxWeedList.htm. The most up-to-date Federal list is maintained by the US Department of Agriculture (USDA) and can be found at their website, http://plants.usda.gov/java/noxious?rptType=Federal.

ED has 36,195 acres of noxious weeds that have been confirmed to exist on the district; but it is estimated that the total acres infested is three to four times that number. Over the previous three years the ED has treated 23,212 acres. This includes acres of cheatgrass is not normally surveyed for but treated as part of habitat restoration. Cheatgrass is often not surveyed for because the invasive annual grass is so wide spread and established on the rangelands of the ED.

**1. Environmental Consequences of the Proposed Action**

Noxious weeds and non-native invasive species are more likely to invade areas that are in poor rangeland condition. Areas that maintain a healthy and diverse population of native species are more resistant to invasion. Drought or water stress affects virtually every physiological and biochemical process in plants (Hanselka and White 1986). Plants that are stressed are more vulnerable to grazing. The degree to which drought impairs the range depends on the intensity, frequency and timing of grazing (Howery 1999). The utilization of perennial bunchgrasses increases significantly during drought years (Bedell and Ganskopp 1980). Therefore, precautions must be taken to ensure proper management occurs in order to avoid overutilization and further degradation of range conditions during drought. The Proposed Action is designed to reduce the impacts of authorized uses and

activities on natural resources. This would maintain existing plant communities and limit the degradation of range resources, which would reduce the potential for invasion by noxious weeds and invasive annual species.

The Proposed Action provides for targeted grazing of monotypic annual communities (e.g., monotypic cheatgrass stands). By utilizing design features it reduces the impacts that this type of grazing can have. Targeted grazing will not occur in within 5 miles of areas infested by certain noxious and invasive noxious weeds. Targeted grazing would be focused during the spring and/or fall months to take advantage of early spring and fall growth of the annuals. Livestock would be removed upon reaching a two-inch average stubble height in order to provide protection from wind and water erosion.

A wild horse drought gather could result in the spread of existing populations of noxious weeds and invasive non-native species. Precautions would be taken prior to setting up trap sites and holding facilities to avoid areas where noxious weeds, invasive or non-native species exist to lessen the chance of spread. The Contracting Officers Representative (COR), Project Inspector (PI), or other qualified specialist would examine proposed holding facilities and traps sites prior to construction to determine if noxious weeds were present. If noxious weeds were found, a different location would be selected.

Temporary trap sites and holding facilities would be selected in previously disturbed areas such as gravel pits that are not infested by noxious weeds. Areas disturbed specifically by gather operations would be monitored, re-vegetated (if appropriate), and treated for potential new infestations of non-native invasive plants as a result of gather operations.

**2. Environmental Consequences of the Grazing Closure Alternative**

The Grazing Closure Alternative would provide rest for all drought afflicted areas. Resting these areas would provide the vegetation an opportunity to take full advantage of available soil moisture and nutrients. Uninterrupted growth would increase plant cover and reduce the potential for soil erosion. This would limit the opportunity for noxious weeds and invasive annuals to invade those communities.

DRAs for wild horses would be implemented as identified in the Proposed Action and would result in similar effects as described above, for the Proposed Action.

**3. Environmental Consequences of the No Action Alternative**

Grazing management practices before, during, and following a drought influence the ability of native rangeland vegetation to recover (Encinias and Smallidge 2009). Lagged responses toward drought pose a threat to sustainable management of rangelands (Thurow and Taylor 1999). Although all rangelands are adversely affected by drought regardless of condition, rangeland in fair or poor condition is more adversely affected and recovers slower than rangeland in good or excellent condition (Howery 1999). The No Action Alternative would require the preparation of separate EAs, which would delay drought response times and potentially result in a continuation of current

management practices. Delaying the implementation of livestock and/or wild horse management strategies that are appropriate for drought conditions would increase the potential of noxious weed and invasive species establishment and spread by extending the period of time the range is in a poor or stressed condition.

## I. Riparian-Wetland Zones

### *Affected Environment*

Riparian and wetland areas adjacent to surface waters are the most productive and important ecosystems on the ED. Riparian and wetland areas represent less than 1% of the ED. However, these areas play an integral role in restoring and maintaining the chemical, physical and biological integrity of water resources. Research has shown riparian and wetland habitats have a greater diversity of plant and animal species than adjoining areas. Healthy riparian and wetland areas have the potential for multi-canopy vegetation layers with trees, shrubs, grasses, forbs, sedges and rushes and are valuable habitat for a wide variety of wildlife species. Healthy systems also filter and purify water, reduce sediment loads, enhance soil stability, provide micro-climatic moderation and contribute to ground water recharge and base flow. They stabilize water supplies, ameliorating both floods and droughts. Functioning riparian/wetland areas provide many values; natural fire barriers, recreation, fisheries, wildlife habitat, increased water supply, cultural, historic and economic. Economic values yield forage for livestock production, timber harvest and mineral extraction.

Functioning riparian areas dissipate energy created from water and sediment during runoff events. Riparian-wetland plants have adapted to the stressors associated with flooding and saturation of soils. Their above ground biomass presents a surface discontinuity that functions to slow the velocity of flowing water, deposit alluvial sediment and aid in floodplain development, stabilize stream banks, enhance infiltration and recharge groundwater supplies.

Grazing can have a negative impact on riparian and wetland zones. When not managed properly, livestock can remain in riparian areas damaging stream banks, over grazing riparian vegetation, compacting soils and contaminating streams with waste. Riparian areas that have experienced heavy grazing pressure pose a risk of becoming non-functioning and degraded, especially during times of drought. Livestock can also introduce non-native plant species. Non-native species may out-compete native species, altering the natural ecosystem.

Non-functioning riparian areas are less capable of slowing water velocity, catching sediment, stabilizing stream banks, allowing for infiltration and recharging groundwater supplies. Reduced vegetative densities could lead to increased surface runoff. Gullies would continue to down cut until they either achieve equilibrium or until bedrock is found. Nonfunctioning riparian areas lose the capability to store water in the soil and yield less water for late summer base flows increasing the potential for erosion. Riparian areas that have experienced heavy grazing pressure pose a risk of becoming nonfunctioning and degraded, especially during times of drought.

The ED manages over 1,200 miles of stream and more than 8,000 springs. Typical riparian areas in the ED include seeps, springs, and streams dominated by willows, cottonwood, alder, aspen, and

wetland vegetation such as sedges and rushes. Degraded riparian areas may be dominated by species such as Kentucky bluegrass, cheatgrass, thistle, and non-native weedy vegetation. Most springs in the ED are small and encompass only a fraction of an acre to a few acres. The average size of 1552 springs was .53 acres.

ED now has long-term trend data on 147 streams between 1977 and 2011. BLM has observed an improving trend in stream condition on many allotments with changes in livestock grazing practices. We have an upward trend on 106 (72%) of the streams and only 9 (6 %) are showing a downward trend in condition. Stream survey data indicates that 70 (48%) of the streams are in good to excellent condition; the remaining 77 streams (52%) are in poor to fair condition, with 45 (31%) of these showing an upward trend in condition.

Proper Functioning Condition (PFC) assessments were established as part of the Standard and Guidelines for the Northeastern Nevada Resource Advisory Council approved and published in 1997. Standard 2 for Riparian and Wetland sites states: "Riparian and wetland areas exhibit a properly functioning condition and achieve state water quality criteria."

Between 2003 and 2007, a total of 1608 springs on 82 livestock use allotments in the ED have been surveyed. Approximately 14% of the springs were in proper functioning condition. In addition, 10% of the lentic sites were functional at risk with an upward trend. In total approximately 24% of the spring sites were in good condition, or showing evidence of improvement. Springs that were functional at risk with no apparent trend represented 6% of the sites and 2% of the acres. Springs that were functional at risk with a downward trend were represented at 46% of the springs, but only 16% of the acreage. Nonfunctional springs represented 21% of the sites and 6% of the acreage.

**1. Environmental Consequences of the Proposed Action**

The direct impact of the Proposed Action is the maintenance of riparian-wetland vegetation during drought. Marlow (1985) studied the distribution pattern of livestock in Montana during August and September and observed 80% of the forage came from the riparian and wetland resources, which comprised less than 4% of the pasture. Similar distribution patterns have been observed within the ED. It is expected that livestock and wild horses would utilize riparian and wetland resources to a greater degree as drought conditions worsen due to reduced production and palatability of upland vegetation during drought. The concentrated use of preferred areas in the landscape results in uneven distribution of animal impact, and periods of below average precipitation compound the effects of herbivory, providing periods of accelerated deterioration (Teague et al. 2004). DRAs identified in the Proposed Action would improve the distribution of livestock and/or wild horses and protect riparian areas from overgrazing and trampling during drought. Implementing DRAs described in the Proposed Action would require that 4-inches of residual stubble remain following grazing. Accumulating 4-inches of residual above ground vegetation would aid in filtering and stabilizing sediment, protecting stream banks and shorelines from trampling, providing shade and retaining water longer, dissipating flood energy and ensuring sufficient biomass to improve plant health and vigor (Clary and Leininger 2000).

Photograph 3. A fence-line contrast of Dixie Creek showing water holding capacity of functioning riparian area compared to non-functioning riparian area.

The DRAs described in the Proposed Action would limit the impacts of livestock and wild horses on riparian areas during drought. These actions would be implemented in combination or separately.

Changes in season of use would be used to avoid hot season grazing of riparian areas. Livestock tend to congregate within riparian areas during years of normal precipitation. If drought occurs this behavior would be exacerbated due to a reduction in the quantity and quality of upland vegetation. Measures that exclude and/or intensely manage livestock grazing of these areas while drought conditions persist are needed to provide for the maintenance of riparian vegetation and protection of riparian systems.

Temporary range improvement projects such as water hauls or fences would be used to reduce the impacts of livestock and/or wild horse use on riparian areas. Temporary water hauls would be used to provide water to livestock and/or wild horses away from riparian areas. Providing off-stream water can be effective in altering distribution patterns of cattle grazing in riparian areas and adjacent uplands (Porath et al. 2002). Temporary fences would be used to protect and/or manage riparian areas separately. Fences can be used to separate sensitive areas from other areas to allow them to be managed differently (Bailey 2004).

Partial or complete rest of an allotment and/or HMA would reduce the adverse impacts of grazing on riparian areas during drought. Resting these areas would allow riparian vegetation to make the best use of limited resources during drought. Improved root and shoot growth of vegetation aids in bank stability, water retention, reduces sedimentation and leads to a better functioning riparian system.

**2. Environmental Consequences of the Grazing Closure Alternative**

The Grazing Closure Alternative would require all drought afflicted areas to be closed to grazing. The closure would remove livestock grazing from the public lands to eliminate the impacts of grazing during drought. Rest of these areas would allow riparian vegetation to make the best use of limited resources during drought. Improved root and shoot growth of vegetation aids in bank stability, water retention and reduces sedimentation and leads to a better functioning riparian system.

DRAs for wild horses would be implemented as identified in the Proposed Action and would result in similar effects as described above, for the Proposed Action.

**3. Environmental Consequences of the No Action Alternative**

The No Action Alternative would require the preparation of separate EAs, which would delay drought response times and potentially result in a continuation of current management practices, which are often poorly suited to periods of drought. As stated earlier, drought reduces the health and production of vegetation. Without the prompt implementation of management strategies, the effects of drought can be compounded by improper livestock and wild horse use. Grazing can have a negative impact on streams. When not managed properly, livestock and overpopulation of wild horses can remain in riparian areas damaging stream banks, over grazing riparian vegetation, compacting soils and contaminating streams with waste. Riparian areas that have experienced heavy grazing pressure pose a risk of becoming non-functioning and degraded, especially during times of drought. Livestock can also introduce nonnative plant species. Non-native species may out-compete native species, altering the natural ecosystem. The No Action Alternative would adversely impact riparian resources within the ED.

## J. Hydrology and Water Quality

***Affected Environment***

**Hydrology**

The ED overlies five watersheds which are classified by the United States Geological Service (USGS) as sub-regions and designated by four digit hydrologic unit codes (HUC) (Seaber, et al 1987). These include the Middle Snake, Lower Snake, Black Rock Desert-Humboldt, Central Nevada Desert Basins and Great Salt Lake sub regions which are shown in Map 2. The Nevada Division of Water Resources (NDWR) has its own delineation of watershed boundaries which differs from that of the USGS (NDCNR 1999). The NDWR watersheds are referred to as hydrographic regions. In the ED the NDWR hydrographic regions follow approximately the same boundaries as the USGS sub-basins however the NDWR hydrographic regions are named differently, and the NDWR combines upper and lower Snake River sub-basins into one hydrographic region.

The BLM district boundaries do not correspond to USGS sub-basin or watershed boundaries. Instead, the district boundaries intersect portions of watersheds which are characterized by internal surface drainage and ground water flows. The Black Rock Desert-Humboldt sub-region drains into the

Humboldt River system, depositing it into the Humboldt Playa. The upper and lower Snake sub-region flows primarily north into the Snake River and eventually the Pacific Ocean. The Central and Salt Lake regions are driven by many internal basins with individual "terminal" playas. Groundwater flow in these watersheds generally flows in the same direction as surface water however there is some flow between basins (Heilweil and brooks, 2011).

The climate of the ED is semi-arid and surface water is limited. Precipitation on BLM lands within the ED ranges between 4 and 40 inches per year and averages 12 inches per year. Precipitation is greater on the higher elevations and most precipitation falls as snow during the winter months. About 10% of precipitation reaches streams or infiltrates into groundwater and the rest is consumed by vegetation or evaporates (NDEP 2012). A portion of precipitation that falls in winter months becomes concentrated in streams primarily in springtime as snow melts. The majority of streams are ephemeral and flow only in response to this snowmelt. According to the National Hydrologic Dataset there are about 4700 miles of perennial streams within the ED boundary, 1,200 miles of which occur on BLM administered land.

A small portion of precipitation that falls within the district infiltrates into the ground and resurfaces as springs. There are about 8,000 springs on BLM administered land within the ED and many more on private land. These springs exhibit the full range of water chemistry and other water quality characteristics as determined by their flow paths through local, intermediate, or regional aquifers (Sada, et al 2001). Springs on BLM lands have flows that reach as much as 7,000 gallons per minute however most are small and discharge less than 0.5 gallons per minute.

Streams, springs, reservoirs and groundwater provide water for a variety of beneficial uses including irrigation, riparian vegetation, mining, municipal, domestic, livestock, recreation, and wildlife. A large portion of available water is used for irrigation and is diverted directly from streams or through groundwater wells. Most irrigation occurs on private land, but some irrigation does occur on public land adjacent to Marys River. Another large portion of water is consumed directly from surface and shallow groundwater by riparian vegetation. The riparian vegetation adjacent to streams, springs, and other waterbodies relies on the dependable water that these sources provide. Municipalities and domestic water users divert water primarily from groundwater wells on private land however there are a few of these types of diversions from springs on BLM and private land. Mining operations divert water for mining and milling as well as dewatering on private and BLM land. Livestock and wildlife drink directly from diverted and un-diverted springs and streams that exist on both BLM and private land.

Hydrology of the ED is affected by a variety of natural characteristics as well as human caused activities. Because of the low population and lack of physical development of the ED area, natural effects are responsible for most of the hydrologic variability. These effects include flooding, drought, climate change, and wildfire. Human caused effects occur as a result of land use such as livestock grazing, mining, and other beneficial uses. Hydrology is affected because these occurrences and activities change hydrologic characteristics of the ED such as timing of peak flows and distribution of water resources.

Recent drought has likely directly and indirectly affected hydrology in both the short term (less than 1 year) and in the long term (greater than one year) in the ED. The short and long term direct effect of drought is that less water is available in streams and streams flow for shorter periods of time. In the long term decreased stream flow can impact stream vegetation and morphology and decrease the capability of the stream to store water from high flows and release it during low flows. Drought also affects hydrology indirectly in the long term by altering upland watershed characteristics. Drought decreases the cover of upland plants resulting in an increased probability of higher precipitation runoff rates and increased soil erosion. These effects would likely not occur in the short term, but would affect watersheds in the long term rainfall and snowmelt return.

Livestock grazing in streams and watersheds affects many of the same stream and watershed characteristics affected by drought and can increase the levels of impacts to hydrology. Removal of vegetation by livestock exacerbates effects of already low vegetative cover resulting in further alteration to watershed runoff. Alternatively, livestock hoof action on upland soils may prevent formation of soil physical crusts improving water infiltration and decreasing runoff. Livestock impacts directly to stream channels further decreases the capability of channels to store and release flow. These impacts are especially noticeable during drought because livestock tend to spend more time near water bodies during periods of dry weather (Marlow 1985).

**Water Quality**

Quality of water in ED waterbodies is the result of a wide variety of natural and human caused characteristics, occurrences and activities. Geology, topography, climate, vegetative cover, wildfire and land use are all factors in determining the chemical, physical, and biological properties of these natural waters. Some surface waters may have naturally high levels of various dissolved solids, nutrients, or high temperature naturally while others express these attributes as a result of a combination of natural conditions and anthropogenic influence (Hem 1970).

Land use has been documented to have a considerable direct and indirect impact on water quality. Some land uses such as mining, and sewage treatment facilities discharge contaminated water directly into waterbodies and are known as point-sources. Most sources of anthropogenic water quality degradation in the ED however are the result of inputs throughout the watershed and are known as non-point sources. Livestock grazing is the most common and widespread land use on BLM lands in the ED and likely is the greatest of the anthropogenic impacts on water quality from these lands. Wildlife use causes similar but less intense impact to water quality.

Most livestock impacts to water quality are indirect and result from alterations to the physical characteristics of streams and watersheds. Livestock grazing on uplands can lead to increased erosion into streams which can result in a long term increase in nutrients as well as dissolved and suspended solids. Increased sediment supply often leads to deposition in streams and alteration of stream morphology. Similar impacts also occur as a result of utilization of riparian areas. Riparian area utilization can also decrease stream bank stability and floodplain function leaving streams more susceptible to changes in channel shape and function. Examples of negative impacts include

incision, increasing width/depth ratio, decrease in sinuosity, increase in stream gradient, and riparian shading. These impacts negatively affect water quality by increasing intensity of flood flow; decreasing alluvial buffering, storage capacity, and base discharge; increasing stream temperature; and increasing the likelihood of elevated nutrient levels (Belsky et al, 1999).

Direct impacts to water quality occur through physical disturbance and direct contact with water resulting in bacterial, nutrient, and sediment loading. Impacts are most noticeable when livestock are concentrated in and near water bodies. Following contact, water quality returns to background conditions as stream substrate and organisms remove or filter contamination (Belsky et al, 1999).

Water quality standards as contained in the Nevada Administrative Code (NAC) 445A define water quality goals for waterbodies in the ED. These standards are based on the beneficial uses for these waterbodies and contain both narrative and numeric criteria. Narrative standards contained in NAC 445A.121 apply to all surface waters of the state including streams and springs and require waters to be "free from" various pollutants. Numeric standards also found in NAC 445A designate specific criteria so that water is suitable to use for irrigation, domestic, stockwater, or any other beneficial use (NDEP 2012).

There are 723 miles of streams on BLM administered land within the ED for which the Nevada Division of Environmental Protection (NDEP) has identified beneficial uses and numeric water quality standards. 404 miles of these streams have been identified as having water quality that does not fully support their beneficial uses. These are included in Nevada's 303(d) list of impaired waters. Inclusion of streams on this list is most commonly due to exceedences of parameters set to support aquatic life such as the temperature and total phosphorus criteria (NDEP 2012). The NDEP report did not identify any waters in exceedence of narrative standards.

NDEP has stated that some numeric water quality standards set for Nevada streams may not be appropriate, or even achievable. Although water quality standards are a good starting point, it is not known whether beneficial uses are truly supported until a total maximum daily load (TMDL) is developed for a waterbody. A TMDL is an assessment of the amount of pollutant a water body can receive and not violate water quality standards. Total phosphorus and temperature exceedences do not necessarily mean that beneficial uses are not being supported since elevated values may not necessarily be causing the associated undesirable conditions such as algal growth or low dissolved oxygen (NDEP 2009). The TMDL prepared for Hanks Creek and Dixie Creek in ED illustrates how better standards can be applied for streams on BLM administered land by choosing criteria that are achievable and appropriate for existing beneficial uses (Pahl 2010).

The recent drought has directly affected water quality due to the prolonged shortage of water caused by lack of precipitation. During periods of low flow such as the period currently being experienced, the sources of contamination may stay the same or increase while the quantity of water decreases in waterbodies. This results in a higher concentration of pollutants and increased likelihood of exceedence of water quality standards. In addition, the recent drought likely has and will affect water quality indirectly in the short and long term through its impacts to watershed and

stream physical characteristics. The lack of stabilizing vegetation in the stream and throughout the watershed can result in greater erosion and increase sediment and nutrients into water.

Impacts to water quality from livestock grazing is also greater during the drought since livestock use concentrates on riparian areas during dry periods. A study in Montana indicated that during August and September, observed 80% of forage came from the riparian and wetland resources, which comprised less than 4% of the pasture (Marlow (1985). Similar distribution patterns have been observed within the ED. It is expected that livestock and wild horses would utilize riparian and wetland resources to a greater degree as drought conditions worsen due to reduced production and palatability of upland vegetation during drought. This increased use in areas near water bodies has been known to result in an increase in sedimentation and a reduction in overall water quality (Teague et al. 2004) and these impacts have likely occurred in the ED as a result of the on-going drought.

**1. Environmental Consequences of the Proposed Action**

The Proposed Action includes a variety of DRAs that would reduce the levels of continued and worsening impacts to hydrology and water quality as described in the Affected Environment and No Action Alternative. These DRAs reduce livestock related effects to hydrology and water quality by: reducing the number of animals in watersheds; reducing the number of animals near water bodies; changing season of use to decrease impacts to watershed vegetation and soils; improving livestock distribution; and/or temporarily removing livestock related impacts by temporarily removing animals. Because livestock related impacts are already affecting ED lands, these impacts are described in the Hydrology and Water Quality Affected Environment portion of this document. Drought related impacts to hydrology and water quality would continue even if DRAs are implemented.

**2. Environmental Consequences of the Grazing Closure Alternative**

The Grazing Closure Alternative could have both positive and negative effects on hydrology and water quality. Positive effects would be similar to those described under the Proposed Action, however this alternative could lead to some negative effects as a result of decreased management flexibility. No livestock grazing could lead to a buildup of fuel and increased susceptibility to impacts from wildfire. Wildfire is known to adversely affect water quality by introducing high levels of ash and sediment in the short term and temporarily causing a sudden and extreme increase in water temperature. Wildfire also alters watershed runoff and vegetation characteristics in the long term.

**3. Environmental Consequences of the No Action Alternative**

Under the No Action Alternative the drought related livestock impacts to hydrology and water quality as described above for the Affected Environment would continue to occur. It is expected that impacts to watershed hydrology and stream morphology would worsen and become more intense until the drought ends. Loss of watershed and alluvial storage capacity would be long term and would persist long after the drought ends. Direct livestock related impacts to water quality would also worsen as long as the drought persists however these impacts would cease when the drought ends.

Indirect and long term effects to water quality would recover more slowly. A prolonged drought would result in livestock related impacts to hydrology and water quality that would not recover naturally.

## K. Grazing Management

### *Affected Environment*

There are currently 167 permittees that run livestock within the ED. These permittees are authorized to graze livestock across 7,275,109 acres of public land. The ED is divided into 238 grazing allotments, 141 administered by the TFO and 97 administered by the WFO. Livestock operators graze cattle, sheep, and domestic horses within these allotments. During the 2012 grazing season, the ED authorized approximately 692,506 AUMs. Actual use of AUMs varies from year to year, but is typically far less than what is permitted by the ED.

In addition to livestock grazing, multiple range improvements (e.g., fences, wells, pipelines) have been authorized on the public lands administered by the ED. These range improvements have been constructed to aid in the control of livestock and improve grazing management.

### 1. Environmental Consequences of the Proposed Action

The Proposed Action would result in an increase in grazing management practices on allotments occurring within drought-afflicted areas of the ED. Depending on the DRAs selected, grazing management would be modified. This would lead to increased inputs from permittees. The specific consequences of these inputs have been analyzed within the Socio-Economic Values Section of this document. Implementation of drought gathers to remove wild horses from drought affected areas would improve recovery from drought, resulting in healthier, more productive plant communities and riparian areas in future years, which would benefit future opportunities for livestock grazing.

### 2. Environmental Consequences of the Grazing Closure Alternative

The Grazing Closure Alternative would require the removal of livestock from the drought afflicted public lands within the ED. The removal of livestock would result in the elimination of grazing until resource conditions improve. If no livestock were being grazed on public land, no grazing management would be needed. The closure of grazing allotments could cause a financial hardship for permittees resulting from the loss of opportunity to graze livestock on public lands. The impacts to permittees resulting from a grazing closure have been analyzed within the Socio-Economic Values Section of this document. The Grazing Closure Alternative would eliminate grazing within drought afflicted areas until resource conditions improve. This could improve the vigor of plants during drought and improve post drought recovery. In the long-term the Grazing Closure would be beneficial to grazing management, in that it would ensure future opportunities for grazing due to improved rangeland conditions.

### 3. Environmental Consequences of the No Action Alternative

Under the No Action Alternative, current livestock and wild horse management actions would continue with no modifications and therefore there would likely be no short-term impacts to grazing management. However, as discussed previously, a continuation of current livestock grazing management during drought could lead to the degradation of rangeland resources. During prolonged drought, rangeland degradation may adversely affect the sustainability of rangeland grazing and create situations where rangelands fail to meet BLM Standards and Guidelines (S&Gs) for rangeland health. If S&Gs for rangeland health are not met, the BLM is mandated to implement changes to management activities so that rangelands "…are, or are making significant progress toward…" meeting rangeland health S&Gs (43 CFR §4180, Fundamentals of Rangeland Health and Standards and Guidelines for Grazing Administration) and the appropriate Resource Advisory Council Guidelines. Additionally, the BLM could cancel portions of or entire permits on allotments that fail to meet S&Gs, which could adversely impact grazing management.

## L. Recreation

### *Affected Environment*

The ED serves a variety of recreation user groups within the resource management area including hunting, fishing, camping, Off-Highway Vehicle (OHV) riding, sightseeing, photography, and hiking among others. Most activities take place in dispersed locations throughout the district but, there are many recreation developments including campgrounds, trails, and interpretive sites for the public.

The ED offers 4 campgrounds on BLM managed land, all with various levels of development. Wilson Reservoir, North Wildhorse Reservoir, Zunino/Jiggs Reservoir, and Tabor Creek offer great locations for all types of recreationists and have served as convenient base camps for many users. Popular activities include car, tent, and Recreational Vehicle (RV) camping, fishing, hunting, OHV riding, hiking, photography, wildlife viewing, and others. Campgrounds have many amenities including well maintained vault toilets, metal fire pits, picnic tables, and some specialized amenities specific to each location. These areas are most popular during late summer and fall because of the various hunting seasons that take place during that time of year. OHV riding is another popular activity that takes place at these sites throughout the year with All-Terrain Vehicles (ATVs) plentiful during the summer months and snow machines during the winter.

Every year ED has several permitted events that take place within the resource management area. OHV-motorized events such as motorcycle, ATV, dune buggy, etc. races, typically take place on the eastside of the district south of Wendover, NV were arid conditions have led to sparse vegetation cover, and sandy soils, which are better suited for such activities (Hammitt 1998), and where many existing trails still provide for an exciting event with no new disturbances. Other areas within the district that are of scientific, educations and/or recreational value include the California Trail Backcountry Byway, California Trail Hastings Cutoff, Owyhee Wild and Scenic River segments, Spruce Mountain Historical Mining District, Mineral Hill Cave, several Petrified Wood Sites and historical mine sites, and the Hawkwatch International site where scientists have been conducting research on one of North America's largest predatory bird migration paths for over 30 years.

### 1. Environmental Consequences of the Proposed Action

The Proposed Action would have an effect on recreation within the ED. The installation of temporary water sources and fencing would influence the recreation landscape by possibly altering the natural form, line, color, or texture of surrounding rangeland and riparian resources within the project area. The installation of temporary fencing would also potentially restrict recreation access to previously open areas. Landscape and access alterations such as the ones mentioned above influence the physical component of the Recreation Setting Characteristic that would potentially impact a participant's recreational experience (BLM Handbook 8320-1).

Deviations from current livestock management (e.g., change in season of use, reduced grazing duration, partial reduction in AUMs, partial or complete closure of an allotment(s), targeted grazing of invasive annual communities, and temporary change in the kind or class of livestock) under the Proposed Action would have an impact on recreation within the ED. Some recreation areas could see a reduction in conflicts/encounters with livestock if some, or all, of these actions are implemented.

Wild horse gathers under the Proposed Action could have an impact on wild horse viewing within the ED., There has been an increased interest in wild horses and wild horse viewing within the ED due to the proposition of a wild horse eco-sanctuary south of Wells, NV. If gathers are implemented under drought conditions, this could reduce opportunities to view wild horses within the ED for as long as the emergency actions are in effect, and impact visitors that use public land for that purpose.

Relocating wild horses within HMAs would have similar effects to the impacts for hauling water and conducting drought gathers, and would be contingent on the numbers of animals moved. The viewing experience would then be dependent on which side of the HMA the visitor would be located. Having a more difficult time viewing animals on the side from which the horses were driven.

**2. Environmental Consequences of the Grazing Closure Alternative**

The Grazing Closure Alternative would impact recreation within the ED. Recreation within the ED is typically dispersed and livestock grazing occurs in areas that coincide with recreational use. Removing livestock from public land would reduce or possibly eliminate the potential for conflicts between livestock and recreationists. Additionally, public safety would improve as the potential for collisions between vehicles and livestock would be eliminated, shared pathogens between humans and livestock would not be as prevalent, and evidence of livestock use would not influence the user experience to the same extent as if AUMs were kept at the same level. The potential effects from this decision would last for the duration of the management action.

**3. Environmental Consequences of the No Action Alternative**

The No Action Alternative would impact recreation within the ED. Under drought conditions, livestock, wild horses, as well as other species would congregate in areas that receive more water, especially riparian areas. Riparian areas also serve as a focal point for recreationists (Hammit 1998, Hendee 2002), further stressing this resource, and possibly degrading the recreational experience. Potential consequences from this action include the degradation of rangeland and riparian resources, unfulfilled outcomes and noticeable landscape alteration. Degradation could include, but is not

limited to, vegetation trampling, soil compaction, erosion, water pollution/contamination, and wildlife displacement, leading to diminished or, unfulfilled recreational experiences.

## M. Socio-Economic Values

### *Affected Environment*

The ED includes all of Elko County and the northern portions of Lander and Eureka Counties, Nevada. The primary economic activities that contribute to the economic base for lands within the ED are mining, gaming, transportation, agriculture, and recreation.

According to a 2011 US Census Bureau report, Elko County had a population estimate to be nearly 49,491 people. Population density in Elko County as of 2011 was estimated at around 2.8 people per square mile, which is extremely low when compared to the state of Nevada average, at 24.6 people per square mile (US Census Bureau 2012). Mining and associated activities comprise the largest proportion of the economy in Elko County. Agriculture, although it comprises a much smaller portion of the total labor force, is vital to the county's economy and has been a steady economic force for decades. Recently, travel, tourism and recreation have grown in importance to the local economy. Median household income for Elko County was $69,459 as per 2007-2011 averages (US Census Bureau 2012). Elko County also had a low rate of persons below poverty level (8.6%), compared to the state average of 12.9% (US Census Bureau 2012).

A 2003 study identified 142 economic sectors within the Elko County economy. Cattle ranching recorded $53.8 million in output value, which ranked this industry 8$^{th}$ out of the 142 sectors; the sector employed 482 people, representing 2.53% of the total workforce, which ranked this sector 9$^{th}$ out of the 142 sectors; the industry realized $43.5 million in export sales, representing 5.77% of Elko County's total exports, which ranked this sector 4$^{th}$ out of the 142 sectors. Total economic impact of the industry to Elko County amounted to $96.6 million dollars, with a total direct and indirect payroll of 905 jobs representing $14.4 million in income (Alevy et al., 2007; Riggs et al. 2002; Fadali et al. 2009; Fadali and Harris 2006; Harris et al. 2007).

Like Elko County, Eureka County is a rural county. The Eureka County economy is primarily dependent on ranching, agriculture, and mining (Eureka County 2011a). Demand for energy and precious metals has historically bolstered economic activity through the production of gold. Eureka has gone through boom and bust cycles, which are inherent in a mining economy. Eureka County, at just under 2,000 people, has the second smallest population of any county in the state of Nevada (Eureka County 2011b; US Census Bureau 2012).

Population density as of 2010 was estimated at around 0.5 people per square mile, which is extremely low when compared to the state of Nevada, at 24.6 people per square mile (US Census Bureau 2012). Mining comprises a large proportion of the economy in Eureka County. Agriculture, although it comprises a much smaller portion of the total labor force, is vital to the county's economy and has been a steady economic force for decades. Recently, travel, tourism and recreation have grown in importance to the local economy (Eureka County 2003).

Median household income was $61,472 as per 2005-2009 averages. Eureka also had the lowest rate of persons below poverty (4.8% for 2005-2009) of any of the three counties in the planning area (US Census Bureau 2012). As per 2005-2009 averages, Eureka County had the highest percentage of people employed in the agriculture, forestry, hunting and fishing, and mining industries at 41% (US Census Bureau 2009).

It should be noted that for Eureka County (and other counties as well), the statistics provided by the US Census Bureau and other similar sources are representative of the larger demographic and geographic area outside of the ED and should be received in that context. Eureka County's population, for example, totaled 1,987 people in 2010 (US Census Bureau 2012). There are, according to the Eureka County Profile, only three established communities in the county: Eureka, Crescent Valley, and Beowawe. The majority of the County's residents live in the unincorporated town and county seat of Eureka, and a remaining number of people live in Crescent Valley and Beowawe. The 2000 Census reported that 1,103 people lived in the Eureka Census County Division and 548 lived in the Beowawe census county division (Eureka County 2011b). Eureka County is over 2,673,300 acres, and over such a large expanse of land, resources vary geographically and different areas are inclined to different industries.

Lander County is a county of about 6,000 people (US Census Bureau 2012). The town of Battle Mountain is the seat of government for Lander County. Battle Mountain began as a rail stop servicing the Battle Mountain Mining District, formed in 1866. The rail line is still in service and has been a major factor in the economic life and resulting urban form of Battle Mountain. The town continues to serve as a regional center in support of mining, ranching and tourism (Lander County 2011). Kingston Canyon is a historic mining district, which dates back to silver mines in the 1860s, and now hosts some of the best-varied trout fishing in the state (Lander County 2011). About 30% of people privately employed in Lander County are employed in the mining industry (Headwater Economics 2011). Lander County's economy has been dominated by mining, but agriculture also plays a significant role in the local economy. Currently, over 85% of the county is public land managed by federal agencies. Lander's population density as of 2002 was estimated at around .99 people per square mile (Lander County 2011).

Median household income for Lander County was $66,525 per 2005-2009 averages; per capita income was $25,287; and 12.2% of people fell below the poverty level. Unemployment rates in the county have ranged from a high of 15.2% in 1994 to a low of 2.9% in 2005 and 2007. Unemployment in 2010 was 7.4% (Bureau of Labor and Statistics 2011).

Although small or corporate classes of livestock operations both contribute social and economic benefits to northern Nevada, economic challenge to smaller family operations is probably most likely to harm the social fabric of small communities. This would be especially true if permittees were forced to leave the area because of financial stress. Family operations are typically of great importance to county governments and even to some of the general public. BLM is concerned about and aware of the potential socio-economic consequences of rangeland management actions. Nevertheless, rangeland management decisions in the ED must balance the need to reasonably

support the social fabric and economies of small communities as well as maintain the public land natural resource base upon which the livestock industry relies. Thus, BLM decisions must be crafted in light of the public land's capacity to support wild horses and livestock herds. And where carrying capacity is limited by drought conditions, BLM is obligated by law and by federal regulation to take actions that would result in sustainable grazing use and functioning rangelands, according to the S&Gs and 43 CFR § 4180. BLM has no access to individual permittee financial records. Further, the ED does not intend to request financial records from ranchers for socio-economic analysis purposes. Consequently, this EA section estimating socio-economic impacts of the Proposed Action and Alternatives would only address animal unit month (AUM) changes and costs associated installing temporary range improvement projects (i.e., water troughs, pipelines, fencing). Because BLM cannot conduct a thorough and accurate analysis of how permitted AUMs may affect individual ranchers economically, it is also not possible to predict accurately the consequences to ranches under AUM reductions. This may or may not lead to existing ranches becoming economically unviable. The BLM also assumes that if existing ranches fail, some other corporation or individual could purchase the base property and grazing privileges. It is not possible to foresee which base properties, if any, may change out of livestock production and into some other form of business. If base properties remain active for livestock production, the industry as a whole would continue to exist but under different ownership and likely with reduced income.

It is important to note that BLM is directed by the Taylor Grazing Act to take actions that would stabilize the livestock industry that is dependent upon public rangeland forage. However, it may not be possible for ED BLM to guarantee that every existing livestock permittee would survive as an economic unit or in a manner to which existing ranchers are accustomed in the event that BLM must reduce AUMs to mitigate rangeland impacts due to drought conditions.

For smaller family operations, economic setbacks or other production limitations could greatly challenge their ability to remain viable and a part of the community in which they choose to live. The livestock industry is not alone in facing potential changes to preferred lifestyles and ways of generating income. The same type of economic pressures and concerns about maintaining a way of life that are affecting permittees, are also affecting other commodity producers and businesses.

Aside from the AUM changes described in this EA, ranch viability (e.g., sustainable ranching operations capable of supporting families and paying for necessary additional help) would likely be influenced by factors beyond BLM control. These factors may involve livestock price fluctuations, foreign competition, transportation and fuel costs, public land forage limitations due to drought, winter livestock feeding costs, private pasture rental fees, and other similarly unpredictable factors.

### 1. Environmental Consequences of the Proposed Action

The Proposed Action is designed to prevent degradation of rangeland resources and protect uplands and riparian areas during drought, which would promote rangeland sustainability for wild horses, livestock, and wildlife. Providing for sustainable grazing management that prevents

degradation of habitat conditions for wildlife and wild horses would in turn increase economic opportunities for livestock operations, help sustain livelihoods for the multiple families employed by these ranching operations, and foster more desirable social opportunities.

Continuing viable ranching operations would also enhance the economies of Elko, Eureka, and Lander Counties through taxes and goods and services purchased by the ranches and people employed by these ranches. By maintaining viable ranching operations and protecting rangeland conditions in the ED, traditions associated with the ranching communities within the ED would be maintained.

Under the Proposed Action, public lands within the ED would continue to contribute environmental amenities such as open space, scenic quality and recreational opportunities (including hunting, bird watching, sightseeing, hiking, and OHV). These amenities would remain but could be reduced if rangeland resources are not protected during drought so that they may provide recreational opportunities such as wildlife viewing and hunting.

Costs associated with the materials, labor, and transportation necessary to implement temporary range improvement projects (i.e., water troughs [water hauls], above ground pipelines, fencing) under the Proposed Action could adversely impact permittees. Conversely, the goods and services purchased by permittees to implement temporary range improvements could enhance the economies of local communities and counties. These economic impacts would be expected to be of short-term duration; however, protecting degradation of rangeland resources (through the use of temporary range improvements) would promote rangeland sustainability thereby providing available forage resource to support livestock grazing in the future.

Under the Proposed Action, temporary reductions in authorized AUMs could adversely impact permittees. As stated in BLM Washington Office instruction memorandum (IM) No. 2012-070, the cost to permittees to find alternative forage in Nevada is estimated at $13.00 per AUM to place livestock on private pasture, which does not include labor, fuel, and equipment for hauling livestock if only distant pasture is available. According to BLM WO IM No. 2012-070 the BLM charges permittees $1.35 per AUM to graze livestock on BLM lands; a difference of $11.65 per AUM. The cost of providing hay is variable based upon annual supply and demand, but is likely to be much higher than pasture. Additionally, ranches within the ED may not be able to support their current number of employees, which could have an adverse impact on local economies. Viability and sustainability of the ranches holding grazing permits within the ED could decline in periods of prolonged drought, potentially affecting their way of life.

Changes in livestock grazing management practices (i.e., reduced grazing duration, change in season of use, targeted grazing of invasive, annual communities, etc.) under the Proposed Action would likely have minimal social and economic impacts to permittees or local economies within the ED. Implementing changes in livestock grazing practices would not necessarily include a reduction in AUMs; therefore, minimal material, labor, or transportation cost would be incurred by permittees. It should be noted, however, that if a temporary change in kind or class of livestock is implemented to

mitigate drought impacts, the BLM would assess a $4.08/AUM surcharge (BLM WO IM No. 2012-070) if the permittee leases livestock.

If wild horses were gathered under the Proposed Action, impacts to socioeconomics would be temporary in nature and would cease upon gather completion. These impacts would consist of hiring contractors to conduct the gather operations, and contributions to local economies/towns for food and lodging during gather operations. There would be no permanent changes in employment or population from the Proposed Action or Alternatives. Removing wild horses during drought would prevent additional degradation of rangeland resources thereby promoting rangeland sustainability and providing available forage resource to support wild horse populations in the future.

**2. Environmental Consequences of the Grazing Closure Alternative**

Under this Alternative, grazing closure of drought afflicted areas would likely result in short-term adverse impacts to grazing permittees. As referenced above, the cost to permittees to find alternative forage in Nevada is estimated at $13.00 per AUM (BLM WO IM No. 2012-070) to place livestock on private pasture, which does not include labor, fuel, and equipment for hauling livestock if only distant pasture is available. In 2012, the ED authorized permits for livestock grazing totaling 692,506 AUMs. Under this alternative, the projected annual cost to permittees to graze private land may total up to $9,002,578.00 (assuming 2012 estimated rates). Additionally, the BLM ED would not collect up to $934,883.10 (for 2012 BLM grazing rates are $1.35/AUM) annually in grazing fees from permittees. The cost of providing hay is variable based upon annual supply and demand, but is likely to be much higher than pasture.

Ranches within the ED may not be able to support their current number of employees during periods of drought, which could have temporary adverse impacts on local economies. Viability and sustainability of the ranches holding grazing permits within the ED could decline in periods of prolonged drought, potentially affecting their way of life.

Closing drought-afflicted areas to livestock grazing under this Alternative, however, would prevent degradation of rangeland resources and protect uplands and riparian areas during drought. This would have long-term beneficial impacts for livestock grazing permittees by providing for sustainable grazing management, which would in turn increase economic opportunities for livestock operations, help sustain livelihoods for the multiple families employed by these ranching operations, and foster more desirable social opportunities. Continuing viable ranching operations would also enhance the economies of Elko, Eureka, and Lander Counties through taxes and goods and services purchased by the ranches and people employed by these ranches. By maintaining viable ranching operations and protecting rangeland conditions in the ED, traditions associated with the ranching communities within the ED would be maintained.

**3. Environmental Consequences of the No Action Alternative**

Under the No Action Alternative, the DRAs contained within the Proposed Action and the Grazing Closure Alternative would not be implemented. No changes to the current livestock grazing and wild horse management activities would be implemented.

Continuation of current livestock and wild horse management during drought would likely lead to the degradation of upland and riparian health. If drought conditions persist for prolonged periods, cumulative degradation of rangeland health could result in grazing allotments failing to meet rangeland S&Gs in the future. If S&Gs for rangeland health are not met, the BLM is mandated to implement changes to management activities so that rangeland "…are, or are making significant progress toward…" meeting rangeland health S&Gs (43 CFR § 4180, Fundamentals of Rangeland Health and Standards and Guidelines for Grazing Administration). Additionally, the BLM could cancel portions of or entire permits on allotments that fail to meet S&Gs, which could adversely impact affected permittees.

The No Action Alternative could also adversely affect permittees who are required to implement rangeland improvement projects so that degraded rangelands "…are, or are making significant progress toward…" meeting rangeland health S&Gs. Economic setbacks or other production limitations may greatly challenge the ability of livestock producers to remain viable. As previously stated, it would not be possible for ED BLM to guarantee that every existing livestock permittee would survive as an economic unit or in a manner to which existing ranchers are accustomed in the event that BLM must cancel portions of or entire permits due to a failure to meet S&Gs.

## N. Soils

### *Affected Environment*

The extremes of climate, relief, aspect and geologic type combine to form a wide variety of soil types. Soils vary with differing parent materials, position on the landscape (landform), elevation, slope, aspect and vegetation. Soils range from those on the valley floors that are frequently deep, poorly drained and alkaline with a high salt content to shallow mountain soils formed over bedrock with pH levels near neutral.

Soil surveys have been completed within the ED. The information obtained from these surveys is used in evaluating land-use potential, potential natural plant communities and developing reclamation and rehabilitation plans. Most of the soils within the ED are aridisols, mollisols, and entisols.

The soils in the valleys are mainly mineral soils of two types: those that do not have water continuously available for three months when the soil is warm enough for plant growth (aridisols); and soils showing little evidence of the soil forming process, the development of horizons or layers (entisols). Aridisols dominate deserts and xeric shrub lands and have a very low concentration of organic matter. Water deficiency is the major defining characteristic of aridisols. Entisols accumulate

on land surfaces that are very young (alluvium, mudflows), extremely hard rocks or disturbed material, mined land, highly compacted soils, or toxic material.

The mountains within the ED consist of aridisols and entisols, and some deeper mineral soils with grass cover and a brown surface horizon (mollisols). Generally, entisols occur on steep mountain slopes where erosion is active. They also occur on flood plains and alluvial fans where new material is deposited. Aridisols and mollisols are older and occur on more stable alluvial fans and terraces.

Average annual soil loss varies across the ED. Some soils exhibit high rates of erosion rates while others are expected to exhibit much lower erosion rates. In general, as disturbance increases and/or soil cover is reduced, soil loss increases compared to what is expected. Management actions which maintain or improve vegetation cover and reduce disturbance are expected to reduce the rate of wind and water erosion.

**1. Environmental Consequences of the Proposed Action**

Soil site stability is an important rangeland health attribute. Stability is important for soil biotic integrity and resistance to erosion. Under the Proposed Action, DRAs would be implemented to maintain vegetation within the ED, which would minimize the potential for accelerated erosion events. A healthy, productive, and diverse plant community plays an important role in the improvement and/or maintenance of soil processes such as permeability and infiltration rates and soil site stability.

Dry soils usually encountered during drought are at risk of erosion. The erosion hazard during a drought is increased when prolonged grazing pressure has further reduced plant cover (Thurow and Taylor 1999). Inadequate plant cover can lead to substantial wind or water erosion of valuable top soil (Reece et al. 1991). Crusting of surface soils is another problem associated with low vegetation cover. When rain strikes exposed soil the partials are detached by the raindrop energy and are likely to lodge in the remaining soil pores, making them smaller or sealing them completely resulting in a crust (Thurow and Taylor 1999). This reduces water infiltration and increases erosion potential. Standing dead vegetation and litter reduce the impact of raindrops and promotes water infiltration. Soil cover also inhibits crusting by reducing raindrop impact; thereby, reducing water erosion (Gates et al. 2003). The prevention of accelerated erosion depends on the ability to respond to reduced vegetative growth quickly, so that adequate plant and litter cover remain (Reece et al. 1991). The Proposed Action would provide for prompt detection of drought conditions through the DMMP. These actions are designed to promote proper utilization of vegetation by livestock and wild horses within the ED. As stated earlier, proper utilization would provide for adequate cover needed for soil protection during drought. The specific DRAs selected would depend on the situation. Forage and water conditions would be assessed and monitored using the DMMP referenced in the Proposed Action.

A majority of the DRAs are intended to improve livestock and/or wild horse distribution and prevent the overutilization of vegetation during drought. DRAs intended to improve distribution include temporary range improvement projects; change in livestock management practices; and temporary

change in kind or class of livestock. The remainder of the actions brought forward would be used to address timing and duration of grazing and adjust stocking rates to match forage and water supplies. These include change in season of use, change in grazing duration, partial reduction in AUMs, partial closure of an allotment(s), and wild horse removal.

Actions designed to improve distribution would limit soil erosion by ensuring grazing pressure is distributed across an allotment(s) or HMA(s). Temporary range improvement projects such as water hauls, above ground pipelines or electric fences would result in a temporary congregation of livestock and/or wild horses within certain areas (i.e., the immediate area near the improvement). The congregation of livestock and/or wild horses near temporary rangeland improvements could lead to an increase in soil compaction, a reduction in vegetative cover and an increased potential for soil erosion. However, the use of temporary range improvement projects would improve the overall distribution of livestock and/or wild horses. This would limit the overuse of vegetation by evenly distributing grazing pressure across and allotment(s) or HMA(s). Proper utilization of vegetation, especially during drought is needed to provide adequate vegetative cover needed to reduce soil erosion. Temporary electric fences could also be used to exclude livestock from critical areas such as riparian areas, meadows, critical areas for wildlife or areas where soil erosion is likely.

Livestock and wild horse use around temporary improvement projects would be monitored. Once the aforementioned utilization criteria are met, livestock and the temporary range improvement projects would be removed from the area. In circumstances where wild horses are the primary grazers, conditions would be assessed to determine if an adequate amount of forage and water remain to support the animals. The use of temporary range improvement projects would only be used when it is determined that adequate forage resources exist to allow for continued grazing of an area in a manner that would not further impact rangeland resources.

DRAs that address the timing and duration of grazing would ensure that grazing occurs at the appropriate time and for the appropriate duration during drought. Reduction of AUMs would adjust livestock grazing to a level consistent with available forage and water supplies. Changing the season of use can reduce adverse grazing impacts during drought; adjustments would be made according to the availability of water and forage and rangeland condition. In most areas, shifting the season of use to a time outside of the critical growth period would allow forage plants to take full advantage of available soil moisture and nutrients. Allowing plants the opportunity to grow unimpeded would increase ground cover and reduce soil erosion.

Reductions in grazing duration are often needed during drought to protect rangeland resources from degradation. Grazing durations, as currently permitted, may result in plants being grazed multiple times. Plants that are grazed repeatedly may have little or no opportunity to regrow between successive defoliations and may become stressed (Howery 1999). Reduced grazing durations would provide for an increased amount of rest for plants already stressed by drought and, thereby, increase ground cover and protection from soil erosion.

Targeted grazing of cheatgrass and other non-native annual species could be used to provide forage while providing rest for native species and reduce undesirable plants and hazardous fine fuels.

Annual bromes such as cheatgrass can provide a valuable forage resource under drought conditions (Reece et al. 1991). Targeted livestock grazing on monotypic annual communities can help reduce fire hazards by disrupting fine fuel continuity and reducing fuel loads (Peischel and Henry 2006). According to Reece et al. (1991), moderate defoliation of annual species can enhance the production of perennial grasses by reducing plant competition and minimizing soil moisture depletion. This would reduce the risk of soil erosion by increasing perennial plant cover.

Partial reduction in AUMs, partial or complete closure of an allotment, and/or wild horse removal are all intended to balance animal stocking rates with forage supply and water availability. As stated before, drought often results in a reduction of forage and water resources. If it is determined that forage and/or water supplies are insufficient to meet livestock and/or wild horse needs, temporary AUM reductions may be implemented. DRAs that improve livestock and/or wild horse distribution are only viable when adequate forage and water resources exist within an allotment or HMA; therefore, when resources are insufficient to meet livestock and wild horse needs, continuation of pre-drought stocking rates would result in overutilization of plants and an increase in soil erosion.

During wild horse drought gathers, direct impacts such as soil displacement and compaction would occur at trap sites (less than 1 acre in size). Trap sites are ideally located in areas previously disturbed. Precautions would be taken during the gather to limit the impacts to soils during gather operations (refer to Attachment 2 for Gather Plan and SOPs).

Relocating wild horses within HMAs would have similar impacts to the impacts for hauling water and conducting drought gathers, and would be congruent with the numbers of animals moved. The receiving portion of the HMA would experience an increase in the population, some impacts to vegetation, soils riparian areas and water could be expected due to the additional travel, trampling, trailing or utilization that could occur. The portion of the HMA where animals were moved from would endure benefits similar to those that would be expected following a drought gather to remove all or some of the wild horses.

**2. Environmental Consequences of the Grazing Closure Alternative**

The Grazing Closure Alternative would provide rest for all areas afflicted by drought. Resting these areas would provide vegetation an opportunity to take full advantage of available soil moisture and nutrients without interruption. This would ensure adequate cover remains and the potential for soil erosion would be reduced. Grazing closure would remove livestock grazing from the public lands to eliminate the impacts of grazing during the drought and would provide rest for plant recovery.

DRAs for wild horses would be implemented as identified in the Proposed Action and would result in similar effects as described above, for the Proposed Action.

**3. Environmental Consequences of the No Action Alternative**

Wind velocity and its potential to detach and transport dry soil, exponentially increases as vegetation cover is reduced (Marshall 1973). Proper use of range forage allows plants to survive dry periods, recover quickly, and provide cover to protect the soil and promote water infiltration (Hanselka and

White 1986). Protection of range plants during drought years allows for quick recovery following a drought (Howery 1999). The No Action Alternative would require the preparation of separate EAs, which would delay drought response times and potentially result in a continuation of current management practices, which are often poorly suited to periods of drought. Without the prompt implementation of management strategies, the effects of drought could be compounded by improper livestock and wild horse use. The No Action Alternative would negatively impact soils resources within the ED due to an increased likelihood of erosion.

## O. Vegetation (Including Special Status Plant Species)

### *Affected Environment*

#### Dominant Vegetation Communities

The following description of dominant vegetation communities occurring within the ED has been adapted from information provided by Weisberg (2010).

The geography and rugged topography within the ED have given rise to a diversity of vegetation types. Great Basin vegetation occupies most of the district, which is characterized by high, sagebrush-dominated valleys and numerous mountain ranges. Vegetation is dominated by cool season plants, which depend on winter precipitation for survival. The Great Basin is considered a "cold desert" because of its snowy winters although summers can be quite hot and dry.

#### Great Basin

Nevada's other important vegetation types are characteristic of the Great Basin and vary according to elevation zone. Rainfall increases and temperature decreases with increasing elevation from valley bottom to mountain peak. In an average year, many of ED's higher mountain ranges are covered in snow all winter, while many valley bottoms are snow-free for much of the season. The distribution of plant species tracks these climatic differences, resulting in a similar zonation of vegetation types in the various mountain ranges. For simplicity, the Great Basin's vegetation zones can be lumped into several distinct types: Salt Desert (Shadscale Zone), Sagebrush Grassland, Pinyon-Juniper Woodland and Mountain Shrub. Salt Desert and Sagebrush Grassland are characteristic of valley bottoms.

#### Salt Desert Shrub

Salt Desert is most prevalent in the low, saline valleys. In the poorly drained playas characteristic of this vegetation type, the water table fluctuates periodically. This results in the development of a salty crust on the surface, as well as extensive wind erosion during dry periods. Plant species that occur in the Salt Desert, such as shadscale and greasewood (*Sarcobatus vermiculatus*), are well adapted to high salt levels and drought conditions. Although there is more biodiversity than what is always apparent to the observer, the general aspect of this vegetation type is one of uniformity, as it is dominated by low, nondescript shrubs that are often spiny and of a greenish-gray hue. Vegetation cover is typically only about 10–15% of the ground surface.

#### Sagebrush Grassland

At somewhat higher elevations and on well-drained soils, Salt Desert transitions into Sagebrush Grassland. Shrubs here are taller and less spiny than in the Salt Desert zone, and vegetation cover is typically 15–40%. Annual precipitation of at least eight inches is typically required to support this vegetation type. Dominant shrub species include big sagebrush, low sagebrush (*Artemisia arbuscula var. arbuscula),* black sagebrush (*Artemisia arbuscula var. nova*), Ephedra species, antelope bitterbrush (*Purshia tridentata*), spiny hopsage (*Grayia spinosa*), desert gooseberry (*Ribes velutinum),* snowberry, (*Symphoricarpos spp*.), littleleaf horsebrush (*Tetradymia glabrata*), and rabbitbrush (*Chrysothamnus spp*.). Also important in the Sagebrush Grassland are a variety of forbs (flowering herbaceous plants) and perennial bunchgrasses such as Great Basin wild rye (*Leymus cinereus*), squirreltail (*Elymus elymoides*), needle-and-thread (*Heterostipa comata*), and Indian rice grass (*Oryzopsis hymenoides*). Such grasses are referred to as "perennial" because plants survive over multiple seasons, and with proper management, they can develop deep root systems for surviving drought.

The balance between shrub and grass dominance in the Sagebrush Grassland zone depends upon the timing and overall amount of precipitation, land use history, and grazing practices. More abundant precipitation favors bunchgrasses, particularly if it occurs as rainfall in summer months (i.e., a more monsoonal climate). Over-grazing favors shrubs of low palatability, such as big sagebrush and can lead to an increase in bare ground.

Invasion by exotic plant species such as cheatgrass (*Bromus tectorum*) is also prevalent in this vegetation zone and can be exacerbated by overgrazing. Because it dries out in early summer and becomes highly flammable, cheatgrass changes the fire frequencies in sagebrush communities from 50 or more years to 10 or fewer years between burns. After a few fires, slow-growing, fire intolerant shrubs are eliminated, perennial grass species decline, and a cheatgrass monoculture becomes established. Such a vegetation type is of little use to wildlife, wild horses or livestock.

**Riparian Areas**

The mountain ranges of the Great Basin are dissected by innumerable canyons, which often contain Sagebrush Grassland vegetation at their bottoms. Riparian plant communities occur where perennial streams flow through canyon bottoms. Such communities may be dominated by grassy meadows, shrubs, or trees, depending upon the physical setting, geology, flood regime, and history of human disturbance characteristic of a particular canyon. Narrow stringers of flood-adapted tree and shrub species occur along steep, confined reaches. Stately groves of quaking aspen (*Populus tremuloides*) and narrowleaf cottonwood (*Populus angustifolia*) can be found in deep canyons of some of the mountain ranges within the ED. Common shrubs of the Great Basin riparian zone include water birch (*Betula occidentalis*), wild rose (*Rosa woodsii*) and several willow species (*Salix spp.)* Finally, geomorphic features such as debris fans sometimes create areas of elevated water tables in the riparian zone, giving rise to springs and wet meadows dominated by graminoids (grasses, sedges and rushes).

**Pinyon-Juniper Woodland**

Above the canyon floors lies the Pinyon-Juniper Woodland, often a broad belt that begins at the margin of mountain and valley and extends upwards to approximately 7,000 feet in elevation. Development of substantial tree cover generally requires annual precipitation of at least 12 inches. This zone is typically a complex mosaic of shrub- and tree-dominated patches, intergrading into mountain shrub communities at higher elevations and on north-facing aspects. Dominant tree species are singleleaf pinyon (*Pinus monophylla*) and Utah juniper (*Juniperus osteosperma*).

**Mountain Shrub**

Many of the mountain ranges within the ED lack subalpine forest vegetation. Instead, Pinyon-Juniper Woodland gives way to a diverse Mountain Shrub community at higher elevations and on moister sites. The Mountain Shrub community occurs as a band above the cold tolerance limit of pinyon and juniper, over extensive areas in the ED between 7,500 and 10,000 feet in elevation. Mountain big sagebrush (*Artemisia tridentata subsp. vaseyana*) dominates mountain shrub communities together with a diverse mixture of other shrub species, grasses, and flowering herbaceous plants. Many important shrub species in this vegetation type are members of the rose family, including bitterbrush, cliffrose (*Purshia mexicana var. stansburiana*), Western serviceberry (*Amelanchier alnifolia*), dwarf ninebark (*Physocarpus alternans*), Western chokecherry (*Prunus virginiana var. demissa*), and wild rose. Interspersed within the montane sagebrush grassland are patches of curlleaf mountain mahogany (*Cercocarpus lediofolius*) along ridge tops and groves of quaking aspen in canyon bottoms and bedrock hollows.

Lower temperatures and higher precipitation allow the mountain shrub communities to be much more productive than structurally similar sagebrush communities at lower elevations. As a result, they provide abundant forage for a great number of animal species. Mule deer, pronghorn, bighorn sheep, and elk undertake seasonal migrations up the mountains in summer and early fall where they concentrate their foraging activities in mountain shrub communities. Several of the shrub and tree species (bitterbrush, cliffrose, mountain mahogany, aspen) are preferred mule deer food sources.

**Special Status Plant Species**

There are no federally listed plant species within the ED listed under the ESA, however there are other special status plant species, most notably species designated as "species of concern" by the Nevada BLM State Director. Table 8 identifies those special status species that occur or are likely to occur within the ED.

Table 8. Special status plant species found within the ED.

| Scientific Name | Common Name | FWS Status* | NV Range | BLM Criteria** |
|---|---|---|---|---|
| *Antennaria arcuata* | Meadow pussytoes | Species of Concern | Y | 1, 2 |
| *Astragalus anserinus* | Goose Creek milkvetch | Species of Concern | Y | 1, 2 |
| *Arabis falcifructa* | Elko rockcress | Species of Concern | Y | 1,2 |
| *Collomia renacta* | Barren Valley collomia | Species of | Y | 1, 2 |

| Scientific Name | Common Name | FWS Status* | NV Range | BLM Criteria** |
|---|---|---|---|---|
| | | Concern | | |
| *Erigeron latus* | Broad fleabane | Species of Concern | Y | 1, 2 |
| *Eriogonum beatleyae* | Beatley buckwheat | Species of Concern | Y | 1 |
| *Eriogonum lewisii* | Lewis buckwheat | Species of Concern | Y | 1 |
| *Eriogonum nutans* var. *glabratum* | Deeth buckwheat | Species of Concern | Y | 1 |
| *Ivesia rhypara* var. *rhypara* | Grimy mousetails | Species of Concern | Y | 1 |
| *Lathyrus grimesii* | Grimes vetchling | Species of Concern | Y | 1,2 |
| *Lepidium davisii* | Davis peppercress | Species of Concern | Y | 1, 2 |
| *Leptodactylon glabrum* | Owyhee prickly phlox | Species of Concern | Y | 2 |
| *Mentzelia tiehmii* | Tiehm blazingstar | Species of Concern | Y | 1 |
| *Penstemon idahoensis* | Idaho beardtongue | Species of Concern | Y | 2 |
| *Phacelia minutissima* | Least phacelia | Species of Concern | Y | 2 |
| *Potentilla cottamii* | Cottam cinquefoil | Species of Concern | Y | 1 |
| *Ranunculus triternatus* | Obscure buttercup | Species of Concern | Y | 1 |
| *Silene nachlingerae* | Nachlinger catchfly | Species of Concern | Y | 1 |

**Candidate* - Plants and animals that have been studied and the US Fish and Wildlife Service have concluded that they should be proposed for addition to the Federal endangered and threatened species list. These species have formerly been referred to as category 1 candidate species. From the February 28, 1996 Federal Register, page 7597: "those species for which the Service has on file sufficient information on biological vulnerability and threat(s) to support issuance of a proposed rule to list but issuance of the proposed rule is precluded."

*Endangered* - an animal or plant in danger of extinction within the foreseeable future throughout all or a significant portion of its range, as defined in the Endangered Species Act.

*Threatened* - any species which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.

*Species of Concern* - An informal term that refers to those species which Region 3 believes might be in need of concentrated conservation actions. Such conservation actions vary depending on the health of the populations and degree and types of threats. At one extreme, there may only need to be periodic monitoring of populations and threats to the species and its habitat. At the other extreme, a species may need to be listed as a Federal threatened or endangered species. Species of concern receive no legal protection and the use of the term does not necessarily mean that the species will eventually be proposed for listing as a threatened or endangered species.

**1 - Information that a species has recently undergone, is undergoing, or is predicted to undergo a downward trend such that the viability of the species or a distinct population segment of the species is at risk across all or a significant portion of the species range.

2 - The species depends on ecological refugia or specialized or unique habitats on BLM-administered lands, and there is evidence that such areas are threatened with alteration such that the continued viability of the species in that area would be at risk.

## 1. Environmental Consequences of the Proposed Action

To survive, perennial plants must accumulate both above ground (shoot growth) and below ground (root growth) biomass through the process of photosynthesis, transpiration, and respiration (Howery 1999). Excessive removal of above ground biomass during the growing season reduces root growth. A healthy root system is paramount in the growth of any range plant, especially during dry years when competition for water and nutrients is most severe (Bedell and Ganskopp 1980). Proper use of range forage allows plants to survive dry periods, recover quickly, and provide cover to protect the soil and promote water infiltration (Hanselka and White 1986). Rangeland conditions and vegetation types vary throughout the ED. Differences in vegetation communities and the condition of those communities would determine their ability to withstand drought. The Proposed Action defines DRAs for each major vegetation community known to occur within the ED. The utilization recommendations were developed using the utilization guidelines proved by Holechek et al. (1988) and would be used to activate DRAs to ensure that proper utilization occurs for each vegetation type within the ED.

The degree to which drought impairs the range's potential for future forage production depends on the intensity, frequency and timing of grazing (Howery 1999). The DRAs described in the Proposed Action would implement management strategies intended to limit the impacts of livestock and wild horses on vegetation including special status species during drought.

The concentrated use of preferred areas in the landscape results in uneven distribution of animal impact, and drought compounds the effects of herbivory, providing periods of accelerated deterioration (Teague et al. 2004). Many of the DRAs described within the Proposed Action are designed to improve livestock distribution and prevent the overuse of vegetation during drought. DRAs intended to improve livestock distribution include temporary range improvement projects; change in livestock management practices; and temporary change in kind or class of livestock.

Temporary range improvement projects such as water hauls, above ground pipelines or electric fences would result in a temporary congregation of livestock and/or wild horses within certain areas (i.e., the immediate area near the improvement) but would improve the overall distribution of livestock and/or wild horses. This would limit the overuse of vegetation by evenly distributing grazing pressure. Livestock and wild horse use around temporary improvement projects would be monitored. In circumstances where wild horses are the primary grazers, conditions would be assessed to determine if an adequate amount of forage and water remain to support the animals. The use of temporary water hauls and/or temporary above ground pipelines would only be used when it is determined that adequate forage resources exist to allow for continued grazing of an area in a manner

that would not further impact rangeland resources. Temporary electric fences would facilitate targeted grazing within monotypic annual plant communities. Temporary electric fences could also be used to exclude livestock and wild horses from critical areas such as riparian areas, meadows, critical areas for wildlife or areas where sensitive plant species are likely to occur.

Changes in livestock management practices such as strategic placement of salt and/or mineral supplements increased herding and concentrating livestock into a single heard can be used to improve livestock distribution. Strategic placement of low moisture blocks is effective in attracting cattle to graze high and rugged rangeland (Bailey et al. 2008a). Low-stress herding is effective in focusing grazing in an area that typically receives little grazing use (Bailey et. al 2008b). Bradford (1998) observed that managing with a single herd strongly affects livestock distribution and grazing patterns. It was found that "bunching" the cattle created a more even utilization pattern and resulted in cattle moving into areas that had not been used before.

A temporary change in kind or class of livestock can provide opportunities to improve livestock distribution and protect vegetation from over utilization. Yearling cattle utilize pastures more uniformly over variable terrain than cows with calves or mixed classes; cows and calves utilize forages nearest the water much more heavily than yearlings (Volesky et al. 1980). Selecting yearlings would improve grazing distribution and limit impacts to riparian areas. Choosing a different kind of livestock would also affect how a range can be utilized. With their large mouths, cattle and horses may not select annual grasses as readily as sheep or goats because livestock prefer plants they can eat quickly and efficiently. Sheep or goats can get a full bite of annual grasses more easily than cattle or horses, especially when annual grass plants are small (Peischel and Henry 2006). Sheep and goats can be herded more effectively which allows for greater control and provides an opportunity to limit impacts to critical areas such as riparian areas, meadows, aspen stands, critical wildlife habitat etc.

During drought, growth slows and plants should be rested longer (Hanselka and White 1986). A significant impact of drought on rangelands is a severe reduction in herbage production (Bedell and Ganskopp 1980). DRAs that address timing, duration and stocking rate have been developed. These include change in season of use, change in grazing duration, partial reduction in AUMs, partial or complete closure of an allotment(s), and wild horse removal from drought afflicted areas.

Changing the season of use in which livestock are grazed can reduce grazing impacts during drought. Excessive removal of plant material during the growing season reduces root growth and replacement; thereby, reducing a plant's ability to harvest solar energy and soil moisture needed for maintenance and growth (Howery 1999). The specific season of use chosen would be fitted to the situation at hand. In most areas, shifting the season of use to a time that is outside of the critic al growth period would allow forage plants to take full advantage of available soil moisture and nutrients. Plants can then be grazed after sufficient growth or dormancy occurs. In areas dominated by cheatgrass, spring grazing and/or fall grazing may be appropriate to take advantage of the annual forage while it is green.

Reductions in grazing duration are often needed during drought to protect rangeland resources from degradation. Grazing durations, as currently permitted, could result in plants being grazed multiple

times. Plants that are grazed repeatedly may have little or no opportunity to regrow between successive defoliations and may become stressed (Howery 1999). Reduced grazing durations would provide for an increased amount of rest for plants already stressed by drought and lead to an increase in ground cover and protection from soil erosion.

Targeted grazing of cheatgrass and other non-native annual species could be used to provide forage while providing rest for native species and reduce undesirable plants and hazardous fine fuels. Annual bromes such as cheatgrass can provide a valuable forage resource under drought conditions (Reece et al. 1991). Targeted livestock grazing can help reduce fire hazards by disrupting fine fuel continuity and reducing fuel loads (Peischel and Henry 2006). According to Reece et al. (1991), moderate defoliation of annual species can enhance the production of perennial grasses by reducing plant competition and minimizing soil moisture depletion.

Partial reduction in AUMs, partial closure of an allotment, and removal are all intended to match stocking rates to forage supply and water availability. Drought often results in a reduction of forage and water resources. If it is determined that forage and/or water supplies are not sufficient to provide for livestock and/or wild horses, temporary AUMS reductions could occur. DRAs intended to improve livestock and/or wild horse distributions are only viable when adequate resources exist within an allotment or HMA. A continuation of current stocking rates would result in overutilization of plants and degradation of rangeland resources. Heavy use of plants during drought results in permanent damage and high death loss of forage plants (Hanselka and White 1986). If necessary a drought gather could occur. Some disturbance to vegetation as a result of a drought gather would occur localized the gather trap and holding corrals. However, overall improvement and/or maintenance of vegetation are expected to occur due to a decrease in use (matching animal population to forage supply) and improved distribution as a result of fewer animal numbers.

Relocating wild horses within HMAs would have similar impacts to the impacts for hauling water and conducting drought gathers, and would be congruent with the numbers of animals moved. The receiving portion of the HMA would experience an increase in the population, some impacts to vegetation, soils riparian areas and water could be expected due to the additional travel, trampling, trailing or utilization that could occur. The portion of the HMA where animals were moved from would endure benefits similar to those that would be expected following a drought gather to remove all or some of the wild horses.

**2. Environmental Consequences of the Grazing Closure Alternative**

The Grazing Closure Alternative would provide rest for all areas afflicted by drought. Resting these areas would allow vegetation to take full advantage of available soil moisture and nutrients without interruption. Protection of range plants during drought years allows for fast recovery following a drought (Howery 1999). The Grazing Closure Alternative would remove livestock grazing from the public lands to eliminate the adverse impacts of grazing during the drought and provide rest for plant recovery.

The Grazing Closure Alternative would not provide for the targeted grazing of invasive annual species and would limit the BLM's opportunity to reduce the vigor of invasive species that may compete with native vegetation. Closing drought-afflicted areas to livestock grazing under this Alternative would prevent degradation of rangeland resources and protect upland and riparian vegetation communities as well as sensitive plant species during drought. This would have long-term beneficial impacts to vegetation within the ED.

DRAs for wild horses would be implemented as identified in the Proposed Action and would result in similar effects as described above, for the Proposed Action.

**3. Environmental Consequences of the No Action Alternative**

"It is obvious that when it comes to drought, it is not a question if drought will occur, but rather when it will occur, how long will it last, and are we prepared?" (Howery 1999). Drought or water stress affects virtually every physiological and biochemical process in plants (Hanselka and White 1986). Grazing management practices before, during, and following a drought would influence the ability of native rangeland vegetation to recover (Encinias and Smallidge 2009). Lagged responses toward drought pose a threat to sustainable management of rangelands (Thurow and Taylor 1999). The No Action Alternative would require the preparation of separate EAs, which would delay drought response times and potentially result in a continuation of current management practices, which are often poorly suited to drought. Livestock and wild horse use would be concentrated around remaining water sources and riparian areas. This would result in an uneven or patchy distribution of grazing pressure with areas of heavy use, leaving other areas far from water unused. As stated earlier, drought reduces the health and production of vegetation. Without the prompt implementation of management strategies, the effects of drought can be compounded by improper livestock and wild horse use. The No Action Alternative would negatively impact vegetation resources within the ED directly affecting the present condition and limiting the ability of vegetation to survive and recover from dry periods in future years. Unsustainable range use can cause an increase in the frequency and consequences of drought (Thurow and Taylor 1999). Hanselka and White (1986) found that weakened root systems affect the ability of plants to pull moisture from the soil and that closely grazed plants will permanently wilt when there is still 6-8 percent moisture in the soil.

## P. Wild Horses

### *Affected Environment*

The ED administers 8 HMAs encompassing over 1.8 million acres of public and private lands. The TFO administers 4 HMAs and the WFO 4 HMAs. HMAs within the ED range in size from 17,151 acres to 502,909 acres. The TFO and WFO also cooperatively manage several US Forest Service Wild Horse Territories (WHTs). The 2012 estimated population within the ED is approximately 2,713 wild horses. The AML for the ED HMAs is 652-1,338. The following table outlines population estimates per HMAs administered by the ED.

Table 9. Wild horse population estimates by HMA within the ED.

| HMA | HMA Number | Public Acres | Private Acres | Total Acres | AML | 2012 Estimated Populations | Last Gathered |
|---|---|---|---|---|---|---|---|
| Owyhee | NV-101 | 336,262 | 2,842 | 339,104 | 139-231 | 186 | 2013[1] |
| Little Humboldt | NV-102 | 15,734 | 1,417 | 17,151 | 48-80 | 22 | 2010 |
| Rock Creek | NV-103 | 102,638 | 24,115 | 126,753 | 150-250 | 424[2] | 2010 |
| Diamond Hills North | NV-104 | 69,056 | 1,423 | 70,478 | 37 | 174 | 2013[4] |
| Maverick-Medicine | NV-105 | 332,367 | 4,767 | 337,134 | 166-276 | 587 | 2011 |
| Antelope Valley | NV-106 | 496,356 | 6,553 | 502,909 | 155-259 | 626[2] | 2012 |
| Goshute | NV-107 | 265,260 | 2,007 | 267,267 | 74-123 | 358 | 2011 |
| Spruce-Pequop | NV-108 | 214,150 | 9,419 | 223,569 | 49-82 | 336 | 2011 |

[1] BLM completed a gather in January 2013
[2] Inventory flights found 208 of the 424 wild horses residing outside the HMA boundaries.
[3] BLM gathered 45 wild horses in October 2012 due to escalating conditions
[4] BLM anticipates gathering wild horses in the Diamond Hills North HMA in Jan-Feb 2013.

HMAs are land areas designated through the Land Use Planning process for the long-term management of wild horses. Many HMAs encompass mountain ranges and include mountain shrub, meadow, mahogany, pinyon and juniper vegetation types interspersed with perennial streams and springs. Wild horses also use sparsely vegetated, rocky mountains with limited water. Winter habitat typically consists of valley bottoms and lower elevations that may support winterfat or other salt desert shrub vegetation. The primary vegetation types used by wild horses consist of Wyoming or mountain big sagebrush with an understory of perennial grasses. Wild horse populations generally move throughout or between HMAs in response to forage and water quantity, precipitation, temperature and other factors that change seasonally. Competition resulting from increased populations would also influence wild horse movement within and/or between HMAs as well as outside HMA boundaries.

In drought years, reduced winter snow and spring precipitation limits the recharge of springs and streams, as well as the overall availability of water to wild horses. HMAs vary widely in their abundance and productivity of water sources. Some HMAs have many productive water sources available that are marginally impacted by drought. Other HMAs have few water sources or water sources that are more reactive to drought. The number and productivity of waters in relation to the population of wild horses is an important consideration as well. Effects from drought in HMAs that are overpopulated and support limited waters would be more substantial when compared to HMAs with normally plentiful water and populations at AML.

Photograph 4. Wild horses looking for water at Bookkeeper springs on the Owyhee HMA

Photograph 5. Wild horse at dry spring in the Antelope Valley HMA.

Wild horses travel between water sources and foraging areas. They can usually travel several miles back and forth from water and forage. During drought years, forage productivity can be a fraction of normal. In areas where forage is limited and/or wild horses are overpopulated, animals have to move increasing distances from water to obtain adequate forage and go into less desirable areas that support lower quality forage.

In general, wild horses are very resilient and adaptable animals with a metabolism that has evolved to allow them to survive and thrive in poor quality habitat (compared to their domestic counterparts). These wild animals are typically in top physical condition, have strong bones and hooves and rarely succumb to ailments that plague domestic horses. Wild horses typically do not begin to show signs of body condition decline until the habitat components are severely deficient. Once the decline begins, their health deteriorates rapidly. As the resources are consumed, and travel distances become longer the animals deteriorate in body condition.

The health of the range and the recovery of the vegetation and waters from drought are also concerns. With reduced productivity of rangeland forage plants, the existing population of animals can cause excessive utilization of the range especially where the HMA supports larger concentration of animals or in HMAs populations of wild horses above the AML. Wild horses also cause damage through excessive trailing and hoof action, which causes destruction of vegetation and increases erosion and trampling of riparian areas; thereby, causing bank shear, contaminating water quality and affecting riparian function.

The majority of wild horse foals are born annually between March 1 and July 1. Throughout the ED, populations increase by 10-22% annually. Wild horses are a long-lived species with documented survival rates exceeding 92% for all age classes and do not have the ability to self-regulate their population size. Predation and disease have not substantially regulated wild horse population levels. Throughout the ED, there are few predators to control wild horse populations. Some mountain lion predation occurs, but it is not believed to be substantial. Coyote are not prone to prey on wild horses unless young or extremely weak. Other predators such as wolves or bears do not present in the ED.

The ED has been collecting samples for genetic analysis since 2001. Seven of the 8 HMAs administered by the ED have been analyzed with several having been sampled more than once. Results indicate high genetic variability with no concerns for inbreeding. Potential concerns are documented for a few HMAs which will be re-sampled in future years with current technology and reassessed at that time.

The BLM is responsible for the protection, management and control of wild horses on public lands in accordance with the WFRHBA as amended, which states that BLM, "…shall manage wild free-roaming horses and burros in a manner that is designed to achieve and maintain a TNEB on the public lands."

Monitoring data is collected annually within Elko District HMAs. During times of drought monitoring is focused on the assessment of forage and water availability for wild horses (see DMMP, Attachment 2). Reduced precipitation associated with drought often results in substantially reduced forage growth and a lack of water due to reduced flows and/or drying up of springs and streams. These factors typically lead to concentrated wild horse use on riparian areas, resource degradation and ultimately the reduced health and/or death of wild horses. When a drought occurs the ED would collect site-specific data in accordance with the DMMP and consider wild horse population levels and past drought related issues to select appropriate DRAs.

**1. Environmental Consequences of the Proposed Action**

**A. Drought Response Actions**

**1. Livestock**

The DRAs identified within the Proposed Action, were developed in order to reduce the impacts of authorized uses and activities on natural resources that are at risk of being adversely affected by drought. The DRAs pertaining to livestock management would have minimal direct impacts to wild horses. Actions implemented within HMAs would indirectly affect wild horses. Temporary water hauls, or pipelines would improve distribution of livestock and wild horses as well as reduce impacts to drought affected water sources. Additionally, the DRAs implemented within HMAs would indirectly affect wild horses by reducing competition among wild horses, wildlife and livestock as additional water sources would be available to offset the reduced water supply due to drought. Changes in season of livestock use, grazing duration or livestock management practices would also

result in indirect effects to wild horses. The moderation of utilization levels, improvement of distribution and protection of forage resources from concentrated use would ensure the long term productivity and health of the range. The degree to which drought impairs the range's potential for future forage production depends on the intensity, frequency and timing of grazing (Howery 1999). Therefore the aforementioned DRAs would also provide for quicker recovery from drought.

The DRAs also include reductions in livestock AUMs and the partial or complete closure of an allotment(s). Pursuant to 43 CFR §4710.5(a), the authorized officer may close appropriate areas of the public lands inhabited by wild horses if necessary to protect for wild horses. These actions implemented either separately or in combination with other DRAs would help ensure that adequate forage and water are available for wild horses and wildlife. Additionally, these DRAs would promote the recovery of rangelands afflicted by drought.

Other actions include temporary fencing, targeted livestock grazing of monotypic invasive annual communities and change of class of livestock, which would have minimal indirect effects to wild horses, and would ultimately benefit forage and riparian resources both in the short and long term.

**2. Wild Horse Drought Response Actions**

**Temporary Water Hauls**

In order to augment water sources for wild horses until an drought gather could be completed or until normal precipitation and water availability resume, temporary water hauls could be authorized at select locations within HMAs or at existing (but dry or limited) water sources. Large (500 gallon or larger) water trucks or trailers would be used to replenish waters in tanks, ponds or other available catchments. In most cases, existing roads would be used, and water haul tanks would be placed in disturbed locations following a cultural and paleontological resources inventory. Where possible, supplemental water troughs would be placed on existing wild horse trails to encourage use. All water troughs would be equipped with bird ladders to protect avian species.

Photograph 6. BLM Fire crew hauling water to spring in Maverick-Medicine HMA.

Minor soil disturbance would be expected depending upon the number of animals using the water source. No adverse impacts to wild horses would be expected; however, temporary water hauls would help maintain animal health and aid in preventing death due to dehydration. The use of water hauls would continue until natural or developed water becomes available that is adequate to support the existing population, or a drought gather occurs to re duce the existing population to levels that can be sustained with the existing resources.

**Within HMA Relocation of Wild Horses**

Relocating wild horses within an HMA could result in similar impacts described for helicopter removals, bait or water trapping or hauling water, however wild horses would not be removed from the range at that time. The animals may suffer some anxiety being moved to another location, but would soon acclimate to the new area. It is highly possible that the animals would move back to the area they were moved from. Depending on the population of wild horses in the receiving portion of the HMA, fighting among studs could increase until such a time that the animals are able to adjust to each other. It is also possible that some animals do not acclimate to the new area, are disoriented in relation to available waters and do not thrive. Follow up monitoring may determine that the relocated animals should be gathered and removed from the range to ensure their welfare.

**Bait or Water Trapping**

When feasible and appropriate in accordance with the criteria outlined in Section 2.0(c) (2) bait and water trapping would be used as the primary gather method. In cases where water is the most limiting factor, it may be practical to remove wild horses through water trapping. The use of hay or mineral supplements (bait) could also be used to trap animals targeted for removal due to drought conditions. Impacts of this method of removal are similar to helicopter gathers and include ground disturbance at the trap location, and minor displacement of wildlife. Traps would be placed on disturbed locations when possible after an archeological and weed surveys have been conducted. In the case of water trapping, pens would be placed around developed rather than natural water sources where possible to reduce impacts to riparian areas.

Water or bait trapping generally results in the capture of a few animals at a time, and requires lengthy time periods to gather larger numbers. Therefore, gather operations could be ongoing for many weeks or months to remove drought affected animals verses helicopter which would be accomplished in a matter of days. As a result, animals debilitated from lack of forage and water would persist for a longer time before being gathered and cared for properly.

Injuries to wild horses through bait or water trapping are similar to those described for helicopter removals. Animals would not endure the exertion from being herded several miles to a trap location (by helicopter) but may experience injuries associated with bites and kicks while in the trap, during loading into stock trailers and transportation to BLM preparation facilities. If foals enter the trap with adult animals, they could become injured or killed by adult wild horses fighting. Similarly, if adequate facilities did not exist to separate animals by sex or age, foals and adult animals could be injured or killed during transport in stock trailers.

Bait and water trapping would be accomplished through the gate cut method, and no wild horses would be returned to the range. The effects would be similar to those described for gate cut removals below. Various removal strategies could be employed with the use of bait or water trapping as described in the Section titled “Removal Numbers”.

**Wild Horse Removal**

If it is determined that wild horse removal is warranted (i.e., all other feasible DRAs have been exhausted), all livestock within the HMA would be removed prior to the commencement of a gather. Removal of excess and drought affected animals would improve herd health and prevent widespread suffering and death of wild horses. Decreased competition for remaining forage and water resources would reduce stress and promote healthier animals, as the actual population becomes balanced with available forage and water resources.

Further deterioration of drought stressed rangeland and riparian resources would be avoided which would also promote range recovery (and healthy animals) over the long-term. The following discussion outlines the impacts of specific elements of gathers on wild horses.

Photograph 7. Spring impacted by wild horses in Goshute HMA.

***Helicopter Capture***

The BLM has been gathering excess wild horses from public lands since 1975, beginning in the Stone Cabin HMA in south central Nevada, and using helicopter gather since the late 1970's. Appendix A of Attachment 2 includes information regarding methods that are utilized to reduce injury or stress to wild horses during gathers. Since 2004, BLM Nevada has gathered over 35,000 excess animals. Of these, mortality has averaged only 0.5%, which is very low when handling wild animals. Another 0.6% of the animals captured were humanely euthanized due to pre-existing conditions and in accordance with BLM policy. This data affirms that the use of helicopters and motorized vehicles has proven to be a safe, humane, effective and practical means for the gather and removal of excess wild horses from the range. BLM staff is on-site at all times to observe the gather, monitor animal health, and coordinate the gather activities with the contractor. The SOPs outlined in Appendix A of Attachment 2 would be implemented to ensure that the gather is conducted in a safe and humane manner, and to minimize potential impact or injury to the wild horses. In their August 2011 BLM Task Force Report, the American Association of Equine Practitioners concluded that the care, handling and management practices utilized by the BLM are appropriate for this population of horses and generally support the safety, health and welfare of the animals.

Over the past 35 years, various impacts to wild horses from gathers have been observed. Individual, direct impacts include handling stress associated with the capture, sorting, handling, and transportation of the animals. The intensity of these impacts varies by individual and is indicated by behaviors ranging from nervous agitation to physical distress. Observations made through the

completion of gathers show that the majority of the wild horses captured acclimate quickly to the holding corral environment, becoming accustomed to water tanks and hay, as well as human presence.

The BLM Wild Horse Specialists and the gather contractor and crew are very attentive to the needs of all animals captured during gathers, ensuring their health and safety. Accidental death or the need to humanely euthanize animals as a direct result of gather activities is infrequent and averages less than one half to one percent of the animals gathered (0.5-1.0%). Injuries sustained during gathers could include nicks and scrapes to legs, face, or body from brush or tree limbs while being herded to the gather corrals by the helicopter. Rarely, wild horses could encounter barbed wire fences and could receive wire cuts. These injuries are generally not fatal and are treated with medical spray at the holding corrals until a veterinarian can examine the animal. On some gathers, injures to horses occur more frequently due to animal temperament and/or body condition. However, on other gathers, no animals are injured or die.

Most injuries to horses are sustained once the animal has been captured and occur within the gather corrals, holding corrals, or during sorting. Transport and sorting is completed as quickly and safely as possible to reduce the occurrence of fighting and then animals are moved into the large holding pens to settle in with hay and water. Injuries received during transport and sorting consist of superficial wounds of the rump, face, or legs. Occasionally, animals could sustain a spinal injury or a fractured limb which requires humane euthanasia but these injuries are rare. Similar injuries could be sustained if wild horses were captured through bait and/or water trapping, as the animals would still need to be sorted, aged, transported, and otherwise handled following their capture.

During summer gathers, environmental conditions come into play as the temperatures are higher, roads and corrals dusty, and water more limited on the range. During times of drought, water could be greatly limited or nearly non-existent. Animals could have to travel long distances to find water, which may lead to animal dehydration or water stress. The exertion of a gather can exacerbate already debilitated conditions, leading to heat exhaustion or other complications. Wild horses may be located at higher elevations and in areas with dense tree cover during summer months, increasing the difficulty of the gather. The helicopter pilot, regardless of season, allows wild horses to travel slowly at their own pace. During gathers of drought affected animals, the pace would be slowed to allow weak or debilitated animals to travel to the trap corrals ass a group. If necessary, crew members may be instructed to capture the animals by roping and loading the animals into stock trailers for transport in order to reduce the stress on the animals. Mares and small foals are especially vulnerable to drought stress and may become weak; therefore, extra care would be taken to ensure their safe capture and recovery.

Heat stress does not occur often but if it does, death may result. If wild horses are in a weakened state due to a shortage of water or forage, higher mortality could occur. In these cases, the BLM would take extra precautions to ensure the safe capture and post-gather care of these animals. Special care would be taken to ensure the health of the animals by limiting the distance horses must travel to a trap, not gathering during the heat of the day, etc. An Animal Plant Health Inspection Service

(APHIIS) veterinarian or other contract veterinarian would be available to examine animal condition and provide recommendations for care. Electrolytes may be added to the drinking water during summer gathers that involve animals in weakened condition. Additionally, the ED wild horse staff maintains a supply of electrolyte paste that could be administered to affected animals as needed.

The BLM and the contractor are also proactive in controlling dust inn and around the holding facility and gather corrals. These areas are sprayed down to reduce dust and limit wild horse exposure to dust during summer months. Additionally, moderate travel speeds on roads reduce dust exposure during transport. The horses could be sprayed in an effort to reduce body temperature and improve overall comfort of the horses. In cases of extreme heat, the gather operations would be suspended once high temperatures are reached. Temperatures vary across the ED on a daily basis during summer months. Length of gather period each day would be determined by closely monitoring the condition of the animals captured, rate of respiratory recovery, whether the animals are coming in excessively sweaty or lathered, and/or showing any other signs of distress. Distances that wild horses would be herded would be determined based on the aforementioned criteria as well as landscape features such as topography, temperatures and other factors affecting wild horse travel and gather operations. All determinations on gather period length and distances that wild horses would be herded would be made by the COR and may vary as conditions change. During summer gathers, operations often conclude between noon and two pm, and can be suspended earlier if the COR deems it necessary to ensure animal health.

In rare cases, water toxicity or poisoning can occur when waters are extremely limited or nonexistent, which can lead to cerebral edema and death. To prevent the occurrence of water poisoning, recently gathered animals may be held off of full water for some time until they have time to cool down and slowly become hydrated, at which time free access to water would be provided. Similarly, hay may be fed sparingly if there is a risk of colic or other complications due to the malnourished state of recently gathered animals.

Indirect individual impacts are those impacts that occur to individual animals after the initial stress event. These impacts, like direct individual impacts, are known to occur intermittently during gather operations. An example of an indirect individual impact would be a brief skirmish amongst stallions following sorting and release into the stud pen. Traumatic injuries usually do not result from these conflicts. Spontaneous abortion events among mares following capture are very rare. Observations following capture indicate the rate of miscarriage varies, but can occur in about one to five percent of the captured mares, particularly if the mares are in very thin body condition or in poor health.

Through the capture and sorting process, wild horses are examined for health, injury and other defects. BLM Euthanasia Policy IM-2009-041 is used as a guide to determine if animals should be euthanized (refer to SOPs in Appendix A of Attachment 2). Animals that are euthanized for non-gather related reasons include those with old injuries (e.g., broken hip or leg) that have caused the animal to suffer from pain or prevents them from being able to travel or maintain adequate body condition; old animals that have lived a successful life on the range, but now have few teeth

remaining, are in poor body condition, or are weak from old age; and wild horses that have congenital (genetic) or serious physical defects such as club foot or sway back. During drought situations animals could be gathered that could be severely debilitated or emaciated and following examination, the APHIS or attending vet could identify that the animals prognoses for recover is unlikely and should be humanely euthanized as an act of mercy.

It should be noted that drought gathers are not intended to meet long-term management goals (e.g., managing healthy wild horses within the productive capacity of the range), but as a management action to preserve animal health and range condition. It is the intent of BLM to intervene during drought or other emergencies to remove wild horses if necessary, before body condition declines and animals become weak from starvation or dehydration.

Unless emergency conditions exist, the BLM does not gather wild horses by helicopter during the foaling season (i.e., the six weeks before or after the peak of foaling (April and mid-May)), per instruction memorandum (IMM) 2010-183. Most foals are born during the aforementioned period; however, it is not uncommon for a very small number of young foals (less than two months old) to be encountered during any month of the year. If foals too young to wean are gathered, they are matched up with the dams. In summer r months, young foals may be more prone to dehydration and complications from heat stress. Additionally, the handling, sorting and transport can be stressful for young animals; however, on-site BLM staff is attentive to the condition and needs of the animals and take precautions to limit stress.

Foals can sometimes be orphaned during a gather. This can occur if the dam rejects the foal; the foal becomes separated from its dam and cannot be matched up following sorting; the dam dies or must be humanely euthanized during the gather; the foal is ill or weak and needs immediate care that requires removal from the dam; or the dam does not produce enough milk to support the foal. On occasion, foals are gathered that were previously orphaned on the range (prior to the gather) because the dam rejected it or died. These foals are usually in poor, unthrifty condition. Every effort is made to provide appropriate care to orphaned foals. Veterinarians could administer electrolyte solutions to aid in hydration and overall health. Orphan foals could be fed milk replacer as needed to support their nutritional needs. Orphaned foals could be placed in a foster ho me to receive additional care. Although fostering is usually successful, despite these efforts, s omen orphaned foals could die or be humanely euthanized ass an act of mercy if the prognosis for survival is very poor. As illustrated in the photos below most orphaned foals gathered are placed in a foster home where they are nursed back to health to live a long and healthy life.

Following a wild horse drought gather, deterioration of the range associated with wild horses would be reduced and rangelands would have the opportunity to recover from the impacts of drought. Protecting rangeland resources from severe use during drought would improve sustainability and enhance resiliency so that rangelands can support future generations of healthy wild horses. Goals of a drought gather would include: the management of wild horse populations in balance with the available forage and water resources and other rangeland uses, and allowing individual animals to

better maintain optimum body weight and overall health during future drought years. This would lessen the potential for individual animals and/or herds to be affected by drought, and avoid or minimize the need for future emergency actions.

Depending upon the gather objectives, some wild horses (whether escaped from capture or intentionally left undisturbed) would remain on the range following the gather. The wild horses that are not captured may be temporarily disturbed and moved to another area during gather operations. Over the last 20 years, it has been proven that, with the exception of changes to herd demographics, direct population-wide impacts are usually temporary in nature and with most; if not all impacts to individual wild horses disappearing within hours to several days after the gather is completed. No observable effects associated with these impacts would be expected within one month of release except for a heightened awareness of human presence.

Primary direct impacts to the wild horse populations related to gather activities include changes to herd population dynamics, age structure and/or sex ratio, and subsequent changes to growth rates and population size over time.

Site-specific data would be used to determine the need for a drought gather. Justification for a drought gather would be thoroughly documented within a site-specific Decision and gather plan. Should it be determined that a drought gather is necessary, HMA-specific gather and removal objectives would be developed based on detailed environmental and animal conditions. This information would be included in the Decision and gather plan (see Attachment 3) issued prior to the gather commencing. Depending on the gather objectives, numerous outcomes would be expected. These are discussed by gather type below.

**Gate Cut**

Wild horses encountered would be gathered and removed until removal and post-gather population objectives were achieved. Typically few or no animals would be returned to the range and no population controls would be implemented. When appropriate animals exhibiting superior condition and health may be returned to the range during a gate cut removal. In most cases the number of horses removed would equal the number gathered. The animals may be removed from specific portions of an HMA or Complex where resources are most limiting, leaving all animals in the remainder of the HMA alone. Only the drought affected animals would be gathered and exposed to the additional stresses of handling. This type of removal is most common during drought and emergency gathers, as it does not pose additional stresses on animals identified to remain on the range.

Wild horses that are not gathered could be minimally impacted due to the helicopter activity but would otherwise be unaffected. All impacts would cease once gather operations were completed. Sex ratios and age distributions of the un-gathered population would be unknown but should be comparable to the ratios observed in the gathered animals and the impacts to the residual herd's health and distribution is difficult to predict.

Without the ability to selectively remove animals from the range by age, a larger number of older wild horses could be removed under a gate cut gather. These animals would likely be transferred to long-term pastures (LTPs) Experience within the ED shows that generally 40-50% of wild horse populations fall into age groups older than 5 years of age, for which there is little to no adoption demand.

Gate cut gathers eliminate the ability to remove wild horses based on animal health or desirable or historical characteristics, which often results in unintended impacts to the remaining herds. For example, horses of larger size (draft), gentle disposition, or bright/light coloring are often easier to locate and capture. Therefore, they are typically the first to be removed using the gate cut method. This has the potential to permanently remove these genetic traits from herds. However, when appropriate animals exhibiting these traits and considered to be healthy and able to survive may be returned to the range during a gate cut removal. Additionally, utilizing the gate cut method could distort the distribution within an HMA by removing all animals concentrated in areas where capture is easiest, while leaving animals in the outlying areas that are more difficult to gather (e.g., areas of trees, rough terrain, or long distance from trap site). These areas are often times characterized by lesser quality habitat. In the case of drought gathers, the emphasis for gather and removal would be for the horses that inhabit the areas in the worst condition and with the fewest resources to sustain them. In cases where it is feasible and appropriate, attempts would be made to gather animals equally across the HMA to avoid disproportionate removal.

Because no wild horses would be released back to the range unless they are found to be in good condition, no adjustment to sex ratios or application of fertility control would take place. Wild horses would not be held at the holding corrals for extended lengths of time while waiting to apply fertility control, and wild horses would not be stressed by additional handling to apply fertility control. Fertility and foaling rates would be unaffected in the un-gathered population with the population increasing at an average rate of 20% per year.

**Removal Numbers**

Because site-specific data would be evaluated prior to conducting a drought gather, removal numbers would be detailed in the site-specific Decision and gather plan (see Attachment 1). The following scenarios are provided for analysis:

**Removal of small localized wild horse populations**

When it is determined that a specific group or groups of wild horses need to be removed due to a lack of water and/or forage and other drought response actions have been exhausted those groups identified could be removed. Other wild horses within the other locations within the HMA where adequate forage and water sources remain would not be gathered. For example localized removal could be used when a water source or multiple water sources within a portion of an HMA have dried up while other portions of the HMA remain and within HMA relocation is not considered to be feasible or appropriate due to horse condition or other factors (e.g. location and number of

fences pose a high risk of horse injury during relocation, forage and water conditions are only capable of supporting horses occupying other areas within the HMA). Impacts would be limited to the specific group or groups of horses selected for removal. Those animals that are located within areas that have sufficient water and forage resources would not be affected. It is not expected that genetic health would be impacted under this option because only a small, localized portion of the population would be removed.

**Removal of sufficient numbers of animals to achieve the low range of AML**

Under this strategy, only sufficient numbers of wild horses would be removed to achieve the low range of AML for applicable, drought affected HMAs. This strategy is consistent with most gathers conducted throughout the District, where excess wild horses are removed to low AML and through the following years the population is allowed to increase to the high AML at which time another gather is scheduled. Most HMAs in the ED has had gathers completed within the past 10 years. Comprehensive EAs, which analyzed environmental impacts of the gathers, were completed for each gather conducted. If it is determined that a drought gather(s) is needed, site-specific details would be provided in the Decision and gather plan (see Attachment 3) documents for the drought gather(s). Drought gathers would only be conducted after consultation or a reasonable attempt to consult with interested parties.

**Removal of sufficient animals to achieve the high AML**

This strategy has also been analyzed in numerous gather EAs written by the ED within the past 10 years. If the analysis of environmental and animal conditions require the need for a drought gather in a particular HMA, it may be determined that the population need only be reduced to the high AML in order to avoid emergency conditions and sustain the wild horse populations during drought. Further gathers to achieve low AML would be scheduled based on additional monitoring data and through the ED and State gather priority process. Impacts to wild horses would be similar to those under the low AML gather option. Range impacts would be proportional to the residual wild horse population. Impacts to rangeland health could be expected, primarily due to trailing and trampling of riparian areas. The level of impacts realized would vary depending on the health of the rangeland within the HMA(s).

Under this option, the established AML would be exceeded following spring foaling. If drought conditions persisted, rangeland health and post drought recovery could be hindered by overpopulation.

It is not expected that genetic health would be impacted under either the low or high AML options. Most wild horse herds sampled have high genetic heterozygosity, genetic resources are lost slowly over periods of many generations, and wild horses are long-lived with long generation intervals (Singer, 2000).

**Removal of animals to a point below the low AML**

Removal of wild horses to achieve a population below the low AML would occur when drought severely limits water and forage resources and animals need to be removed to prevent further suffering or death as well as to prevent significant rangeland degradation. HMA-specific data and animal health analysis would be used to estimate how many animals could be supported on the range, and where animals should be removed to ensure animal health and resource recovery. This data along with other site-specific data would be included in a site-specific Decision and gather plan (see Attachment 3).

In order to safeguard genetic variability of the animals remaining on the range, genetic analysis of the horses within an HMA would be considered as well as known movement between HMAs. Due to the amount of animals that could be removed under this option, genetic variability could be negatively impacted. However, the immediate welfare of the wild horses and their habitat take precedence over the long-term genetic variability. Hair samples would be collected for genetic analysis, and should future analysis indicate that action is needed to enhance or maintain the genetic variability of the herd; a strategy would be developed to address the specific issues. Strategies may include introducing animals from one HMA into another. Genetic sampling has completed on 7 of the 8 HMAs within the ED, with several having been sampled more than once. Out of the 7 HMAs sampled, only a few have resulted in potential concerns for genetic health. Future sampling and evaluation of all pertinent factors would continue.

AML would not be permanently adjusted. The population would be allowed to increase to the high AML before another gather was scheduled, as long as resource conditions and animal health allow.

**Complete removal of all animals in an HMA**

This option would be employed only under extreme circumstances and is, therefore, unlikely. However, it is analyzed here as a worst-case scenario. The decision to remove all animals would be made after analysis of the environmental and animal data, and only done in order to prevent suffering of animals due to the absence of forage and/or water and reduce negative impacts to rangeland resources. It is possible that a small portion of the animals could be held in a contract facility until conditions recover and then be returned to the range. It may also be possible to gather animals and release them into another HMA that has adequate resources to support additional animals. The consequences of such a removal could be the need to revert the HMA back to a Herd Area. If it is determined that resources are adequate, the HMA could be repopulated in future years with horses transplanted from another HMA.

In the extreme case of a complete removal of animals from an HMA, impacts to the genetic health of the wild horses would be expected. The exact impacts cannot be quantified, as each wild horse herd has specific genetics and the herds are comprised of animals of diverse characteristics and genetic backgrounds. If animals were held in a contract facility and later returned to the HMA, it is expected that the genetic variability may be affected. Experience in the ED has shown that drought

gathers which reduced the populations to low numbers did not result in degraded genetic health. Future genetic sampling showed healthy herds with little or no concerns for inbreeding.

**Population Growth Controls (Fertility Control treatments and sex ratio adjustments)**

Fertility control or sex ratio adjustments could be applied if conditions warrant the complete removal of all animals within an HMA and those animals are to be returned to the range after drought recovery has occurred. The following discussion analyzes the impacts of population control methods on wild horses:

**Fertility Control**

Fertility control would include the application of fertility control drugs to all mares released back to the range. All mares selected for release would be treated with a two-year Porcine Zona Pellucida (PZP) or similar vaccine/fertility control and released back to the range. Immunocontraceptive (fertility control) treatments would be conducted in accordance with the approved standard operating procedures (SOPs, outlined in Appendix A of Attachment 2).

Each released mare would receive a single dose of the two-year PZP contraceptive vaccine. When injected, PZP (antigen) causes the mare's immune system to produce antibodies; these antibodies bind to the mare's eggs and effectively block sperm binding and fertilization (Zoo Montana, 2000). PZP is relatively inexpensive, meets BLM requirements for safety to mares and the environment, and can be easily administered in the field. In addition, among mares, PZP contraception appears to be completely reversible. The vaccine has also proven to have no apparent effect on pregnancies in progress, the health of offspring, or the behavior of treated mares (Turner et. al, 1997). Available data from 20 years of application to wild horses contradicts the claim that PZP application in wild mares causes mares to foal out of season or late in the year (Kirkpatrick and Turner 2003). The PZP vaccine is currently being used on over 75 HMAs for the BLM and its use is appropriate for all free-ranging wild horse herds. The long-term goal is to reduce or eliminate the need for gathers and removals (Kirkpatrick et al. 2010).

Photograph 8. Wild horse receiving freeze brand after being treated with PZP.

The highest success obtained for fertility control has been achieved when applied during the timeframe of November through February. The efficacy for the application of the two-year PZP vaccine based on summer application (August through October) is as follows:

The PZP treatments would be controlled, handled, and administered by a trained BLM employee Mares receiving the vaccine would experience slightly increased stress levels associated with handling while being vaccinated and freeze-marked. Serious injection site reactions associated with fertility control treatments are rare in treated mares. Any direct impacts associated with fertility control, such as swelling or local reactions at the injection site, would be minor in nature and of short duration. Most mares recover quickly once released back to the HMA, and none are expected to have long term impact from the fertility control injections. Injuries through fighting and other behaviors may occur within the holding pens prior to release, but rarely result in death.

As the sole approach, contraception would not allow the BLM to maintain populations at AML; however, in conjunction with other techniques (e.g., removals of excess animals and adoption) and through incorporation of other population control techniques (e.g., sex ratio adjustments,

sterilization), it now provides a valuable tool in a larger, adaptive management approach to wild horse management.

Contraception may be a cost effective and humane treatment to employ in horses to prevent increases in populations, or with other techniques, to reduce horse populations (Bartholow 2004). In general, contraception would not remove horses from an HMA's population which would result in some continuing environmental effects by those individuals. Wild horses are long-lived reaching 20 years of age in the wild and those horses returned to the HMA could continue exerting, throughout their life span, negative effects on the environment as described above, as opposed to the removal of a horse. Contraception, if effective, reduces future reproduction. Limiting future population increases would limit increases in environmental damage from higher densities of wild horses. It could also reduce the effect of wild horse gather activities on the environment (if it limits the numbers of wild horse gathers required). If application of contraception to wild horses requires capturing and handling horses, the risks and costs associated with capture and handling of horses may be roughly equivalent (not counting the cost of adoption). Application of contraception to older animals and returning them to the HMA may reduce risks associated with horses that are difficult to adopt or handle in captivity.

Ransom et al. (2010) found no differences in how PZP-treated and control mares allocated their time between feeding, resting, travel, maintenance, and social behaviors in three populations of wild horses, which is consistent with Powell's (1999) findings in another population. Likewise, body condition of PZP-treated and control mares did not differ between treatment groups in Ransom et al.'s (2010) study. Turner and Kirkpatrick (2002) found that PZP-treated mares had higher body condition than control mares in another population, presumably because energy expenditure was reduced by the absence of pregnancy and lactation.

In two studies involving a total of four wild horse populations, both Nunez et al. (2009) and Ransom et al. (2010) found that PZP-treated mares were involved in reproductive interactions with stallions more often than control mares, which is not surprising given the evidence that PZP-treated females of other mammal species can regularly demonstrate estrus behavior after receiving contraceptives (Shumake and Wilhelm 1995, Heilmann et al. 1998, Curtis et al. 2002). Ransom et al. (2010) found that control mares were herded by stallions more frequently than PZP-treated mares, and Nunez et al. (2009) found that PZP-treated mares exhibited higher infidelity to their band stallion during the non-breeding season than control mares. Madosky et al. (in press) found this infidelity was also evident during the breeding season in the same population that Nunez et al. (2009) studied, resulting in PZP-treated mares changing bands more frequently than control mares. Long-term implications of these changes in social behavior are currently unknown. Kirkpatrick et al. (2010) conclude by stating that "the larger question is, even if subtle alterations in behavior may occur, this is still far better than the alternative" and that the "other victory for horses is that every mare prevented from being removed, by virtue of contraception, is a mare that would only be delaying her reproduction rather than being eliminated permanently from the range. This preserves herd genetics, while gathers and adoption do not." (Kirkpatrick and Turner 2002, 2008; Turner and Kirkpatrick 2002, 2003; Willis et al. 1994.)

Population-wide indirect impacts are more difficult to quantify and would occur over time. A large percentage of inoculated mares would experience reductions in fertility. Recruitment of foals into the population would be reduced over a two-year period. Any multi-year reprieve from foaling would increase overall health and fitness of the mares, as well as the health of the foals born after fertility returns, particularly during times of drought or other environmental stress.

Following resumption of fertility, the proportion of mares that conceive and foal could be increased (rebound effect) due to the increased fitness. Application of fertility control (and/or adjustment of sex ratios to favor stallions) could increase the intervals between future gathers, and reduce disturbance to individual animals as well as to the herd social structure over the foreseeable future when compared to a gather without implementation of either population growth control method. The BLM could return to these areas every 2-3 years (dependent on vaccine formulation used) to re-apply fertility control in order to maintain its effectiveness in controlling population growth rates. By completing follow-up gathers on a regular basis (every 2-3 years) in future years, it is possible that the population control measures may be adequate to maintain the population within the existing AMLs if implemented successfully, with the need to remove few if any wild horses from the range. As a result, few wild horses would need to be removed that might ultimately be held in long term pastures or entered into the sale program as the adoption demand comes into line with the number of excess wild horses removed from the range.

PZP can safely be repeated in 2 years or as necessary to control the population growth rate. The probability of long-term infertility using PZP is very low, and many mares retreated even after 3 years will return to normal fertility after the second treatment wears off.

Fertility control application would allow the average population size to be maintained at a level consistent with the AML. Reduced population growth rates and smaller population sizes would also allow for improvements to range condition, which would have long-term benefits to wild horse habitat quality and contribute to the achievement and maintenance of a TNEB. This would also improve the recovery of the range from the effects of drought as the population grows more slowly and has fewer impacts on the vegetation, waters and other resources, than would occur without the application of population controls.

**Sex Ratio Adjustment**

Should population controls be applied to animals released to the range, sex ratio adjustments could be included as a management option in wild horse herds. Wild horses would be released to increase the post-gather sex ratio to favor stallions in the remaining herds. Stallions would be selected to maintain a diverse age structure, herd characteristics and body type (conformation). Adjustment of sex ratios to favor stallions would be expected to have relatively minor impacts to overall population dynamics. Impacts of additional stallions in the population could include: decreased band size, increased competition for mares, and increased size and number of bachelor bands. These effects would be slight, as population ratios of 60% stallions to 40% mares are not considered extreme departures from natural sex ratios. Ratios above 60% would be expected to increase fighting among

studs, which would be a consequence of removing additional mares in order to prevent widespread death and suffering. Conversely, a selection criterion, which leaves more mares than stallions, would be expected to result in fewer and smaller bachelor bands, increased reproduction on a proportional basis with the herd, and larger band sizes. With more stallions involved in breeding it should result in increased genetic exchange and improvement of genetic health within the herd.

Modification of sex ratios favoring stallions could also reduce growth rates and subsequent population size, as a smaller proportion of the population would consist of mares that are capable of giving birth to foals. As a result, gather frequency could be reduced as well as the number of wild horses gathered and removed in future gathers.

It is well accepted that wild stallions maintain body condition and muscling better than wild mares when resources are limiting. This is most often observed during gathers where the population is very high in comparison to the AML and forage or water are lacking. In these cases, mares with dependent foals or young mares 3-4 years of age are often very thin with Henneke Body Condition Scores of 2 or 3. In such cases, it may be possible to release additional stallions (rather than thinner mares) that otherwise would have needed to be held in Long Term Pastures, thus leaving a larger population on the range, albeit at a higher proportion of studs. Release of studs could occur at the time of the gather if it is determined that due to limited resources, the more vulnerable mares and foals should be removed from the range, but that resources are adequate to ensure the health of the studs.

Though this could result in sex ratios with higher than 60% studs, the populations would not be so large that competition and fighting among studs would be much higher than normal levels. The sex ratio would eventually even-out over the course of time and could be further corrected in the next gather cycle if necessary. The release of a level of studs above 60% would only occur in extreme cases when it is determined that additional horses (studs) could be left on the range rather than be removed.

**Temporary Holding Facilities During Helicopter Gathers**

Wild horses gathered would be transported from the gather corrals (a.k.a. trap sites) to a temporary holding corral within the HMAs primarily in goose-neck trailers; however, straight deck semi-trailers could be used. At the temporary holding corrals, animals would be aged and sorted into different pens based on sex, then provided quality hay and water while in the holding facility (refer to previous discussion about care of drought stressed animals). Mares and their un-weaned foals (if encountered) would be kept in pens together.

At the temporary holding facility, recommendations to the BLM regarding care, treatment, and if necessary, euthanasia of the recently captured animals would be provided by a veterinarian. Any animals affected by a chronic or incurable disease, injury, lameness or serious physical defect (such as severe tooth loss or wear, club foot, and other severe congenital abnormalities) would be humanely euthanized using methods acceptable to the American Veterinary Medical Association (AVMA).

**Transport, Short Term Holding, and Adoption (or Sale) Preparation**

Wild horses removed from the range would be transported from the capture/temporary holding corrals to the designated BLM short-term holding corral facility(s) in straight deck semitrailers or goose-neck stock trailers.

Vehicles would be inspected by the BLM Contracting Officer's Representative or Project Inspector prior to use to ensure animal safety. Animals would be segregated by age and sex and loaded into separate compartments. A small number of mares could be shipped with foals. Transportation of recently captured animals is limited to a maximum of 8 hours. During transport, potential impacts to individual animals can include stress, as well as slipping, falling, kicking, biting, or being stepped on by another animal. Unless wild horses are in extremely poor condition, it is rare for an animal to be seriously injured or to die during transport.

Upon arrival at the short term holding facility, recently captured wild horses would be off-loaded by compartment and placed in holding pens where they are provided quality hay and water. If necessary, specific hay or supplement would be prescribed to help animals recover from drought stress. Most animals begin to eat and drink immediately and adjust rapidly to their new situation. At the short-term holding facility, a veterinarian would examine each load of horses and provide recommendations to the BLM regarding care, treatment, and if necessary, euthanasia of the recently captured animals. Any animals affected by a chronic or incurable disease, injury, lameness or serious physical defect (such as severe tooth loss or wear, club feet, and other severe congenital abnormalities) would be humanely euthanized using methods acceptable to the AVMA. Wild horses in very thin condition or animals with injuries would be sorted and placed in hospital pens, fed separately and/or treated for their injuries as indicated. Recently captured wild horses, generally mares, in very thin condition may have difficulty transitioning to feed. Some of these animals may be in such poor condition that it is unlikely they would have survived if left on the range. Some mares may lose their pregnancies. Every effort would be taken to help the mare make a quiet, low stress transition to captivity and domestic feed to minimize the risk of miscarriage or death.

At short-term corral facilities, once the horses have adjusted to their new environment, they are prepared for adoption or sale. Preparation involves freeze-marking the animals with a unique identification number, drawing a blood sample to test for equine infectious anemia (Coggins test), vaccination against common equine diseases, castration, and de-worming. During the preparation process, potential impacts to wild horses are similar to those that can occur during handling and transportation. Serious injuries and deaths from injuries during the preparation process are rare, but can occur.

At short-term corral facilities, a minimum of 700 square feet is provided per animal. Mortality at short-term holding facilities averages approximately 5% per year (GAO-09-77, 2008, Page 51), and includes animals euthanized due to a pre-existing condition; animals in extremely poor condition; animals that are injured and would not recover; animals which are unable to transition to feed; and animals which are seriously injured or accidentally die during sorting, handling, or preparation.

**Adoption or Sale with Limitations, and Long Term Pastures**

Adoption applicants are required to have at least a 400 square foot corral with panels that are at least six feet tall for horses over 18 months of age. Applicants are required to provide adequate shelter, feed, and water. The BLM retains title to the horse for one year and the animals and the facilities are inspected to assure the adopter is complying with the BLM's requirements. After one year, the adopter may take title to the horse after an inspection from an official, veterinarian, or other individual approved by the authorized officer to ensure humane care, at which point the horse becomes the property of the adopter. Adoptions are conducted in accordance with 43 CFR §4750.

Potential buyers must fill out an application and be pre-approved before they may buy a wild horse. A sale-eligible wild horse is any animal that is more than 10 years old; or has been offered unsuccessfully for adoption three times. The application also specifies that all buyers are not to re-sell the animal to slaughter buyers or anyone who would sell the animal to a commercial processing plant. Sales of wild horses are conducted in accordance with BLM policy.

Potential impacts to wild horses from transport to adoption, sale LTPs (horses only) are similar to those previously described. One difference is that when shipping animals for adoption, sale or LTP, animals may be transported for a maximum of 24 hours. Immediately prior to transportation, and after every 18-24 hours of transportation, animals are offloaded and provided a minimum of 8 hours on-the-ground rest. During the rest period, each animal is provided access to unlimited amounts of clean water and 25 pounds of good quality hay per horse with adequate feed bunk space to allow all animals to eat at one time. Most animals are not shipped more than 18 hours before they are rested. The rest period may be waived in situations where the travel time exceeds the 24-hour limit by just a few hours and the stress of offloading and reloading is likely to be greater than the stress involved in the additional period of uninterrupted travel. Wild horses generally five years of age and older (those for which there is less adoption or sale demand) are transported to LTPs. Establishment of each LTP is subject to a separate environmental analysis and decision making process. Wild horses in LTPs remain available for adoption or sale (11 years of age and older) to individuals interested in acquiring a larger number of animals and who can provide the animals with a good home. The BLM has maintained LTPs in the Midwest for over 20 years.

The LTPs are designed to provide excess wild horses with humane, and in some cases life-long care in a natural setting off the public rangelands. There, wild horses are maintained in grassland pastures large enough to allow free-roaming behavior and with the forage, water, and shelter necessary to sustain them in good condition. About 28,600 wild horses that are in excess of the current adoption or sale demand (due to age or other factors such as economic recession) are currently located on private land pastures in Oklahoma, Kansas, Iowa, and South Dakota. Located in mid or tall grass prairie regions of the United States, these LTPs are highly productive grasslands compared to more arid western rangelands. These pastures comprise about 256,000 acres (an average of about 10-11 acres per animal). Of the animals currently located in LTP, less than one percent is age 0-4 years, 49 percent are age 5-10 years, and about 51 percent are age 11+ years.

Mares and castrated stallions (geldings) are segregated into separate pastures except one facility where geldings and mares coexist. No reproduction occurs in the LTPs, but some foals are born to mares that were pregnant when they were removed from the range and placed onto the LTP. These foals are gathered and weaned when they reach about 8-10 months of age and are then shipped to short-term facilities where they are made available for adoption. Handling of wild horses at the LTPs is minimized to the extent possible although regular on-the-ground observation and weekly counts of the wild horses to ascertain their numbers, well-being, and safety are conducted. A very small percentage of the animals could be humanely euthanized if they are in very thin condition and are not expected to improve to a Henneke Body Condition Score of 3 or greater due to age or other factors. Natural mortality of wild horses in LTP averages approximately 8% per year, but can be higher or lower depending on the average age of the horses pastured there (GAO-09-77, Page 52). The savings to the American taxpayer which results from contracting for LTP averages about $4.45 per horse per day as compared with maintaining the animals in short-term holding facilities.

**Euthanasia and Sale without Limitation**

While humane euthanasia and sale without limitation of healthy horses for which there is no adoption demand is required under the WFRHBA, Congress prohibited the use of appropriated funds for this purpose between 1987 and 2004 and again in 2010-12.

**2. Environmental Consequences of the Grazing Closure Alternative**

Similar to the Proposed Action, the Grazing Closure Alternative would have indirect impacts to wild horses that would consist of reduced numbers of grazing animals on the range through the drought period and drought recovery. The impacts would be a degree of increased availability and quality of forage and water dependent upon the specific vegetation and water present throughout the HMA(s) and the inherent overlap of livestock and wild horses of that particular HMA. In any case, the absence of all livestock within drought affected areas would ensure maximum recovery of vegetation and riparian areas especially in HMAs that are at or below the established AML or where wild horse distribution is good as a result of adequate and dispersed available water. In areas where wild horse populations exceed AML or are concentrated, the beneficial impacts to the range from grazing animals would be lessened, yet drought recovery would be enhanced.

Direct impacts to wild horses would be the same as those described for the Proposed Action due to the fact that DRAs for wild horses would be implemented as identified in the Proposed Action.

**3. Environmental Consequences of the No Action Alternative**

The No Action Alternative would require the preparation of separate EAs, which would delay drought response times and potentially result in a continuation of current management practices, which are often poorly suited to drought.

Implementation of livestock and wild horse drought management actions would be delayed which could result in deterioration of animal health and body condition and degradation of rangeland health as water and/or vegetation resources dwindle under continued use by livestock and wild horses.

Photograph 9. Use by wild horses September 2012 in Maverick-Medicine HMA. A dime is used to show amount of use. Some limited green up had occurred in late summer, but all previous growth had been removed by wild horses.

Wild horse habitat could be affected by concentrated use by livestock and wild horses. Drought affected forage and riparian resources would be more likely to be degraded by overuse or improper timing of use. Trailing, trampling, and erosion of soils and bare ground would increase, as would degradation to riparian areas and utilization of rangeland plants. Excessive utilization of plants and pawing them from the ground would cause plant death, preventing recovery of plant health once drought ceases. Irreparable damage may occur.

Photograph 10. Spring impacted by wild horses in Goshute HMA.

Competition for the available water and forage between wild horses, and native wildlife would continue and further increase. Wild horses are a long-lived species with documented survival rates exceeding 92%, and little impact from predation and disease occurs. Experience has shown that once the vegetation and water resources are at critically low levels, deterioration of animal health can happen very quickly, with young foals and mares affected most severely. Without implementation of drought management actions, it is likely that many of these animals would die from starvation and/or dehydration. The resultant population could be heavily skewed towards the stronger stallions which could lead to social disruption in the HMAs. Recovery from drought could be delayed, and could require many years before pre-drought production is achieved. In the short and long-term, wild horses would have reduced quality and quantity of habitat, which could affect distribution of use within the HMAs, concentration of use and have impacts to animal health as resources are less plentiful.

Photograph 11. An aerial photograph of a dry reservoir and a dead wild horse on the Owyhee HMA.

By managing the public lands in this way, the vegetation and water resources would be severely impacted with little to no potential for recovery. This degree of rangeland degradation could lead to management of wild horses at greatly reduced levels in the future. As a result, the No Action Alternative would adversely impact the health and wellbeing of wild horses in drought afflicted HMAs and would inhibit the recovery of drought stressed habitat important to the future management of these herds. A TNEB would not be maintained or restored under the No Action Alternative.

As populations increase beyond the capacity of the habitat, bands of wild horses could leave the boundaries of the HMAs in search of forage and water, thereby increasing impacts to rangeland resources outside the HMA boundaries as well (i.e., in areas not designated for their use). An indirect impact of the No Action Alternative would include animal and/or human deaths due to the increased vehicle collisions as wild horses cross roadways in specific areas searching for food and water.

The BLM realizes that some members of the public advocate "letting nature take its course", however, allowing horses to die of dehydration and starvation would be inhumane treatment and clearly indicates that an overpopulation of horses exists in the HMA, and is not consistent with the WFRHBA. Additionally, promulgated Federal Regulations at Title 43 CFR 4700.0-6 (a) state "*Wild horses shall be managed as self- sustaining populations of healthy animals in balance with other uses and the productive capacity of their habitat*" (emphasis added).

## Q. Wilderness

### *Affected Environment*

The ED administers 10 Wilderness Study Areas (WSAs) totaling 272,422 acres. The WFO manages the Bluebell, Goshute Mountain, South Pequop, and Badlands WSAs, and the TFO manages the Cedar Ridge, Red Spring, South Fork Owyhee River, Owyhee Canyon, Little Humboldt River, and Rough Hills, According to Johnson et al (1997), a majority of wilderness users (40%) in the intermountain West consider grazing to be an acceptable form of wilderness utilization, but predicated their opinions based on proper management and avoiding stressors such as manure in camping locations, and trail encounters.

Per House Report 96-617, grazing is to be a continued use in wilderness areas including: maintenance and construction of supporting facilities, fences, line cabins, water wells and lines, and stock tanks, which has been emphasized through the passage of the El Malpais Wilderness Act (P.L. 100-225), and the New Mexico Wilderness Act (P.L. 96-550) among others.

- WSAs are designated by the BLM as having wilderness characteristics worthy of consideration by Congress for permanent Wilderness designation (BLM Handbook H-8550-1). While Congress considers whether to designate a WSA as permanent Wilderness, the BLM manages the area to prevent impairment of its suitability for Wilderness designation. Any treatment proposed within a WSA would include a "minimum tool analysis", which determines if the methods and equipment proposed for use have the minimum impact on the quality of a wilderness experience, as well as the physical, biological, cultural, and paleontological resources within the WSA (BLM Handbook H-8550-1).

### Environmental Consequences of the Proposed Action

Under the Proposed Action, rangeland and riparian resources within the WSAs would be affected due to the installation of temporary water sources (e.g., temporary water hauls, and water pipelines). Livestock and wild horses would be provided with an alternative water source to utilize outside of WSAs. This could minimize the impacts that would occur within WSAs. These impacts could include, but are not limited to, vegetation trampling, soil compaction, erosion, and water pollution/contamination that could occur when livestock and wild horses utilize WSA rangeland and riparian resources for forage and water.

Alterations to current livestock management practices (e.g., change in season of use, reduced grazing duration, partial reduction in AUMs, partial or complete closure of an allotment(s), targeted grazing of invasive annual communities, and temporary change in kind or class of livestock) under the Proposed Action would have an impact on WSAs. These actions would allow the rangeland and riparian resources to temporarily recover from livestock grazing in WSAs. Possible impacts could include, but are not limited to, vegetation trampling, soil compaction, erosion, water

pollution/contamination, and wildlife displacement. These impacts could impair the wilderness characteristics within WSAs.

Wild horse removal under the Proposed Action would have an impact on the rangeland and riparian resources within WSAs. Wild horses utilize rangeland and riparian resources, which also serve as a focal point for recreationists (Hammit 1998, Hendee 2002), further stressing this resource, and possibly degrading the recreational experience within WSAs. If unmanaged under drought conditions, this usage could cause degradation, which could include, but are not limited to, vegetation trampling, soil compaction, erosion, and water pollution/contamination. These impacts can impair the wilderness characteristics within WSAs.

Relocating wild horses within HMAs would have similar effects to the impacts for hauling water and conducting drought gathers, and would be contingent on the numbers of animals moved. The viewing experience would then be dependent on which side of the HMA the visitor would be located. Having a more difficult time viewing animals on the side from which the horses were driven.

**Environmental Consequences of the Grazing Closure Alternative**

The grazing closure alternative would impact WSAs within the ED. Rangeland and riparian resources within WSAs would be allowed to temporarily recover from livestock grazing improving the overall naturalness of the WSA, which is a key component to qualify an area for inclusion into the National Wilderness Preservation System (NWPS) (P.L. 88-577). Benefits from the alleviation of grazing stressors would last for the duration of the management action, which could include: vegetation trampling, soil compaction, erosion, water pollution/contamination, and wildlife displacement.

**Environmental Consequences of the No Action Alternative**

The No Action Alternative would impact the wilderness characteristics of the WSAs within the ED. WSAs must meet certain criteria in order to be studied further for a determination of suitability as wilderness (BLM Handbook H-8550-1). Criteria include an area which generally appears to have been affected primarily by the forces of nature, with the imprint of man's work substantially unnoticeable; has outstanding opportunities for solitude or a primitive and unconfined type of recreation; has at least five thousand acres of land or is of sufficient size as to make practicable its preservation and use in an unimpaired condition; and may also contain ecological, geological, or other features of scientific, educational, scenic, or historical value (Section 2(c) of the Wilderness Act of 1964). The No Action Alternative would not allow for changes in livestock grazing management to adjust to drought conditions. Over time, this could impair the same qualities that the WSAs originally met in order to receive further study regarding their suitability as wilderness. During drought conditions, livestock and wild horses would congregate in areas that receive a higher abundance of moisture, especially riparian areas. Riparian areas that are within WSAs could be

degraded. This degradation could include, but is not limited to, vegetation trampling, soil compaction, erosion, water pollution/contamination, and wildlife displacement.

## IV. CUMULATIVE EFFECTS

The Council on Environmental Quality (CEQ) regulations implementing NEPA defines cumulative impacts as: "The impact on the environment which results from incremental impact of the action when added to other past, present or reasonably foreseeable future actions regardless of what agency (Federal or Non-Federal) or person undertakes such actions. Cumulative impacts can result from individually minor, but collectively significant actions taking place over a period of time (40 CFR 1508.7). For the purposes of this EA, cumulative impacts are the sum of all past and present actions, the Proposed Action and reasonably foreseeable future actions (PPRFFAs) resulting from public land uses. The purpose of the cumulative analysis in this EA is to evaluate the significance of the Proposed Action's contributions to cumulative impacts.

As required under NEPA and the regulations implementing NEPA, cumulative impacts have been addressed for each resource brought forward for analysis. The extent of impacts to each resource would vary based on geographical and biological limits of that resource. Additionally, the length of time for cumulative effects analysis would vary according to the duration of impacts from the Proposed Action on the particular resource. The Cumulative Effects Study Area (CESA) for the Proposed Action is the entire ED and administered allotments.

### 4.0 Past, Present and Reasonably Foreseeable Future Actions

The PPRFFAs applicable to the assessment area are identified in the table below:

Table 10. Past, Present and Reasonably Foreseeable Future Actions

| Project Name or Description | Status (X) | | |
|---|---|---|---|
| | Past | Present | Future |
| Issuance of multiple use decisions and permits through the allotment evaluation process | X | X | X |
| Wild horse gathers | X | X | X |
| Fence construction for resource protection and management | X | X | X |
| Mining exploration, extraction and reclamation | X | X | X |
| Geothermal exploration and development | X | X | X |
| OHV use and trail system | | | X |
| Woodcutting and pine nut and Christmas tree harvesting | X | X | X |
| Habitat and vegetation improvement treatments and projects | X | | X |
| Wildfire suppression and rehabilitation | X | X | X |
| Invasive and noxious weed treatments | X | X | X |
| Wind Energy | | X | X |
| Wild Horse Eco-Sanctuaries | | X | X |

Any future proposed projects within the assessment area would be analyzed in an appropriate environmental document following site-specific planning. Future project planning would also include public involvement.

## 4.1 Effect of Past, Present and Reasonably Foreseeable Future Actions

### A. Air Quality

#### Cumulative Effects of the Proposed Action

Past, present and RFFAs cumulatively affecting air quality on the ED have been identified as smoke, ash and debris from wildland fires/prescribed burns, fugitive dust from mining activities and motorized vehicle use of unimproved roads, combustion engine emissions, wind erosion of disturbed areas and herbicide applications.

Under the Proposed Action, DRAs would be implemented to maintain vegetation within the ED to minimize the potential for accelerated erosion events. DRAs such as temporary water hauls could result in the short-term increase of wind born particulate matter and vehicle emissions during the hauling of water. Any airborne particulate matter caused by the implementation of DRAs coupled with past, present and RFFAs would be negligible and are not expected to cumulatively impact air quality.

The DRAs described in the Proposed Action are designed to protect vegetation and stabilize soils and would decrease wind born particulate matter in the long-term. Therefore, it is expected that the cumulative effects of the Proposed Action, would be beneficial and not significant in regards to air quality.

#### Cumulative Effects of the Grazing Closure Alternative

The cumulative effects of the Grazing Closure Alternative are similar to those of the Proposed Action.

#### Cumulative Effects of the No Action Alternative

Marshal (1973) found that wind velocity, and its potential to detach and transport dry soil, exponentially increases near the ground as vegetation's sheltering effect is reduced. The Society for Range Management Task Group in Concepts and Terminology (1995) concluded that erosion was a function of protective attributes of vegetation (e.g., cover, biomass, density of plants). The No Action Alternative would increase response time and reduce the effectiveness of management during a drought. In many instances, current livestock and wild horse management would continue with no modifications. This would lead to an overall decline in rangeland health associated with a reduction in plant cover and increased soil erosion. Accelerated soil erosion rates would increase the amount of airborne particulate matter, which could reduce air quality causing public safety issues such as poor

visibility or respiratory problems. This coupled with past, present and RFFAs such as smoke, ash and debris from wildland fires/prescribed burns and fugitive dust from mining activities and (OHV) use of unimproved roads would have adverse cumulative impacts on air quality.

## B. Wildlife

### 1. Cumulative effects of the Proposed Action

In the short-term, the Proposed Action could positively impact a wide variety of wildlife species through increased water and forage availability, reduced livestock impacts to critical habitats such as riparian areas, and reduced competition for drought-limited resources. Long-term, wildlife would benefit from improved rangeland health conditions.

The Proposed Action, with included stipulations, does not induce substantial growth or concentration of wildlife populations, displace or redistribute wildlife populations, cause a substantial reduction in wildlife population growth, reduce reproduction or survival, cause a substantial net increase in physiological expenditures, or create a substantial demand for forage or water. It is expected that the cumulative and incremental effects of the Proposed Action, in concert with PPRFAs, would be beneficial to wildlife populations.

**Cumulative Effects of the Grazing Closure Alternative**

In the short-term, the this alternative could positively impact a wide variety of wildlife species mainly as a result of increased water and forage availability, elimination of livestock impacts to critical habitats such as riparian areas, and cessation of competition for drought-limited resources. In the long-term, wildlife would also benefit from improved rangeland health conditions and cessation of resource competition with livestock.

The Grazing Closure Alternative does not induce substantial growth or concentration of wildlife populations; displace or redistribute wildlife populations; cause a substantial reduction in wildlife population growth; reduce reproduction or survival; cause a substantial net increase in physiological expenditures; or create a substantial demand for forage or water. It is expected that the cumulative and incremental effects of the Grazing Closure Alternative on wildlife would be beneficial to wildlife populations.

**Cumulative Effects of the No Action Alternative**

The current regime of livestock and wild horse management would continue during drought and would lead to the degradation of upland and riparian health. During the short-term, negative impacts to wildlife could include degradation of crucial riparian and upland habitats and declines in physiological condition leading to depressed reproductive output and increased mortality. If drought conditions persist for prolonged periods, cumulative degradation of rangeland health could lead to significant declines in wildlife populations, local extinctions and reduced connectivity between extant populations. Competition for drought-limited resources would continue at present levels.

Impacts would likely be considerable for species that depend on surface water and/or riparian areas for portions of their life history. It is expected that the cumulative and incremental effects of the No Action Alternative would have negative impacts on wildlife populations.

## C. Cultural/Historical

### Cumulative Effects of the Proposed Action

Past, present, and cumulative land-altering activities in northeastern Nevada affecting cultural resources include wildland and prescribed fires, mining, town/housing interfaces, recreation/OHV use, and other ground disturbing activities. The Proposed Action is not expected to contribute to negative cumulative impacts to cultural resources. The Proposed Action may be beneficial for the preservation of cultural resource through the DRAs to maintain vegetation health and limiting soil erosion. The DRAs temporary emergency actions would be inventoried for cultural resources. Located cultural resources would be protected through avoidance.

### Cumulative Effects of the Grazing Closure Alternative

The cumulative effects of the Grazing Closure Alternative reflect those of the Proposed Action. Cumulative Effects of the No Action Alternative Cumulative effects of the No Action Alternative would lead to a further reduction in plant cover and increased soil erosion. An increase in soil erosion would provide the potential for the degradation of important cultural resources and on-going site damage.

### Cumulative Effects of the No Action Alternative

Cumulative effects of the No Action Alternative would lead to a further reduction in plant cover and increased soil erosion. An increase in soil erosion would provide the potential for the degradation of important cultural resources and on-going site damage.

## D. Native American Traditional Values

### Cumulative Effects of the Proposed Action

Past, present, and cumulative land-altering activities in northeastern Nevada affecting Native American Traditional Values include wildland and prescribed fires, mining, town/housing interfaces, recreation/OHV use, geothermal energy development, spring and water source development, and other ground disturbing activities. Project-specific issues identified in the past by tribal representatives and analyzed for the proposed project include potential effects numerous traditional use water, plant gather (especially riparian species), and stone gathering areas; numerous identified

and documented TCPs; archaeological sites; and several locations of ceremonial and non-ceremonial (cultural) significance.

The Proposed Action is not expected to contribute to negative cumulative impacts to Native American Traditional Values. The Proposed Action may be beneficial for the protection and preservation of Native American Traditional Values through the DRAs to maintain vegetation health, limiting soil erosion, and excluding direct access to live water sources during times of extreme water stress.

**Cumulative Effects of the Grazing Closure Alternative**

The cumulative effects of the Grazing Closure Alternative reflect those of the Proposed Action.
Cumulative Effects of the No Action Alternative
Cumulative effects of the No Action Alternative would lead to a further reduction in plant cover and increased soil erosion. Negative impacts to culturally and spiritually important water sources would be increased with the decrease in active water sources and the additional use pressure on those water sources that remain. An increase in soil erosion would provide the potential for the degradation of important cultural resources and on-going site damage.

**Cumulative Effects of the No Action Alternative**

Cumulative effects of the No Action Alternative would lead to a further reduction in plant cover and increased soil erosion. Negative impacts to culturally and spiritually important water sources would be increased with the decrease in active water sources and the additional use pressure on those water sources that remain. An increase in soil erosion would provide the potential for the degradation of important cultural resources and on-going site damage.

**E. Paleontological Resources**

**Cumulative Effects of the Proposed Action**

Past, present, and cumulative land-altering activities in northeastern Nevada affecting paleontological resources include wildland and prescribed fires, mining, town/housing interfaces, recreation/OHV use, and other ground disturbing activities. The Proposed Action is not expected to contribute to negative cumulative impacts to paleontological resources. The Proposed Action may be beneficial for the preservation of paleontological deposits through the DRAs to maintain vegetation health and limiting soil erosion. The DRAs temporary emergency actions would be inventoried for paleontological resources. Located paleontological resources would be protected through avoidance.

**Cumulative Effects of the Grazing Closure Alternative**

The cumulative effects of the Grazing Closure Alternative reflect those of the Proposed Action.

**Cumulative Effects of the No Action Alternative**

Cumulative effects of the No Action Alternative would lead to a further reduction in plant cover and increased soil erosion. An increase in soil erosion would provide the potential for the degradation of paleontological resources.

## F. Climate Change

**Cumulative Effects of the Proposed Action**

Reduced anthropogenic degradation of upland and riparian resources and their associated microclimates during drought would benefit the upland and riparian resources within the ED. The Proposed Action would likely improve perennial vegetation and water resources, while also reducing erosion and water infiltration and runoff rates. The Proposed Action would likely lead to healthier ecosystems, which in turn would lead to more favorable land surface microclimates. Areas that are dominated by annual plants already have a changed microclimate that favors their existence. Increasing grazing in these areas would likely have minimal effects depending on site specific information (topography, species composition, water resources, and etc.).

**Cumulative Effects of the Grazing Closure Alternative**

The cumulative effects of the Grazing Closure Alternative reflect those of the Proposed Action.

**Cumulative Effects of the No Action Alternative**

Under the No Action Alternative, current livestock and wild horse management would continue during drought and would likely lead to the degradation of upland and riparian health. Reduced plant vigor, soil cover and increased erosion are linked to reduced upland and riparian health and their associated microclimates. This would increase the potential for invasion by noxious weeds and non-native species and lead to a long-term increase in noxious weeds and non-native species.

## G. Fire Management

**Cumulative Effects of the Proposed Action**

Under the Proposed Action, wildfire intensity in grazing allotments and wild horse HMA's would be decreased as a result of high suppression fire management practices, and reduced fuel load reduction

treatments. The Proposed Action could also result in greater reseeding projects after fires have been suppressed within drought-afflicted areas. This could lead to smaller burned areas within drought-afflicted areas and increased rangeland rehabilitation, which will positively impact native vegetation conditions and soil site stability, and create healthier, more productive plant communities. This would benefit future opportunities for livestock grazing.

**Cumulative Effects of the Grazing Closure Alternative**

The cumulative effects of the Grazing Closure Alternative reflect those of the Proposed Action. However, the Grazing Closure Alternative does not provide an opportunity for targeted grazing of invasive non-native species to reduce fuel loads.

**Cumulative Effects of the No Action Alternative**

Under the No Action Alternative, current livestock and wild horse management would continue during drought and would likely lead to the continued degradation of upland and riparian health. Invasive annual plants would continue to become established altering fire cycles to more frequent intervals. Fire burned areas within grazing allotments and wild horse HMA's could increase in intensity and size. Increased wildfire behavior will have a negative impact on native vegetation conditions and soil site stability. This could also negatively impact the duration and intensity of drought conditions within grazing allotments and wild horse and burro herd management areas.

**H. Noxious Weeds/Invasive Non-native Species**

**Cumulative Effects of the Proposed Action**

Noxious weeds and/or invasive non-native species are spread by wind, water, animals, and people. The potential for these species to invade an area and become established increases with ground disturbance and reduced vigor of native plants. In the short-term, the Proposed Action would provide for targeted grazing of non-native species. In the long-term the Proposed Action would limit adverse impacts to native vegetation and reduce the potential for soil erosion, thus limiting the opportunity for noxious weeds and/or invasive non-native species to become established. It is expected that the cumulative and incremental effects of the Proposed Action would be beneficial in regards to noxious weeds and invasive non-native species.

**Cumulative Effects of the Grazing Closure Alternative**

The cumulative effects of the Grazing Closure Alternative reflect those of the Proposed Action. However, the Grazing Closure Alternative does not provide an opportunity for targeted grazing of non-native species.

**Cumulative Effects of the No Action Alternative**

Under the No Action Alternative, current livestock and wild horse management would continue during drought and would likely lead to the degradation of upland and riparian health. Reduced plant vigor, soil cover and increased erosion are linked to reduced upland and riparian health. This would increase the potential for invasion by noxious weeds and non-native species and lead to a long-term increase in noxious weeds and non-native species.

**I. Riparian/Wetlands**

**Cumulative Effects of the Proposed Action**

The direct impact of the Proposed Action would be to reduce the impact of grazing on riparian vegetation. The reduction in the loss of riparian vegetation as a result of the Proposed Action would increase bank stability, reduce erosion, sedimentation, and changes in channel morphology, and increase groundwater recharge and maintenance of water in the stream channel longer at cooler temperatures.

Other factors that could adversely impact riparian vegetation such as diversion of stream flow and groundwater pumping for agriculture and mining are not altered by the Proposed Action. The reduction in in-stream flows as a result of diversion for irrigation and/or mining during periods of drought may still lead to a reduction in riparian vegetation. Groundwater pumping for irrigation and mining with a reduction in groundwater recharge for periods of sustained drought may result in a lowering of the water table in some areas adversely impacting riparian vegetation.
The increase in mining, geothermal, and solar development in the ED might continue into the foreseeable future resulting in the potential loss of some riparian habitat.

**Cumulative Effects of the Grazing Closure Alternative**

The direct impact of the Proposed Action would close drought affected areas to grazing during the period of the drought and provide time for riparian vegetation to recover. Researchers in Oregon conducted a study of a stream segment that had been removed from grazing impacts for four years (Dobkin et al. 1998). They observed that during the four year period the water table rose, expanding the hyporheic zone laterally from the channel. They also observed and increase in quantity and duration of base flows.

Most climate models predict the severity and frequency of droughts in the southwestern United States is expected to increase, increasing the need for a drought management program. The Grazing Closure Alternative would allow the restoration of riparian vegetation in a climate with longer, hotter growing seasons, and increased intensity of droughts. Riparian areas in poor condition would return to poor condition once grazing is authorized at previous levels of use, while riparian areas in good to

excellent condition would retain their condition with the improved livestock grazing practices being used prior to the drought.

**Cumulative Effects of the No Action Alternative**

Under the No Action Alternative there could be a significant loss of riparian vegetation. The loss of riparian vegetation would result in increased erosion and sedimentation.
The reduction in riparian vegetation as a result of grazing would increase the impacts of storm run-off from development. Channels could become entrenched, and flood plains become hydrologically disconnected from channel stream flow resulting in the loss of riparian vegetation and the formation of dry terraces.

Based on climate models, the severity and frequency of droughts in the southwestern United States is expected to increase. Predicted climate change may result in the acceleration of the degradation of the riparian ecosystem.

**J. Hydrology and Water Quality**

The cumulative effects study area (CESA) is the five sub-region level watersheds that intersect the ED as described in the Affected Environment portion of this document. This area was chosen because water uses within this area affects water quality and hydrology on BLM lands within the CESA, and water uses on BLM lands may affect water quality and hydrology within portions of these watersheds located on lands not administered by the BLM within these watersheds. As described in the Affected Environment, water bodies in these watersheds are already receiving a substantial level of cumulative effects as a result of a combination of the many existing land uses and natural effects.

**Cumulative Effects of the Proposed Action**

As described above, the Proposed Action would result in less negative effects than the No Action Alternative. This decrease in effects would not likely be sufficient to result in large scale and long term improvement to water quality, but effects would be less than under the No Action Alternative.

**Cumulative Effects of the Grazing Closure Alternative**

Cumulative effects of the Grazing closure alternative would be similar to the Proposed Action except that indirect effects of reduced management flexibility might result in some negative results. This difference in effects would not likely be sufficient to result in large scale and long term changes in hydrology and water quality when compared to the Proposed Action and No Action Alternative.
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**Cumulative Effects of the No Action Alternative**

Under the No Action Alternative, hydrology and water quality would continue to receive the level of cumulative effects that has led to violation of multiple water quality criteria as described above in the Affected Environment. These impacts will persist and possibly worsen as long as the drought continues. The impacts from grazing at current levels along with agricultural diversions and other water uses within the ED would affect hydrology by altering the timing and quantities of water within the CESA. Water quality would be affected by runoff from BLM administered lands into the rest of the CESA.

## K. Grazing Management

**Cumulative Effects of the Proposed Action**

Past, present, and RFFAs have the potential to impact livestock grazing activities, at least temporarily. It is expected that the Proposed Action could contribute to the cumulative impacts of past actions that have resulted in improved rangeland health conditions such as; rangeland health evaluations, wildland fires, habitat treatment activities, and past weed treatments. Temporary displacement of livestock as a result of actions that could occur under the Proposed Action along with past, present and RFFAs also contributes to the direct cumulative impacts to grazing management. The Proposed Action would require an increase in grazing management practices on allotments occurring within drought-afflicted areas of the ED. Depending on the DRAs selected, grazing management would be modified. This would lead to increased inputs from permittees. The cumulative effects of these inputs have been analyzed within the Socio-Economic Values Section (3.3 M) of this document. The degree to which drought impairs the range's potential for future forage production depends on the intensity, frequency and timing of grazing (Howery 1999). Lagged responses toward drought pose a threat to sustainable management of rangelands (Thurow and Taylor 1999). The Proposed Action would provide for the maintenance of vegetation and continuation of opportunities for grazing when past, present and RFFAs could provide additional disturbances (e.g., mineral exploration/extraction, disturbance from wildland and prescribed fire, road maintenance, etc.) across the public lands. These actions result in an increase in disturbed lands, increasing the risk of degradation of vegetative resources. Cumulatively, the indirect impact of the Proposed Action when coupled with these particular past, present and RFFAs would improve resources available for livestock grazing management due to a reduction in the net-loss of vegetative resources.

**Cumulative Effects of the Grazing Closure Alternative**

In the short-term, the Grazing Closure Alternative would remove livestock from public lands and eliminate grazing management. The cumulative effects of the reduced opportunity for grazing have been analyzed within the Socio-Economic Values Section (3.3 M) of this document.

In the long-term, the Grazing Closure Alternative would have similar impacts as the Proposed Action. The removal of grazing would maintain vegetative cover and reduce the potential for soil erosion and noxious weed invasion. This would provide for the sustainable management of the rangelands and provide future opportunities for grazing.

**Cumulative Effects of the No Action Alternative**

The No Action Alternative would increase response time and reduce the effectiveness of management during a drought. In many instances, current livestock and wild horse management would continue with no modifications. This would lead to an overall decline in rangeland health associated with a reduction in plant cover and increased susceptibility to soil erosion. The No Action Alternative would directly impact rangeland health, indirectly impacting grazing management practices and levels of livestock production over the long term.

## L. Recreation

**Cumulative Effects of the Proposed Action**

In the past, recreation within the ED has been dispersed and primitive in nature, and presently remains that way. Under the Proposed Action, reasonably foreseeable future actions include impacts on wild horse viewing, and riparian areas that are utilized for recreational purposes. In recent years, there has been an increased interest in wild horses and wild horse viewing within the ED due to the wild horse eco-sanctuary proposed just south of Wells, NV. Under the Proposed Action, gathers would be implemented in order to minimize the impacts that drought conditions would have on wild horses. Wild horse viewers would observe horses that are in better condition than if no action is taken, due to fewer horses utilizing scarce resources under drought conditions. Wild horse enthusiasts would continue to recreate in ED because horse populations would generally be in better health than if no action was taken. The Proposed Action would then positively benefit communities within the ED that rely partly on wild horse tourism as a source of income.

While limited, the ED does contain riparian resources that are frequently used for recreational purposes with the majority taking place on the Humboldt, Owyhee, Mary's, Bruneau, and Jarbidge, river systems . Impacts under the Proposed Action include minimizing the degradation of riparian resources used for recreational purposes. If livestock management actions and wild horse gathers are implemented, riparian resources should not be impacted as heavily as if no action was taken. If drought conditions persisted without action, this would cause livestock and wild horses to utilize water sources earlier in the season and for longer duration in order to survive. This could result in large congregations of animals in riparian areas that are utilized for recreation, increasing use and potentially degrading the riparian resources. Degradation could include, but is not limited to, vegetation trampling, soil compaction, erosion, water pollution/contamination, and wildlife displacement. These impacts would be diminished under the Proposed Action. Visitors would

continue to utilize riparian resources within the ED for recreational purposes. This would potentially benefit local economies, compared to no action, within the ED that outfit for recreational activities.

**Cumulative Effects of the Grazing Closure Alternative**

Past and current actions within the ED include allowing for livestock grazing in areas which coincide with recreation activities. Reasonably foreseeable future actions under the Grazing Closure Alternative include a temporary benefit to rangeland and riparian resources that are utilized for recreation purposes. Evidence of livestock use would be diminished, which would otherwise include, but are not limited to, vegetation trampling, soil compaction, erosion, water contamination, and would be evident for the duration of the management action. This alternative would temporarily alleviate grazing stressors on rangeland and riparian resources within the ED. The outcome would possibly benefit local economies from sustained or increased visitors to communities within the ED that rely partly on recreation as a source of income.

**Cumulative Effects of the No Action Alternative**

Impacts under the No Action Alternative include reduced wild horse viewing, and a degradation of riparian areas that are or could be used by recreationists. Wild horse enthusiast would have that experience altered by witnessing horses in malnourished conditions, and could view horses that are near death or have died due to declining conditions. The possible result of such an experience could cause wild horse recreationists to search for other wild horse viewing opportunities outside of the ED, and influence tourism in local communities that might otherwise rely on that traffic.

Reasonably foreseeable future actions under the No Action Alternative would include a reduction in the health and functionality of riparian resources within the ED. Under the No Action Alternative, changes in livestock management would not be implemented and wild horse gathers would not take place. If drought conditions persist, this would cause livestock and wild horses to access water sources earlier in the season and for a longer duration in order to survive. This could result in large, or larger, congregations of animals at riparian locations that are utilized for recreation, causing degradation to the riparian resource, and possibly influence the user's experience. Degradation could include, but are not limited to, vegetation trampling, soil compaction, erosion, and water pollution/contamination. Impacts could cause recreation users to search for other recreation areas outside of the ED. This would result in a negative economic impact on communities within the ED that rely partly on recreational visitors as a source of income.

**M. Socio-Economic Values**

**Cumulative Effects of the Proposed Action**

In the short-term, the Proposed Action could adversely impact ranchers who hold BLM grazing permits due to costs incurred to implement DRAs. However, in the long-term, ranchers would benefit

from improved rangeland health conditions. Wildlife and wild horses would also benefit from the increased production rates of forage and habitat improvement.

The Proposed Action does not induce substantial growth or concentration of population; displace a large number of people; cause a substantial reduction in employment; reduce wage and salary earnings; cause a substantial net increase in county expenditures; or create a substantial demand for public services. In the volatile economy of the foreseeable future, it is expected that the cumulative and incremental socioeconomic effects of the Proposed Action, would be beneficial and not significant.

**Cumulative Effects of the Grazing Closure Alternative**

In the short-term, the Grazing Closure Alternative could adversely impact ranchers who hold BLM grazing permits due to costs incurred to provide alternate livestock forage. However, in the long-term, ranchers could benefit from improved rangeland health conditions. Wildlife and wild horses would also benefit from the increased production rates of forage and habitat improvement.
This alternative does not induce substantial growth or concentration of population; displace a large number of people; cause a substantial reduction in employment; reduce wage and salary earnings; cause a substantial net increase in county expenditures; or create a substantial demand for public services. In the volatile economy of the foreseeable future, it is expected that the cumulative and incremental socioeconomic effects of the Grazing Closure Alternative, would be beneficial and not significant.

**Cumulative Effects of the No Action Alternative**

Under the No Action Alternative, current livestock and wild horse management would continue during drought and would likely lead to the degradation of upland and riparian health. If drought conditions persist for prolonged periods, cumulative degradation of rangeland health may result in grazing allotments failing to meet rangeland S&Gs in the future. Consequently, BLM could cancel portions of or entire permits on allotments that fail to meet S&Gs, which may adversely impact affected permittees. Additionally, declining conditions of the rangelands may be coupled with declining conditions of livestock, wild horses, and wildlife. During periods of prolonged drought, profits of ranchers would decline. This may or may not lead to existing ranches becoming economically unviable. The BLM assumes that if existing ranches fail, some other corporation or individual may step in to purchase the base property and grazing privileges. It is not possible to foresee which base properties, if any, may change out of livestock production and into some other form of business. If base properties do remain active for livestock production, the industry as a whole would continue to exist but under different ownership and likely with reduced income.

**N. Soils**

**Cumulative Effects of the Proposed Action**

Past, present and RFFAs such as historic grazing management, range improvement construction, mining exploration/extraction, wild horse use, OHV use, and wildland and prescribed fires have impacted soils, at least temporarily, in the form of soil compaction, loss of soil-site stability and changes in physical and/or biological processes. These impacts, which may be in the form of compaction, erosion, loss of soil structure, or a combination of the three, are dependent upon the size and nature of the actions that have or may occur across the landscape. Other activities that have resulted in improved rangeland health have been implemented to improve soil site stability such as changes in grazing management, removal of excess wild horses, reclamation, rehabilitation activities and authorization of various range improvement projects.

There is broad agreement that improper grazing can negatively impact various rangeland ecosystem functions and degrade ecosystem services (Belsky et al. 1999; Briske et al. 2008; Tate et al. 2004). This is especially true during drought, when plant production and vigor is reduced and plants become increasingly vulnerable to grazing. The quality of the soil determines the nature of plant ecosystems and the capacity of land to support animal life, vegetation and society (Brady and Weil 2002). Soil erosion decreases the capacity of the soil to provide these services. The erosion hazard during drought is increased when prolonged grazing pressure further reduces plant cover (Thurow and Taylor 1999).

The livestock and wild horse management strategies described in the Proposed Action would provide for the maintenance of soil cover. The Proposed Action would also limit the impact to riparian areas where improper management can lead to increased erosion in a short amount of time. It is expected that the cumulative and incremental effects of the Proposed Action would be beneficial and not significant in respect to soils.

**Cumulative Effects of the Grazing Closure Alternative**

The cumulative effects of the Grazing Closure Alternative reflect those of the Proposed Action.

**Cumulative Effects of the No Action Alternative**

Increases in wind and water erosion are positively correlated to reduced plant cover. Marshal (1973) found that wind velocity, and its potential to detach and transport dry soil, exponentially increases near the ground as vegetation's sheltering effect is reduced. The Society for Range Management Task Group in Concepts and Terminology (1995) concluded that erosion was a function of protective attributes of vegetation (e.g., cover, biomass, density of plants). The No Action Alternative would increase response time and reduce the effectiveness of management during a drought. In many instances, current livestock and wild horse management would continue with no modifications. This would lead to an overall decline in rangeland health associated with a reduction in plant cover and

increased susceptibility to soil erosion. Therefore, it is expected that the No Action Alternative would have a negative effect on soils within the ED.

## O. Vegetation (Including Special Status Species)

### Cumulative Effects of the Proposed Action

Past, present and RFFAs brought forward in Table 8 have resulted in potential direct and indirect impacts to vegetative resources. Most actions that occur have resulted in the improvement of vegetative communities as a whole. Activities such as rehabilitation/restoration projects, noxious/invasive weed treatments, changes in grazing management, and removal of wild horses have direct impacts to vegetative communities by improving vegetative health (vigor, density, and production). Activities such as the implementation of range improvement projects are designed to improve vegetative conditions by modifying livestock distribution patterns within an area. Improved livestock distribution patterns limit grazing pressures on vegetative resources within a given area therefore allowing for an increased vigor, density, and productive response. Where impacts have resulted in a loss of vegetation (e.g., mining, wildland and prescribed fires, geothermal exploration, OHV use) mitigation efforts are typically incorporated in order to limit a net loss across the landscape.

During drought, it is imperative that proper grazing management occurs. The Proposed Action is designed to reduce the impacts of livestock and wild horse use on vegetation during drought.
To survive, perennial plants must accumulate both above ground (shoot growth) and below ground (root growth) biomass through the process of photosynthesis, transpiration, and respiration (Howery 1999). Excessive removal of above ground biomass during the growing season reduces root growth. A healthy root system is paramount in the growth of any range plant, especially during dry years when competition for water and nutrients is most severe (Bedell and Ganskopp 1980). Proper use of range forage allows plants to survive dry periods, recover quickly, and provide cover to protect the soil and promote water infiltration (Hanselka and White 1986). The DRAs described in the Proposed Action are intended to ensure adequate residual plant material is left to protect the soil and provide for sustainable plant production. Maintenance of native plants is important for the continuation of healthy and diverse plant communities, therefore, it is expected that the cumulative and incremental effects of the Proposed Action would be beneficial and not significant in respect to vegetation.

### Cumulative Effects of the Grazing Closure Alternative

The cumulative effects of the Grazing Closure Alternative are similar to those of the Proposed Action. However, the Grazing Closure Alternative does not provide an opportunity for targeted grazing of non-native species, which could be used to enhance the production of perennial grasses by reducing plant competition and minimizing soil moisture depletion.

### Cumulative Effects of the No Action Alternative

The degree to which drought impairs the range's potential for future plant production depends on the intensity, frequency, and timing of grazing (Howery 1999). Thurow and Taylor (1999) found that unsustainable range use leads to erosion, crusting and degraded vegetation. This causes an increase in the frequency and consequences of drought. Excessive removal of above ground biomass during the growing season reduces root growth. A healthy root system is paramount in the growth of any range plant, especially during dry years when competition for water and nutrients is most severe (Bedell and Ganskopp 1980). As plants are overgrazed their root system is reduced which in turn limits their ability to capture and use soil moisture.

The No Action Alternative would require the preparation of separate EAs, which would delay drought response times and potentially result in a continuation of current management practices, which are often poorly suited to drought. Therefore, it is expected that the No Action Alternative would have negative cumulative impacts on vegetation. Overuse of vegetation during drought would directly impact the health of vegetation and reduce the ability of vegetative communities to use soil nutrients and water even during times of average precipitation.

## P. Wild Horses

### Cumulative Effects of the Proposed Action

Since 1975, the ED has been conducting periodic gathers to remove excess wild horses. Through this time, populations of individual HMAs have fluctuated. Emergency drought or wildfire gathers have also been conducted on several HMAs.

Past activities, which may have affected wild horses within primarily, include livestock grazing through the impacts on vegetation condition and availability, as well as water quality and quantity, and drought. Wild horse use/overpopulation and gathers to remove excess animals are likely to have the largest impact on the quality of habitat used by wild horses and thus on the health and long term success of animals on the range. Other actions have included mining and mineral exploration, wildfire suppression and rehabilitation, range improvement projects including water developments and vegetation treatments, geothermal development, oil and gas exploration, power line development, recreational activities and fence construction.

Several HMAs within the WFO maintain populations in excess of AML, and maintenance gathers are being proposed for 2013 to remove excess animals. HMAs within the TFO have been gathered in recent years and are at or below AML. Permitted livestock use is the primary use that occurs within the associated Allotments in addition to the use by wild horses and wildlife. Geothermal exploration and development is taking place in several HMAs, as well as ongoing mineral exploration and mining.

Rangeland Health Evaluations (RHE) is currently being completed in several HMAs. Once data is collected and analyzed, Standards for Rangeland Health will be evaluated and if necessary, changes to livestock and wild horse use would be recommended and implemented through decisions, following consultation with the interested public.

Future activities which could occur include adjustments to livestock grazing numbers or season of use, water developments, spring enclosures, solar, geothermal and mine development, and mineral or geothermal exploration activities. The future may also involve further adjustments (increases or decreases) to AMLs and development of Herd Management Area Plans (HMAPs). Other activities, such as future gathers to maintain AML, implementation of fertility control and/or modification of sex ratios within the HMAs could occur. Should future genetic analysis indicate concerns with genetic viability, specific treatment protocols would be developed to address these concerns such as potential augmentation of wild horses from other similar HMAs.

The BLM would continue to conduct monitoring to assess progress towards meeting the Northeastern Great Basin RAC Standards and Guidelines, Rangeland Health Standards, and RMP objectives. Wild horses would continue to be a component of the public lands, managed within a multiple use concept. While there is no anticipation that amendments to the Wild Free-Roaming Horse and Burro Act that would change the way wild horses would be managed on the public lands, the Act has been amended three times since 1971. Therefore, there is potential for amendment as a reasonably foreseeable future action.

As the BLM achieves AML on a Bureau wide basis, gathers should become more predictable due to facility space. This should increase stability of gather schedules, which would result in HMAs being gathered at least every four years. Fertility control should also become more readily available as a management tool, with treatments that last between gather cycles, reducing the need to remove as many wild horses, and possibly extending the time between gathers.

Cumulative beneficial effects from the Proposed Action are expected, and would include improvement of the rangeland vegetation and riparian areas, which in turn positively impact wildlife, wild horse populations, and livestock as forage and water availability and quality is protected from the effects of drought.

The combination of the PPRFAs, along with the Proposed Action, should provide the best opportunity to maintain stable wild horse populations, healthier rangelands and animals, and avoid future emergency situations. The Proposed Action would contribute to isolated areas of disturbed vegetation through the gather activities. Due to the small size or short duration of the disturbance, cumulative impacts associated with the Proposed Action, when compared to the overall CESA, are expected to be negligible especially when identified mitigation measures are implemented.

The Proposed Action is expected to result in indirect impacts that would contribute to improved rangeland health. In the long term, the DRAs in addition to foreseeable actions (such as changes to

livestock management systems) would lead to improved habitat for wild horses and wildlife. The actions identified for livestock and wild horses, whether implemented alone or in combination would promote recovery of native vegetation affected by drought as well as reduce or eliminate additional degradation to vegetation and riparian areas.

Because of the movement of wild horses between neighboring HMAs, any removal operation, as well as future gathers could affect the number of animals in these HMAs. Experience has shown that when populations are reduced in one HMA, often times there are compensatory population fluctuations as wild horses migrate into an area of lower population from an area of higher population. This is likely a natural response to reduced competition for forage, water, and space. The outcome can be noticeable or involve subtle shifts in the populations between HMAs over time, and particularly in the years following a gather operation.

Due to the normal movement of wild horses between HMAs and United States Forest Service WHTs, it is expected that genetic health of all populations would continue to be maintained. In the case of a complete removal the genetic health of the HMA could be impaired. If possible, an adequate number of animals would be held in a contract facility until it deemed possible to safely release the wild horses and ensure their welfare.

In future years, the implementation of fertility control could reduce the overall number of wild horses needing to be removed from the range. The result could be maintaining stable populations within the established AML ranges, removal of primarily young animals, and avoiding the cycle of over populated ranges, necessitating the gather and removal of large numbers of excess animals in order to achieve the lower limit of AML. Cumulatively, application of fertility control through the Proposed Action could increase the health of mares within the HMA with reduced biological costs due to repeated births and nursing foals. Once normal fertility resumes, mares would reflect higher body condition which would result in larger, stronger foals more apt to reach their genetic potential and survive adverse conditions.

With implementation of the Proposed Action, excessive use by wild horses would be minimized or avoided. Key forage species would improve in health, abundance and robustness, and would be more likely to set seed and reproduce, which in turn would contribute to their increase within the plant community. As future wild horse decisions are implemented and future gathers conducted to remove excess animals and maintain AML, these impacts are expected to continue and result in overall improvements to the forage availability for livestock, wild horses and wildlife. Habitat would be protected from further losses of important key forage species, which would increase in frequency, vigor and production. Improved habitat condition would lead to improved equine body condition, healthier foals, and ensure herd sustainability through drought years.

No additional impacts would be expected from relocating wild horses within HMAs beyond those identified for the other Drought Response Actions. Over the course of time, animals would be

expected to re-distribute throughout the HMA, and long term distribution patterns would not be affected.

**Cumulative Effects of the Grazing Closure Alternative**

Cumulative impacts of this alternative in combination with all other past, present and future actions would consist of enhanced rangeland health in the long term as recovery from drought ensues in the absence of livestock grazing. Effects to wild horses would be a degree of improved quality and quality of forage and water in the short term and potentially in the long term if recovery from drought and subsequent impacts rangeland health are notable. Future impacts from overpopulation of wild horses, changes to livestock management or actions that cause changes to animal distribution on the range (including future or continued drought) could negate impacts from this alternative in the long term. There are however, no adverse impacts to wild horses anticipated from this alternative.

**Cumulative Effects of the No Action Alternative**

The No Action Alternative would not result in any long-term cumulative benefits to any rangeland user. The No Action Alternative would allow continued degradation of vegetation by wild horses within drought affected rangeland, which would cause continued loss of key perennial forage species replaced by less palatable and nutritious native and non-native plants.

In HMAs that supports inadequate resources in relation to the population of animals; emergency conditions for wild horses could result. No other past, present or reasonably foreseeable actions would offset the potentially irreparable damage to the range. Lack of appropriate management action at this time could result in future decisions to reduce AML or eliminate portions of HMAs from long term management due to lack of resources. Without an emergency gather to remove the stressed animals, a large portion of the population could die a painfully suffering death. Animal health, particularly wild horses would be affected for many years as the range begins to recover from drought under the pressure of a population of animals that is out of balance with the resources.

Deterioration of uplands and riparian areas would not ensure healthy habitat for future generations of wild horses and/or wildlife. Chronic and long term degradation of rangeland resources could result in irreparable damage to the arid habitat and could result in the need to permanently remove all wild horses from the range in certain HMAs, cumulatively resulting in reduced AML or discontinuing long term management of wild horses due to lack of suitable habitat. In the long term, the No Action Alternative would result in reductions or elimination of livestock grazing due to degraded range conditions, and a severe reduction or extirpation of native wildlife in most seriously affected areas.

**Q. Wilderness**

**Cumulative Effects of the Proposed Action**

Past and present actions have allowed livestock grazing within WSAs. Grazing within WSAs must continue in a manner that does not cause unnecessary or undue degradation of the lands (BLM Handbook 8550-1, CFR 43 § 1782 603(c)). Reasonably foreseeable future actions under the Proposed Action include maintaining this standard for livestock grazing within WSAs to limit degradation of rangeland and riparian resources within WSAs, which may otherwise reduce wilderness characteristics below acceptable levels (Hendee 2002).

Past and present actions have allowed for wild horses to utilize WSAs as long as that use would not degrade wilderness values, and vegetative cover (BLM Handbook 8550-1). Reasonably foreseeable future actions under the Proposed Action include maintaining the non-impairment standard regarding wild horses within WSAs and reducing or preventing degradation of wilderness values. During drought conditions, gathers could be implemented. This action would reduce potential degradation within WSAs, and safeguard the wild horses' health and vitality. The removal of wild horses from WSAs would reduce stressors that could otherwise impact wilderness character during drought years (Hendee 2002).

**Cumulative Effects of the Grazing Closure Alternative**

Past and present actions have allowed for livestock grazing within WSAs (CFR 43 § 1782 603(c)). Grazing within WSAs must continue in a manner that doesn't cause unnecessary or undue degradation of the lands (BLM Handbook 8550-1). Under the Grazing Closure Alternative, grazing would not take place within WSAs until resource conditions improve. Reasonably foreseeable future actions include a temporary recovery of the rangeland and riparian resources within WSAs. This recovery would alleviate impacts to vegetation that could otherwise impinge on wilderness character.

**Cumulative Effects of the No Action Alternative**

Past and present actions have allowed for livestock grazing within WSAs (CFR 43 § 1782 603(c)). Grazing within WSAs must continue in a manner that doesn't cause unnecessary or undue degradation of the lands (BLM Handbook 8550-1). Reasonably foreseeable future actions under the No Action Alternative include undue degradation of lands within WSAs. Under drought conditions, livestock would utilize remaining rangeland and riparian resources, including those within WSAs, in order to survive. Potential overuse could degrade the rangeland and riparian resources and impact wilderness characteristics vital for wilderness designation (Hammitt 1998, BLM Handbook 8550-1). Degradation could include, but is not limited to, vegetation trampling, soil compaction, erosion, and water contamination (Hendee 2002).

Past and present actions have allowed for wild horses to utilize WSAs as long as that use doesn't degrade wilderness values, and vegetative cover (BLM Handbook 8550-1). Reasonably foreseeable future actions under the No Action Alternative would include a degradation of wilderness values, and vegetative cover within WSAs. Under drought conditions, wild horses would exploit remaining rangeland and riparian resources earlier in the year and for a longer duration, including those within

WSAs, in order to survive (Hendee 2002). This utilization could degrade rangeland and riparian resources impacting wilderness characteristics, which are crucial for wilderness designation (Hammitt 1998, BLM Handbook 8550-1). Degradation could include, but is not limited to, vegetation trampling, soil compaction, erosion, and water contamination.

# V. CONSULTATION, COORDINATION, AND LIST OF PREPARERS

## 5.1 Public Scoping

A scoping letter for this EA with the proposed action was sent to the public for a 30-day comment period on October 15, 2012. The scoping letter was sent to three hundred and fifty eight individuals, organizations, companies, agencies, and tribes. Comments from the scoping period were received from fourteen individuals, organizations, companies, agencies, and tribes. Comments were then evaluated and considered by BLM specialists while the EA was being prepared.

## 5.2 Consultation

Pursuant to Section 7 of the Endangered Species Act of 1973 (ESA; 16 U.S.C. 1531 *et seq*.); Elko District BLM consulted with US Fish and Wildlife Service about this EA. The USFWS determined the proposed action for this EA may affect, but would not likely adversely affect any endangered species located within the Elko District.

## 5.3 List of Preparers

The following is a list of preparers for the Elko District Management and Mitigation for Drought Impacted Rangelands Environmental Assessment

Casey Addy, Rangeland Management Specialist (co-lead)

Victoria Anne, Planning and Environmental Coordinator

Beth Bigelow, Archaeologist

Patrick Coffin, Fisheries Biologist

Cameron Collins, Wildlife Biologist

Mark Dean, Hydrologist

Terri Dobis, Project Manager (co-lead)

Bryan Mulligan, Natural Resource Specialist (Weeds)

Matt Murphy, Natural Resource Specialist (Fire)

Blaine Potts, Outdoor Recreation Planner

Bruce Thompson, Wild Horse and Burro Specialist

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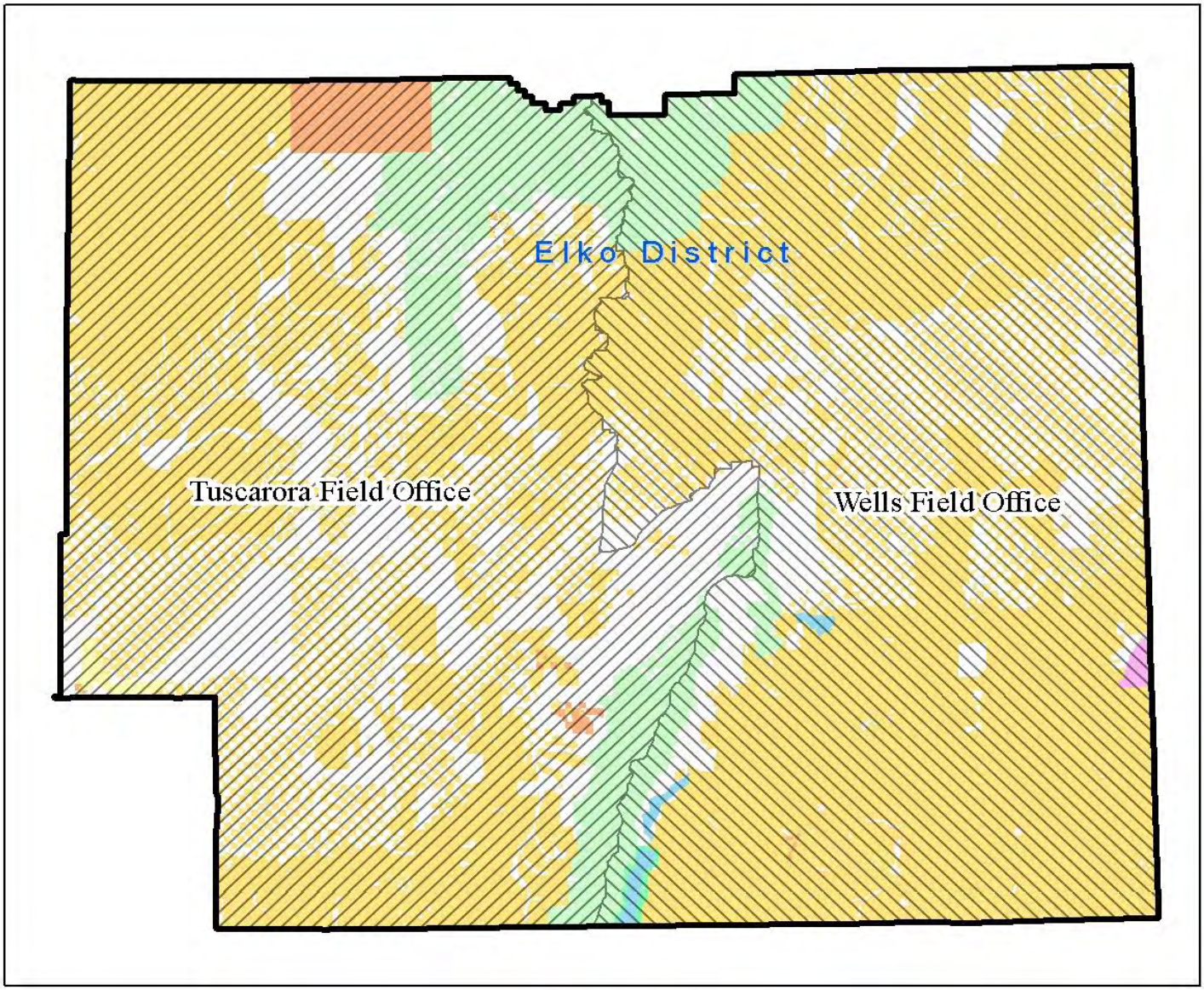
# MAPS

# ELKO DISTRICT BLM MAP




**Legend**

- Elko District Office Boundary

**Field Office Boundary**

- Tuscarora Field Office
- Wells Field Office

BIA BLM BR DOD FWS FS NV PVT WTR

Miles

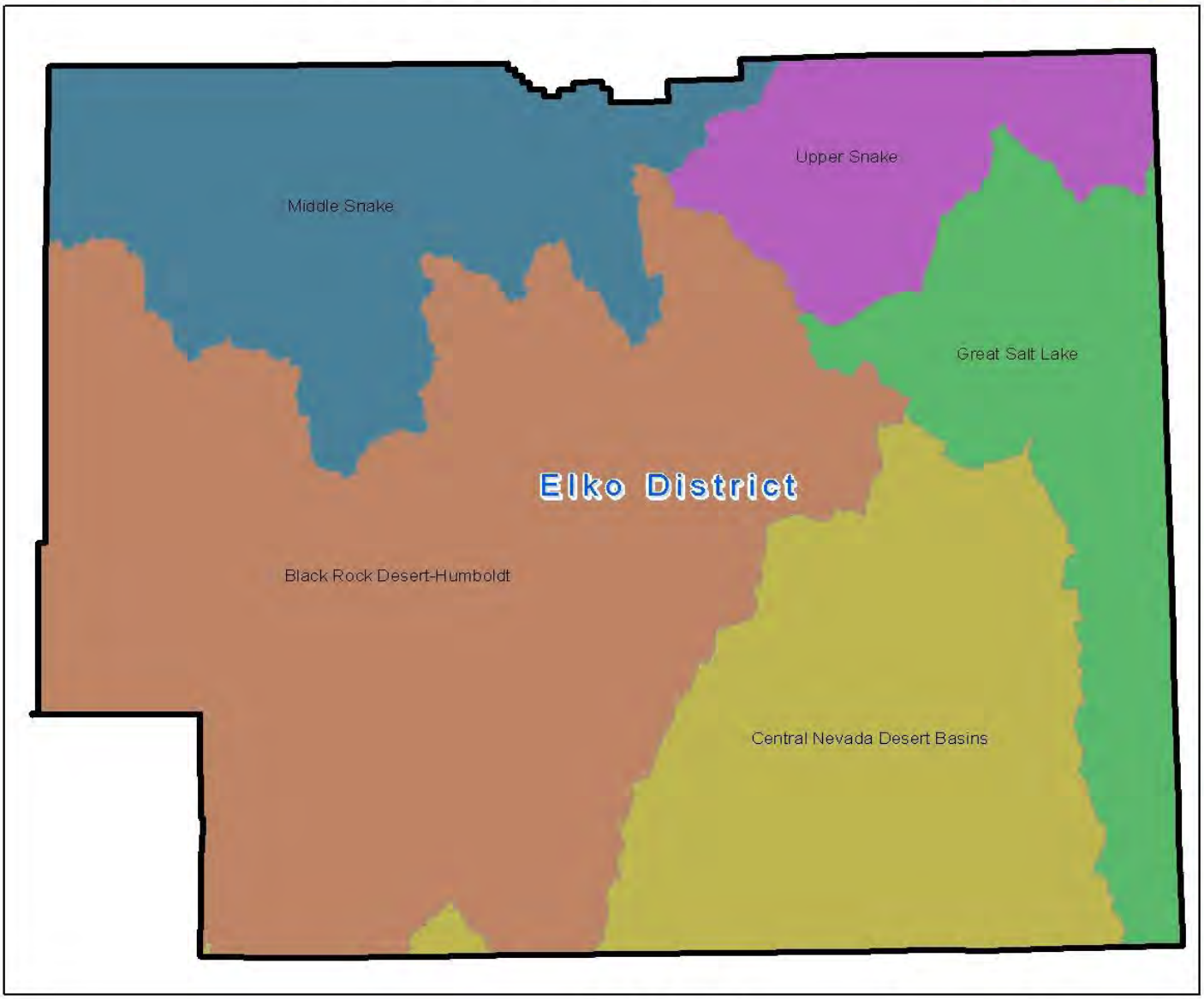
0 5 10 20 30 40

United States of America
Dept. of the Interior
Bureau of Land Management
Elko District Office
J.C.Robbins 11-Feb-2013

N W E S

No warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual or aggregate use with other data. Original data were compiled from various sources. This information may not meet National Map Accuracy Standards. This product was developed through digital means and may be updated without notification

# MAP 2. USGS HYDROLOGIC SUB-REGIONS




0 10 20 40 60 80

Miles

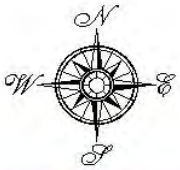
**Legend**

- Elko District Office Boundary

**Hydrologic Sub-Regions**

- Black Rock Desert-Humboldt
- Central Nevada Desert Basins
- Great Salt Lake
- Middle Snake
- Upper Snake

United States of America
Dept. of the Interior
Bureau of Land Management
Elko District Office
J.C.Robbins 11-Feb-2013

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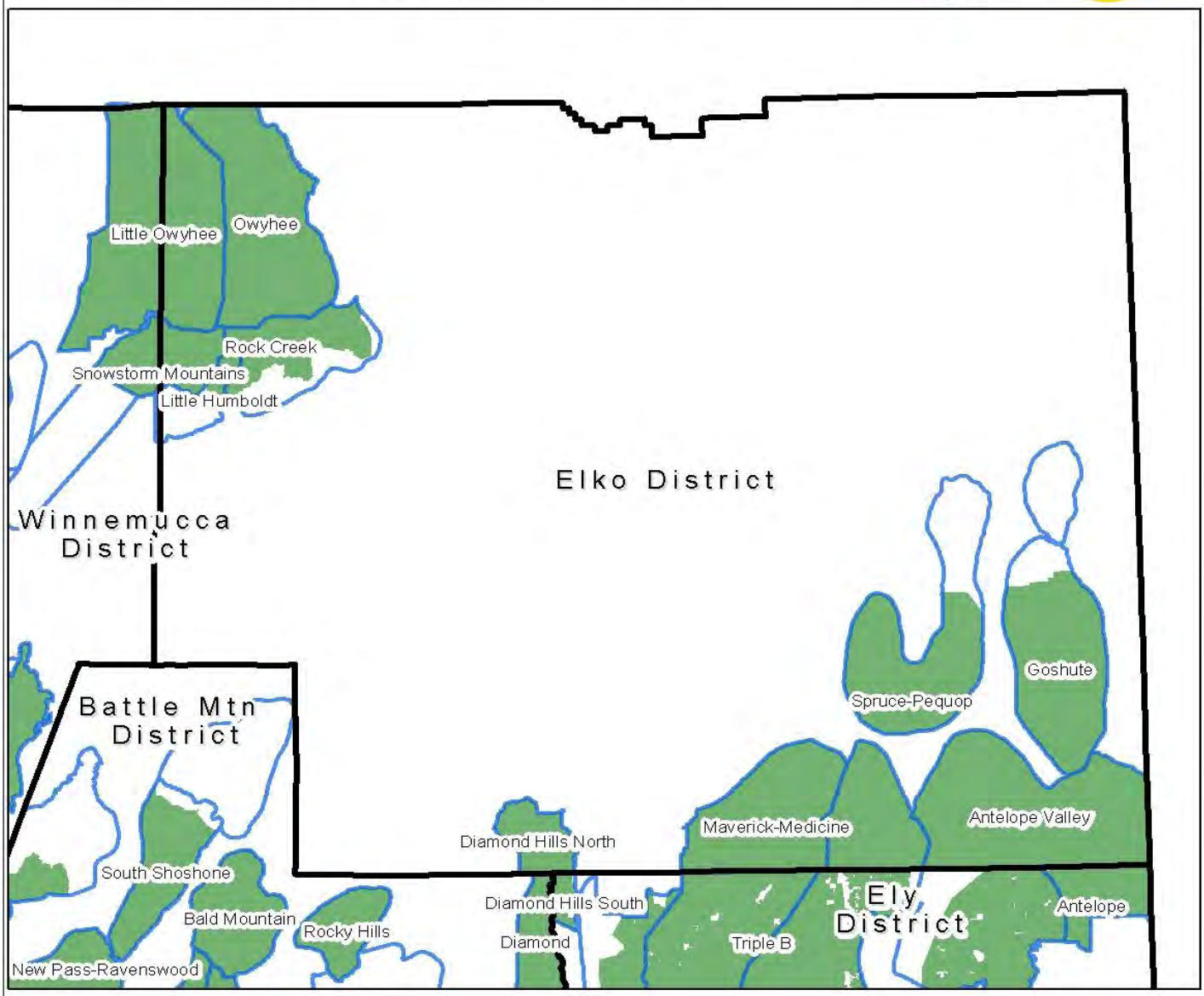
# ELKO DISTRICT HERD MANAGEMENT AREAS AND HERD AREAS




**Legend**

- Elko District Office Boundary
- Herd Area
- Herd Management Area

No warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual or aggregate use with other data. Original data were compiled from various sources. This information may not meet National Map Accuracy Standards. This product was developed through digital means and may be updated without notification.

0 5 10 20 30 40

Miles

N W E S

United States of America
Dept. of the Interior
Bureau of Land Management
Elko District Office
J.C.Robbins 11-Feb-2013

## APPENDIX A – WILDLIFE STIPULATIONS

The following stipulations would apply to Drought Response Actions (DRA) which have the potential to disturb or displace wildlife. Such actions could include, but are not limited to: gathering and trapping of wild horses, relocation of wild horses, construction of temporary fences, pipelines and water troughs, temporary water hauling, and other activities.

STIPULATION 1: Greater Sage-Grouse Strutting Grounds (Leks)

The Elko District contains 792 Greater Sage-Grouse leks and an additional number within two miles of the District boundary. These leks are subject to protection from disturbance during 15 March - May 15. Seasonal restrictions from disturbance apply within two miles of active or unknown status leks. It may be appropriate to permit certain DRAs (e.g., temporary water hauling on a road within two miles of lek) within two miles of a lek during the breeding season provided there are time-of-day restrictions. Time-of-day restrictions are one-half hour before sunrise to 10 am. The most current lek data provided by the Nevada Department of Wildlife will be used to delineate leks and their activity status at the time a drought response action is implemented.
*Authority/Supporting Documentation:* Wells RMP ROD (p. 22 – Terrestrial Wildlife Habitat SOP # 10).

STIPULATION 2: Raptor Nesting Sites

The Elko District contains raptor nesting sites which are subject to seasonal and spatial protection from disturbance to avoid displacement and mortality of raptor young (Wells RMP ROD, p. 22 – Terrestrial Wildlife Habitat SOP # 10-11). If a DRA is to occur during the raptor nesting seasons below and has the potential to disturb or displace nesting raptors, nest surveys will be conducted by a BLM wildlife biologist using current U.S. Fish and Wildlife Service protocols. Such surveys shall be conducted no more than 14 days prior to commencement of DRAs in an area. If disturbance does not occur within 14 days of the survey, the site shall be resurveyed. If during any surveys, nests or nesting behavior are documented, the area must be avoided by the species-specific distances below until the young have fledged from the nest or the nest fails. Nest results will be determined by the wildlife biologist. For example, if a Cooper's hawk nest is found to exist within 0.25 mile of a wild horse trap site or temporary holding facility, no activity would be authorized within a 0.25 mile buffer of the nest from March 15 through August 31, or from March 15 through the date that young have fledged and are no longer dependent upon the nest, as determined by a BLM biologist.

| Species | Seasonal Buffer[1] | Spatial Buffer[2] |
|---|---|---|
| Turkey Vulture | 2/1[3] – 8/15 | 0.5 mile[1] |
| Northern Harrier | 4/1 – 8/15 | 0.25 mile |
| Cooper's Hawk | 3/15 – 8/31 | 0.25 mile |
| Sharp-shinned Hawk | 3/15 – 8/31 | 0.25 mile |
| Northern Goshawk | 3/1 – 8/15 | 0.5 mile |
| Red-tailed Hawk | 3/15 – 8/15 | 0.33 mile |

| | | |
|---|---|---|
| Swainson's Hawk | 3/1 – 8/31 | 0.25 mile |
| Ferruginous Hawk | 3/1 – 8/1 | 1.0 mile |
| Golden Eagle | 1/1 – 8/31 | 0.5 mile |
| Bald Eagle | 1/1 – 8/31 | 1.0 mile |
| American Kestrel | 4/1 – 8/15 | 0.125 mile |
| Prairie Falcon | 3/1[3] – 8/31 | 0.5 mile |
| Peregrine Falcon | 2/1 – 8/31 | 1.0 mile |
| Barn Owl | 2/1 – 9/15 | 0.125 mile |
| Long-eared Owl | 2/1 – 8/15 | 0.125 mile |
| Short-eared Owl | 3/1 – 8/1 | 0.25 mile |
| Flammulated Owl | 4/1 – 9/30 | 0.25 mile |
| Western Screech-owl | 3/1 – 8/15 | 0.125 mile |
| Great Horned Owl | 12/1 – 9/30 | 0.125 mile |
| Northern Pygmy Owl | 4/1 – 8/1 | 0.25 mile |
| Burrowing Owl | 3/1 – 8/31 | 0.25 mile |
| Northern Saw-whet Owl | 3/1 – 8/31 | 0.125 mile |

[1]From Utah Field Office Guidelines for Raptor Protection from Human and Land Use Disturbances (USFWS).
[2]From Guidelines for Raptor Conservation in the Western United States, except where noted (USFWS).
[3]From Nevada Raptors: Their Biology and Management (NDOW).

STIPULATION 3: Migratory Birds

The Elko District contains widespread nesting habitat for numerous migratory bird species (50 CFR 10.13). If DRAs will take place between March 15 - July 31, and they have the potential to disturb or displace breeding migratory birds, nesting surveys will be conducted by a BLM wildlife biologist using current U.S. Fish and Wildlife Service protocols. If surveys occur between March 15 and May 15, the DRA must commence within 14 days due to the high proportion of migratory birds nesting during this time. If the DRA does not occur within 14 days a new survey is required. If initial surveys occur between May 16 and July 31, a single survey can suffice, the 14-day restriction does not apply, and the DRA can commence at any time after survey completion. If during any surveys, nests or nesting behavior are documented, the area must be completely avoided by a 300' buffer until the young have fledged from the nest or the nest fails. Nest results will be determined by the wildlife biologist.

## APPENDIX B. NORTHEASTERN NEVADA WILDLIFE LIST

### BIRDS

**Order**: *Gaviiformes* (Diver/Swimmers)
Family: *Gaviidae* (Loons)

| | |
|---|---|
| Common Loon | *Gavia immer* |

**Order**: *Podicipediformes* (Flat-toed Divers)
Family: *Podicipedidae* (Grebes)

| | |
|---|---|
| Pied-billed Grebe | *Podilymbus podiceps* |
| Horned Grebe | *Podiceps auritus* |
| Eared Grebe | *Podiceps nigricollis* |
| Western Grebe | *Aechmophorus occidentalis* |
| Clark's Grebe | *Aechmophorus clarkii* |

**Order**: *Pelecaniformes* (Four-toed Fisheaters)
Family: *Pelecanidae* (Pelicans)

| | |
|---|---|
| American White Pelican | *Pelecanus erythrorhynchos* |

Family: *Phalacrocoracidae* (Cormorants)

| | |
|---|---|
| Double-crested Cormorant | *Phalacrocorax auritus* |

**Order**: *Ciconiiformes* (Long-legged Waders)
Family: *Ardeidae* (Bitterns, Herons, Egrets)

| | |
|---|---|
| American Bittern | *Botaurus lentiginosus* |
| Least Bittern | *Ixobrychus exilis* |
| Great Blue Heron | *Ardea herodias* |
| Great Egret | *Ardea alba* |
| Snowy Egret | *Egretta thula* |
| Cattle Egret | *Bubulcus ibis* |
| Green Heron | *Butorides virescens* |
| Black-crowned Night Heron | *Nycticorax nycticorax* |

Family: *Threskiornithidae* (Ibises)

| | |
|---|---|
| White-faced Ibis | *Plegadis chihi* |

Family: *Cathartidae* (New World Vultures)

| | |
|---|---|
| Turkey Vulture | *Cathartes aura* |
| California Condor | *Gymnogyps californianus(loc.ex)* |

**Order**: *Anseriformes* (Waterfowl)
Family: *Anatidae* (Ducks, Geese, Swans)

| | |
|---|---|
| Greater White-fronted Goose | *Anser albifrons* |
| Snow Goose | *Chen caerulescens* |
| Canada Goose | *Branta canadensis* |
| Tundra Swan | *Cygnus columbianus* |

| | |
|---|---|
| Trumpeter Swan | *Cygnus buccinator* |
| Wood Duck | *Aix sponsa* |
| Gadwall | *Anas strepera* |
| American Widgeon | *Anas americana* |
| Mallard | *Anas platyrhynchos* |
| Blue-winged Teal | *Anas discors* |
| Cinnamon Teal | *Anas cyanoptera* |
| Northern Shoveler | *Anas clypeata* |
| Northern Pintail | *Anas acuta* |
| Green-winged Teal | *Anas crecca* |
| Canvasback | *Aythya valisinaria* |
| Redhead | *Aythya americana* |
| Ring-necked Duck | *Aythya collaris* |
| Lesser Scaup | *Aythya affinis* |
| Bufflehead | *Bucephala albeola* |
| Common Goldeneye | *Bucephala clangula* |
| Barrow's Goldeneye | *Bucephala islandica* |
| Hooded Merganser | *Lophodytes cucullatus* |
| Common Merganser | *Mergus merganser* |
| Red-breasted Merganser | *Mergus serrator* |
| Ruddy Duck | *Oxyura jamaicensis* |

**Order**: *Falconiformes* (Diurnal Flesh Eaters)
Family: *Accipitridae* (Hawks, Eagles, Osprey)

| | |
|---|---|
| Osprey | *Pandion haliaetus* |
| Bald Eagle | *Haliaeetus leucocephalus* |
| Northern Harrier | *Circus cyaneus* |
| Sharp-shinned Hawk | *Accipiter striatus* |
| Cooper's Hawk | *Accipiter cooperii* |
| Northern Goshawk | *Accipiter gentilis* |
| Red-shouldered Hawk | *Buteo lineatus* |
| Broad-winged Hawk | *Buteo platypterus* |
| Swainson's Hawk | *Buteo swainsoni* |
| Red-tailed Hawk | *Buteo jamaicensis* |
| Ferruginous Hawk | *Buteo regalis* |
| Rough-legged Hawk | *Buteo lagopus* |
| Golden Eagle | *Aquila chrysaetos* |

Family: *Falconidae* (Falcons)

| | |
|---|---|
| American Kestrel | *Falco sparverius* |
| Merlin | *Falco columbarius* |
| Gyrfalcon | *Falco rusticolus* |
| American Peregrine Falcon | *Falco peregrinus* |

| | |
|---|---|
| Prairie Falcon | *Falco mexicanus* |

**Order**: *Galliformes* (Chicken Relatives)
Family: *Phasianidae* (Grouse, Partridge)

| | |
|---|---|
| Chukar | *Alectoris chukar* |
| Himalayan Snowcock | *Tetraogallus himalayensis* |
| Gray Partridge | *Perdix perdix* |
| Ruffed Grouse | *Bonasa umbellus* |
| Greater Sage-Grouse | *Centrocercus urophasianus* |
| Blue Grouse | *Dendragapus obscurus* |
| C. Sharp-tailed Grouse | *Tympanuchus phasianellus columbianus* |
| Wild Turkey | *Meleagris gallopavo* |

Family: *Odontophoridae* (New World Quail)

| | |
|---|---|
| California Quail | *Callipepla californica* |
| Mountain Quail | *Oreortyx pictus* |

**Order**: *Gruiformes* (Cranes and Allies)
Family: *Rallidae* (Rails, Coots)

| | |
|---|---|
| Virginia Rail | *Rallus limicola* |
| Sora | *Porzana carolina* |
| Common Moorhen | *Gallinula chloropus* |
| American Coot | *Fulica americana* |

Family: *Gruidae* (Cranes)

| | |
|---|---|
| Greater Sandhill Crane | *Grus canadansis tabida* |

**Order**: *Charadriiformes* (Wading Birds)
Family: *Charadriidae* (Plovers)

| | |
|---|---|
| Black-bellied Plover | *Pluvialis squatarola* |
| Snowy Plover | *Charadrius alexandrinus* |
| Semi-palmated Plover | *Charadrius semipalmatus* |
| Killdeer | *Charadrius vociferus* |
| Mountain Plover | *Charadrius montanus* |

Family: *Recurvirostridae* (Avocets)

| | |
|---|---|
| Black-necked Stilt | *Himantopus mexicanus* |
| American Avocet | *Recurvirostra americana* |

Family: *Scolopacidae* (Sandpipers, Phalaropes)

| | |
|---|---|
| Greater Yellowlegs | *Tringa melanoleuca* |
| Lesser Yellowlegs | *Tringa flavipes* |
| Solitary Sandpiper | *Tringa solitaria* |
| Willet | *Catoptrophorus semipalmatus* |
| Spotted Sandpiper | *Actitus macularia* |
| Long-billed Curlew | *Numenius americanus* |

| | |
|---|---|
| Marbled Godwit | *Limosa fedoa* |
| Western Sandpiper | *Calidris mauri* |
| Least Sandpiper | *Calidris minutilla* |
| Baird's Sandpiper | *Calidris bairdii* |
| Long-billed Dowitcher | *Limnodromnus scolopaceus* |
| Wilson's Snipe | *Gallinago delicata* |
| Wilson's Phalarope | *Phalaropus tricolor* |
| Red-necked Phalarope | *Phalaropus lobatus* |

Family: *Laridae* (Gulls, Terns)

| | |
|---|---|
| Franklin's Gull | *Larus pipixcan* |
| Bonaparte's Gull | *Larus philadelphia* |
| Ring-billed Gull | *Larus delawarensis* |
| California Gull | *Larus californicus* |
| Herring Gull | *Larus argentatus* |
| Caspian Tern | *Sterna caspia* |
| Forster's Tern | *Sterna forsteri* |
| Black Tern | *Chlidonias niger* |

**Order**: *Columbiformes* (Pigeons and Allies)

Family: *Columbidae* (Doves)

| | |
|---|---|
| Rock Dove | *Columba livia* |
| White-winged Dove | *Zenaida asiatica* |
| Mourning Dove | *Zenaida macroura* |
| Eurasian Collared Dove | *Streptopelia decaocto* |

**Order**: *Cuculiformes* (Cuckoos and Allies)

Family: *Cuculidae* (Cuckoos andRoadrunners)

| | |
|---|---|
| Yellow-billed Cuckoo | *Coccyzus americanus* |
| Greater Roadrunner | *Geococcyx californianus* |

**Order**: *Strigiformes* (Nocturnal Flesh Eaters)

Family: *Tytonidae* (Barn Owls)

| | |
|---|---|
| Barn Owl | *Tyto alba* |

Family: *Strigidae* (Owls)

| | |
|---|---|
| Flammulated Owl | *Otus flammeolus* |
| Western Screech-Owl | *Megascops kennicottii* |
| Great Horned Owl | *Bubo virginianus* |
| Burrowing Owl | *Athene cunicularia* |
| Long-eared Owl | *Asio otus* |
| Short-eared Owl | *Asio flammeus* |
| Northern Saw-whet Owl | *Aegolius acadicus* |
| Northern Pygmy-Owl | *Glaucidium gnoma* |

**Order**: *Caprimulgiformes* (Night Jars)
Family: *Caprimulgidae* (Goatsuckers)

| | |
|---|---|
| Common Nighthawk | *Chordeiles minor* |
| Common Poorwill | *Phalaenoptilus nuttallii* |

**Order**: *Apodiformes* (Small Fast Fliers)
Family: *Apodidae* (Swifts)

| | |
|---|---|
| White-throated Swift | *Aeronautes saxatalis* |

Family: *Trochilidae* (Hummingbirds)

| | |
|---|---|
| Black-chinned Hummingbird | *Archilochus alexandri* |
| Calliope Hummingbird | *Stellula calliope* |
| Broad-tailed Hummingbird | *Selasphorus platycercus* |
| Rufous Hummingbird | *Selasphorus rufus* |

**Order**: *Coraciiformes* (Cavity Nesters)
Family: *Alcedinidae* (Kingfishers)

| | |
|---|---|
| Belted Kingfisher | *Ceryle alcyon* |

**Order**: *Piciformes* (Cavity Builders)
Family: *Picidae* (Woodpeckers)

| | |
|---|---|
| Lewis' Woodpecker | *Melanerpes lewis* |
| Williamson's Sapsucker | *Sphyrapicus thyroideus* |
| Red-naped Sapsucker | *Sphyrapicus nuchalis* |
| Downy Woodpecker | *Picoides pubescens* |
| Hairy Woodpecker | *Picoides villosus* |
| Three-toed Woodpecker | *Picoides tridactylus* |
| Northern Flicker | *Colaptes auratus* |

**Order**: *Passeriformes* (Perching Birds)
Family: *Tyrannidae* (Flycatchers)

| | |
|---|---|
| Olive-sided Flycatcher | *Contopus cooperi* |
| Western Wood-Pewee | *Contopus sordidulus* |
| Willow Flycatcher | *Empidonax traillii* |
| Hammond's Flycatcher | *Empidonax hammondii* |
| Gray Flycatcher | *Empidonax wrightii* |
| Dusky Flycatcher | *Empidonax oberholseri* |
| Cordilleran Flycatcher | *Empidonax occidentalis* |
| Black Phoebe | *Sayornis nigricans* |
| Say's Phoebe | *Sayornis saya* |
| Ash-throated Flycatcher | *Myiarchus cinerascens* |
| Western Kingbird | *Tyrannus verticalis* |

| | |
|---|---|
| Eastern Kingbird | *Tyrannus tyrannus* |
| Family: *Laniidae* (Shrikes) | |
| Loggerhead Shrike | *Lanius ludovicianus* |
| Northern Shrike | *Lanius excubitor* |
| Family: *Vireonidae* (Vireos) | |
| Plumbeous Vireo | *Vireo plumbeus* |
| Warbling Vireo | *Vireo gilvus* |
| Family: *Corvidae* (Jays) | |
| Western Scrub-Jay | *Aphelocoma californica* |
| Pinyon Jay | *Gymnorhinus cyanocephalus* |
| Clark's Nutcracker | *Nucifraga columbiana* |
| Black-billed Magpie | *Pica pica* |
| American Crow | *Corvus brachyrhynchos* |
| Common Raven | *Corvus corax* |
| Family: *Alaudidae* (Larks) | |
| Horned Lark | *Eremophila alpestris* |
| Family: *Hirundinidae* (Swallows) | |
| Tree Swallow | *Tachycineta bicolor* |
| Violet-green Swallow | *Tachycineta thalassina* |
| Bank Swallow | *Riparia riparia* |
| N. Rough-winged Swallow | *Stelgidopteryx serripennis* |
| Cliff Swallow | *Petrochelidon pyrrhonota* |
| Barn Swallow | *Hirundo rustica* |
| Family: *Paridae* (Chickadees, Titmice) | |
| Black-capped Chickadee | *Poecile atricapillus* |
| Mountain Chickadee | *Poecile gambeli* |
| Juniper Titmouse | *Baeolophus griseus* |
| Family: *Aegithalidae* (Bushtits) | |
| Bushtit | *Psaltriparus minimus* |
| Family: *Sittidae* (Nuthatches) | |
| Red-breasted Nuthatch | *Sitta canadensis* |
| White-breasted Nuthatch | *Sitta carolinensis* |
| Pygmy Nuthatch | *Sitta pygmaea* |
| Family: *Certhiidae* (Creepers) | |
| Brown Creeper | *Certhia americana* |
| Family: *Troglodytidae* (Wrens) | |
| Rock Wren | *Salpinctes obsoletus* |
| Canyon Wren | *Catherpes mexicanus* |
| Bewick's Wren | *Thyromanes bewickii* |
| House Wren | *Troglodytes aedon* |
| Winter Wren | *Troglodytes troglodytes* |
| Marsh Wren | *Cistothorus palustris* |

Family: *Cinclidae* (Dippers)

| | |
|---|---|
| American Dipper | *Cinclus mexicanus* |

Family: *Regulidae* (Kinglets)

| | |
|---|---|
| Golden-crowned Kinglet | *Regulus satrapa* |
| Ruby-crowned Kinglet | *Redulus calendula* |

Family: *Sylviidae* (Gnatcatchers)

| | |
|---|---|
| Blue-gray Gnatcatcher | *Polioptila caerulea* |

Family: *Turdidae* (Thrushes)

| | |
|---|---|
| Western Bluebird | *Sialia mexicana* |
| Mountain Bluebird | *Sialia currucoides* |
| Townsend's Solitaire | *Myadestes townsendi* |
| Veery | *Catharus fuscescens* |
| Swainson's Thrush | *Catharus ustulatus* |
| Hermit Thrush | *Catharus guttatus* |

Family: *Turdidae* (Thrushes) (continued)

| | |
|---|---|
| American Robin | *Turdus migratorius* |
| Varied Thrush | *Ixoreus naevius* |

Family: *Mimidae* (Thrashers, Mockingbirds)

| | |
|---|---|
| Northern Mockingbird | *Mimus polyglottos* |
| Sage Thrasher | *Oreoscoptes montanus* |

Family: *Sturnidae* (Starlings)

| | |
|---|---|
| European Starling | *Sturnus vulgaris* |

Family: *Motacillidae* (Pipits)

| | |
|---|---|
| American Pipit | *Anthus rubescens* |

Family: *Bombycillidae* (Waxwings)

| | |
|---|---|
| Bohemian Waxwing | *Bombycilla garrulus* |
| Cedar Waxwing | *Bombycilla cedrorum* |

Family: *Parulidae* (Wood-Warblers)

| | |
|---|---|
| Orange-crowned Warbler | *Vermivora celata* |
| Nashville Warbler | *Vermivora ruficapilla* |
| Virginia's Warbler | *Vermivora virginae* |
| Yellow Warbler | *Dendroica petechia* |
| Yellow-rumped Warbler | *Dendroica coronata* |
| Black-throated Gray Warbler | *Dendroica nigrescens* |
| Townsend's Warbler | *Dendroica townsendi* |
| MacGillivray's Warbler | *Oporornis tolmiei* |
| Common Yellowthroat | *Geothlypis trichas* |
| Wilson's Warbler | *Wilsonia pusilla* |
| Yellow-breasted Chat | *Icteria virens* |

Family: *Thraupidae* (Tanagers)

| | |
|---|---|
| Western Tanager | *Piranga ludoviciana* |

Family: *Emberizidae* (Sparrows, Towhees, Juncos)

Green-tailed Towhee *Pipilo chlorurus*
Spotted Towhee *Pipilo maculatus*
American Tree Sparrow *Spizella arborea*
Chipping Sparrow *Spizella passerina*
Brewer's Sparrow *Spizella breweri*
Vesper Sparrow *Pooecetes gramineus*
Lark Sparrow *Chondestes grammacus*
Black-throated Sparrow *Amphispiza bileneata*
Sage Sparrow *Amphispiza belli*
Savannah Sparrow *Passerculus sandwichensis*
Grasshopper Sparrow *Ammodramus bairdii*
Fox Sparrow *Passerella iliaca schistacea*
Song Sparrow *Melospiza melodia*
Lincoln's Sparrow *Melospiza lincolnii*
White-throated Sparrow *Zonotrichia albicollis*
Harris's Sparrow *Zonotrichia querula*
Gambel'sWhite-crownedSparrow *Zonotrichia leucophrys gambelii*
Mountain W-crowned Sparrow*Zonotrichia leucophrys oriantha*
Golden-crowned Sparrow *Zonotrichia atricapilla*
Dark-eyed Junco*(Oregon)* *Junco hyemalis therburi*
Dark-eyed Junco(*Gray-headed*) *Junco hyemalis caniceps*
Lapland Longspur *Calcarius lapponicus*
Family: *Cardinalidae* (Grosbeaks, Buntings)
Rose-breasted Grosbeak *Pheucticus ludovicianus*
Black-headed Grosbeak *Pheucticus melanocephalus*
Blue Grosbeak *Iraca caerulea*
Lazuli Bunting *Passerina amoena*
Indigo Bunting *Passerina cyanea*
Family: *Icteridae* (Blackbirds, Orioles)
Bobolink *Dolichonyx oryzivorus*
Red-winged Blackbird *Agelaius phoeniceus*
Western Meadowlark *Sturnella neglecta*
Yellow-headed Blackbird *Xanthocephalus xanthocephalus*
Brewer's Blackbird *Euphagus cyanocephalus*
Great-tailed Grackle *Quiscalus mexicanus*
Brown-headed Cowbird *Molothrus ater*
Family: *Icteridae* (Blackbirds, Orioles continued)
Bullock's Oriole *Icterus bullockii*
Scott's Oriole *Icterus parisorum*
Family: *Fringillidae* (Finches, Grosbeaks)
Gray-crowned Rosy-Finch *Leucosticte tephrocotis*
Black Rosy-Finch *Leucosticte atrata*

| | |
|---|---|
| Pine Grosbeak | *Pinicola enucleator* |
| Purple Finch | *Carpodacus purpureus* |
| Cassin's Finch | *Carpodacus cassinii* |
| House Finch | *Carpodacus mexicanus* |
| Red Crossbill | *Loxia curvirostra* |
| Common Redpoll | *Carduelis flammea* |
| Pine Siskin | *Carduelis pinus* |
| Lesser Goldfinch | *Carduelis psaltria* |
| American Goldfinch | *Carduelis tristis* |
| Evening Grosbeak | *Coccothraustes vespertinus* |

Family: *Passeridae* (Old World Sparrows)

| | |
|---|---|
| House Sparrow | *Passer domesticus* |

MAMMALS

**Order**: *Insectivora* (Insect Eaters)

Family: *Soricidae* (Shrews)

| | |
|---|---|
| Merriam's Shrew | *Sorex meriammi* |
| Dusky Shrew | *Sorex monticolus* |
| Vagrant Shrew | *Sorex vagrans* |
| Water Shrew | *Sorex palustris* |
| Preble's Shrew | *Sorex preblei* |

**Order**: *Chiroptera* (Bats)

Family: *Vespertilionidae* (Plainnose Bats)

| | |
|---|---|
| California Myotis | *Myotis californicus* |
| Small-footed Myotis | *Myotis ciliolabrum* |
| Long-eared Myotis | *Myotis evotis* |
| Little Brown Bat | *Myotis lucifugus* |
| Fringed Myotis | *Myotis thysanodes* |
| Long-legged Myotis | *Myotis volans* |
| Yuma Myotis | *Myotis yumanensis* |
| Western Red Bat | *Lasiurus blossvellii* |
| Hoary Bat | *Lasiurus cinereus* |
| Silver-haired Bat | *Lasionycteris noctivagans* |
| Western Pipistrelle | *Pipistrellus hesperus* |
| Big Brown Bat | *Eptesicus fuscus* |
| Townsend's Big-eared Bat | *Corynorhinus townsendii* |
| Spotted Bat | *Euderma maculata* |
| Pallid Bat | *Antrozous pallidus* |

Family: *Molossidae* (Freetail Bats)

| | |
|---|---|
| Brazilian Free-tailed Bat | *Tadarida brasiliensis* |

**Order**: *Lagomorpha* (Pikas, Hares, Rabbits)
Family: Ochotonidae (Pikas)
Pika *Ochotona princeps*

Family: *Leporidae* (Hares, Rabbits)
White-tailed Jackrabbit *Lepus townsendi*
Snowshoe Hare *Lepus americanus*
Black-tailed Jackrabbit *Lepus californicus*
Mountain Cottontail *Sylvilagus nuttalli*
Pygmy Rabbit *Brachylagus idahoensis*

**Order**: *Rodentia* (Rodents)
Family: *Sciuridae* (Squirrels)
Least Chipmunk *Tamias minimus*
Cliff Chipmunk *Tamias dorsalis*
Uinta Chipmunk *Tamias umbrinus*
Yellow-bellied Marmot *Marmota flaviventris*
White-tailed Antelope Squirrel *Ammospermophilus leucurus*
Townsend Ground Squirrel *Spermophilus townsendii*
Belding Ground Squirrel *Spermophilus beldingi*
Family: *Geomyidae* (Gophers)
Botta's Pocket Gopher *Thomomys bottae*
Northern Pocket Gopher *Thomomys talpoides*
Southern Pocket Gopher *Thomomys umbrinus*
Family: *Heteromyidae* (Kangaroo Rodents)
Little Pocket Mouse *Perognathus longimembris*
Great Basin Pocket Mouse *Perognathus parvus*
Dark Kangaroo Mouse *Microdipodops megacephalus*
Ord Kangaroo Rat *Dipodomys ordii*
Chisel-toothed Kangaroo Rat *Dipodomys microps*
Family: *Castoridae* (Beavers)
Beaver *Castor canadensis*
Family: *Cricetidae* (Mice, Rats, Voles)
Western Harvest Mouse *Reithrodontomys megalotis*
Canyon Mouse *Peromyscus crinitus*
Deer Mouse *Peromyscus maniculatus*
Pinion Mouse *Peromyscus truei*
Northern Grasshopper Mouse *Onychomys leucogaster*
Desert Woodrat *Neotoma lepida*
Bushy-tailed Woodrat *Neotoma cinerea*
Mountain Vole *Microtus montanus*
Long-tailed Vole *Microtus longicaudus*

| | |
|---|---|
| Sagebrush Vole | *Lemmiscus curtatus* |
| Muskrat | *Ondatra zibethica* |
| Family: *Zapodidae* (Jumping Mice) | |
| Western Jumping Mouse | *Zapus princeps* |
| Family: *Erethizontidae* (New World Porcupines) | |
| Porcupine | *Erethizon dorsatum* |

**Order**: *Carnivora* (Flesh-Eaters)
Family: *Canidae* (Dogs, Wolves, Foxes)

| | |
|---|---|
| Coyote | *Canis latrans* |
| Gray Wolf | *Canis lupus* (*locally extirpated*) |
| Gray Fox | *Urocyon cinereoargenteus* |
| Kit Fox | *Vulpes velox* |
| Red Fox | *Vulpes vulva* |

Family: *Procyonidae* (Racoons and Allies)

| | |
|---|---|
| Raccoon | *Procyon lotor* |
| Family: *Mustelidae* (Weasels and Allies) | |
| Short-tailed Weasel | *Mustela erminae* |
| Long-tailed Weasel | *Mustela frenata* |
| Family: *Mustelidae* (Weasels and Allies) (cont.) | |
| Mink | *Mustela vison* |
| American Marten | *Martes americana (l. extirpated)* |
| Wolverine | *Gulo gulo (locally extirpated)* |
| River Otter | *Lutra canadensis* |
| American Badger | *Taxidea taxus* |
| Striped Skunk | *Mephitis mephitis* |
| Western Spotted Skunk | *Spilogale gracilis* |
| Family: *Felidae* (Cats) | |
| Mountain Lion | *Felix concolor* |
| Lynx | *Lynx lynx (locally extirpated)* |
| Bobcat | *Lynx rufus* |

**Order**: *Artiodactyla* (Hoofed Mammals)
Family: *Cervidae* (Deer)

| | |
|---|---|
| Rocky Mountain Elk | *Cervus elaphus* |
| Mule Deer | *Odocoileus hemionus* |
| Family: *Antilocapridae* (Pronghorn) | |
| Pronghorn | *Antilocapra americana* |
| Family: *Bovidae* (Bison, Sheep, Goats) | |
| Bison | *Bison bison (locally extirpated)* |
| Mountain Goat | *Oreamnos americanus* |

| | |
|---|---|
| Bighorn Sheep | *Ovis canadensis* |

REPTILES

**Order**: *Squamata* (Lizards, Snakes)

Family: *Iguanidae* (Iguanas and Allies)

| | |
|---|---|
| Western Fence Lizard | *Sceloporus occidentalis* |
| Sagebrush Lizard | *Sceloporus graciosus* |
| Side-blotched Lizard | *Uta stansburiana* |
| Pigmy Short-horned Lizard | *Phrynosoma douglassii* |
| Greater Short-horned Lizard | *Phrynosoma hernadesi* |
| Desert Horned Lizard | *Phrynosoma platyrhinos* |

Family: *Scincidae* (Skinks)

| | |
|---|---|
| Western Skink | *Eumeces skiltonianus* |

Family: *Teiidae* (Whiptails)

| | |
|---|---|
| Western Whiptail | *Cnemidophorus tigrus* |

Family: *Boidae* (Boas, Pythons)

| | |
|---|---|
| Rubber Boa | *Charina bottae* |

Family: *Colubridae* (Solid-toothed Snakes)

| | |
|---|---|
| Ringneck Snake | *Diadophis punctatus* |
| Striped Whipsnake | *Masticophis taeniatus* |
| Great Basin Gopher Snake | *Pituophis cantenifer deserticola* |
| Common Kingsnake | *Lampropeltis getulus* |
| Sonoran Mountain Kingsnake | *Lampropeltis pyromelana* |
| Long-nosed Snake | *Rhinocheilus lecontei* |
| Western Terrestrial Garter | *Thamnophis elegans* |
| Ground Snake | *Sonora semiannulata* |
| Night Snake | *Hypsiglena torquata* |

Family: *Viperidae* (Vipers)

| | |
|---|---|
| Great Basin Rattlesnake | *Crotalus viridis lutosus* |

AMPHIBIANS

**Order**: *Anura* (Frogs and Toads)

Family: *Pelobatidae* (Spadefoots)

| | |
|---|---|
| Great Basin Spadefoot Toad | *Scaphiopus intermontanus* |

Family: *Ranidae* (True Frogs)

| | |
|---|---|
| Columbia Spotted Frog | *Rana luteiventris* |
| Northern Leopard Frog | *Rana pipiens* |
| Bullfrog | *Rana catesbeiana* |

Family: *Bufonidae* (Toads)

| | |
|---|---|
| Western Toad | *Bufo boreas* |

Family: *Hylidae* (Treefrogs)

| | |
|---|---|
| Pacific Chorus Frog | *Pseudacris regilla* |

Note: This list is a combination of wildlife sight record data and our best effort to predict what wildlife species live in this area in all seasons and under optimum habitat conditions.

*With the exception of the European Starling, House Sparrow, Eurasian Collared Dove, and Rock Dove, all birds are protected in Nevada by either the International Migratory Bird Treaty Act or as game species. Several mammal and one amphibian species are also protected as game species. All starred (*) wildlife species enjoy some further form of protection as either priority, sensitive, threatened or endangered species.
Updated: 4/2005 - Peter V. Bradley - Nevada Department of Wildlife - Elko, Nevada.

## Attachment 1 - Elko District Drought Monitoring and Mitigation Plan

United States Department of the Interior
Bureau of Land Management

# Elko District Office

## Drought Monitoring and Mitigation Plan

February 2013

This management plan contains a description of drought response actions that would be used to alleviate the impacts of authorized uses and activities on natural resources that are at risk of being adversely affected by drought conditions. The drought response actions would be implemented either separate or in combination upon reaching the criteria described under the Proposed Action of the Elko District Management and Mitigation for Drought Impacted Rangelands EA.

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**Elko District Office**

**Attachment 1 - Drought Monitoring and Mitigation Plan**

## I. Introduction

Drought, a normal part of the climate for virtually all regions of the United States, is of particular concern in the west, where an interruption of the region's already limited water supplies for extended periods of time can produce devastating impacts (Wilhite 1997). This is especially true for Nevada, which is consistently the most arid state in the nation. The Elko District Office (ED) is located within the Central Basin and Range and Northern Basin and Range ecoregions defined by the Western Ecology Division of the United States Environmental Protection Agency. Drought is considered to be a recurring event within the Central and Northern Basin and Range ecoregions. The early detection and prompt response to drought is needed to prevent further degradation to affected resources within the ED. The purpose of this mitigation plan is to describe the drought response actions that would be implemented either separate or in combination upon reaching the criteria described within the Proposed Action of the Elko District Drought Mitigation EA. Drought Response Actions (DRAs) are designed to alleviate the impacts of authorized uses and activities on natural resources that are at risk of being adversely affected by drought conditions.

## II. Goals

The early response to drought conditions is necessary for effective management during drought. Lagged responses toward drought pose a threat to sustainable management of rangelands (Thurow and Taylor 1999). The following list outlines the goals of the Elko District Drought Monitoring and Mitigation Plan (DMMP):

**Goal 1:** Provide for the prompt response to drought conditions.

**Goal 2:** Prevent further degradation to affected resources on lands affected by drought within the ED.

**Goal 3:** Clearly define Drought Response Actions that would be used to alleviate the impacts of authorized uses and activities on natural resources that are at risk of being adversely affected by drought.

**Goal 4:** Monitor the condition of forage and water resources.

**Goal 5:** Monitor climatic conditions, forage, and water and identify when drought conditions have ceased.

## III. Drought Indicators

Drought indicators are observations signaling the start or continuation of a drought. The following discussion identifies the indicators that the ED would use to determine the onset and/or continuation of a drought.

A two-part drought definition was provided within the purpose and need for the Proposed Action section of this document (page 1). The first part of the definition describes drought as, "a prolonged chronic shortage of water, as compared to the norm, often associated with high temperatures and winds during spring, summer, and fall." Tracking weather conditions provides an early indication of drought. The U.S. Drought Monitor (http://droughtmonitor.unl.edu/) would be consulted to determine if weather conditions indicate drought and to identify affected areas. Site visits to allotments and Herd Management Areas (HMAs) within drought-afflicted areas would be used to evaluate the current condition of water resources and determine if water shortages exist.

Part two of the drought definition describes drought as, "A period without precipitation during which the soil water content is reduced to such an extent that plants suffer from lack of water". The U.S. Drought Monitor and the Vegetation Drought Response Index (VegDRI) (http://vegdri.unl.edu/) would be consulted to determine drought afflicted areas and vegetation condition as it pertains to drought stress. Site visits to allotments and HMAs within drought-afflicted areas would be used to evaluate the current condition and production of key forage species as described in the associated Ecological Site Descriptions (ESDs) for the area. In instances where key species referenced in the ESD are absent, key species would be identified using site-specific and/or past monitoring data. Evaluations would be used to determine if plants are exhibiting signs of drought stress and if forage shortages exist. Signs of drought stress include reduced shoot and leaf growth, reduction in seed head development, induced senescence (i.e., premature aging) and plant death.

The U.S. Drought Monitor can be accessed at http://droughtmonitor.unl.edu/. The Vegetation Drought Response Index can be accessed at http://vegdri.unl.edu/Home.aspx.

## IV. Drought Monitoring

### 4.0. Drought Response Triggers

Drought monitoring would be completed for both upland and riparian areas within the ED. Monitoring will be conducted within areas of allotments and Herd Management Areas (HMAs) that are determined to be afflicted by drought. When it is determined that drought conditions exist, site visits to allotments and or HMAs within drought-afflicted areas will occur. Drought triggers will be used to determine site specific drought affects and activate drought response actions. Drought Response Triggers (Triggers) are thresholds associated with forage and water resources that indicate the need for site-specific drought response. Triggers would be used separately or in combination to activate Drought Response Actions. These triggers have been placed into two categories, water and forage. The following is a list of the triggers for both categories:

**A. Water**

This Trigger is based on the presence or absence of available water. Field visits would be conducted in drought-afflicted areas to determine if there are adequate water sources (natural and/or developed) to provide for the management and/or distribution of wildlife, wild horses and livestock while maintaining riparian area functionality or the health of upland areas surrounding developed water sources (e.g.,, wells, pipelines, guzzlers, etc.).

Water would be classified as "available" or "unavailable" within areas affected by drought. "Available" is defined as an amount of water sufficient to provide a safe and reliable source of drinking water for wildlife, wild horses and burros and livestock while maintaining resource values associated with the riparian areas and/or areas surrounding the water source. Resource values associated with riparian areas include riparian vegetation, bank stability, wildlife habitat and water quality. Resource values associated with upland areas surrounding water sources (e.g., wells, pipelines, etc.) include vegetation, nutrient cycling, soil site stability, hydrologic function and wildlife habitat.

"Unavailable" is defined as an absence of water or an amount of water that is insufficient to provide a safe and reliable source of drinking water for wildlife, wild horses and burros and livestock while maintaining resource values.

Field observations and professional judgment would be used to determine availability. Criteria such as reduced quantity, noticeable accumulation of animal waste, and unsafe conditions due to mud or severely eroded banks would be used.

**B. Forage**

To survive, perennial plants must accumulate both above ground (shoot growth) and below ground (root growth) biomass through the process of photosynthesis, transpiration, and respiration (Howery 1999). A lack of available soil moisture usually reduces the length of the growing season. A shorter growing season directly impacts above and below ground production and ultimately forage quantity. The degree to which drought impairs the range's potential for future forage production depends on the intensity, frequency, and timing of grazing (Howery 1999). Drought afflicted rangelands are unable to support pre-drought stocking levels. Overutilization during drought can negatively impact plant health and impair the ability (in the future) to meet, or make significant progress towards fulfillment of, the standards and guidelines of rangeland health.

The following drought response triggers associated with forage are intended to ensuring proper utilization levels of upland and riparian key species, as described in the ESD associated with the site. In instances where key species referenced in the ESD are absent, key species would be identified using site-specific and/or past monitoring data). Appropriate utilization levels provide adequate residual matter for the maintenance of plant health especially during a drought. The triggers have been organized into three categories; utilization and stubble height triggers by vegetation community, livestock distribution, and plant production/drought stress.

**1. Utilization and Stubble Height**

Utilization triggers were developed using the utilization guidelines proved by Holechek et al. (1988). The guidelines provide a range of use associated with rangeland condition. For the purpose of grazing management during times of drought, the BLM has chosen to limit utilization of key species to the lower utilization level. The lower utilization levels are consistent with those suggested for ranges in poor condition. These were chosen due to the reduced vigor and production of range forage plants resulting from drought. The following utilization levels would function as drought response triggers within each respective vegetation community and would trigger the implementation of DRAs. Stubble height triggers were developed to ensure adequate residual matter remains to maintain riparian plant communities. Generally, stubble heights of 4 to 6 inches provide effective stream bank protection, prevent sedimentation, and maintain or improve plant communities (USDI 1999-2001). Key species would be identified using the ESD for a specific area. In instances where key species referenced in the ESD are absent key species would be identified using site-specific and/or past monitoring data

.

**-Salt Desert Shrub**

- 25 % utilization of key species.

**-Sagebrush Grassland**

- 30% utilization of key species.

**-Pinyon-Juniper Woodland**

- 30% utilization of key species.

**-Mountain Shrub**

- 30% Utilization of key species.

**-Riparian Zones**

- Four inch stubble height of key riparian species.

**2. Livestock and Wild Horse Distribution**

A pattern of use or distribution of livestock and/or wild horses and burros resulting in a concentration of animals, which contributes to grazing in excess of the aforementioned utilization levels and/or stubble heights, would trigger Drought Response Actions to improve animal distribution and prevent further rangeland degradation.

**3. Plant Production/Drought Stress**

The following plant production and/or drought stress indicators would trigger Drought Response Actions:

- -Drought induced senescence or reduced production of key upland and/or riparian species which results in an insufficient quantity of forage for wildlife, wild horses and burros, and livestock;
- -Drought induced senescence of key riparian herbaceous species which results in insufficient plant growth/height to provide for stubble heights equal to or greater than four inches within riparian areas; and
- -Noticeable signs of drought stress which impede the ability of key species to complete their life cycle (e.g., drought induced senescence, reduced seed head development, etc.).

**4.1 Monitoring Methods**

The sections below provide the following summaries of (1) the protocol for each variable to be monitored, including general techniques and key information to be collected and (2) the authors and organizations that developed the protocol. All monitoring data will be recorded on the appropriate monitoring forms and summarized on the Drought Monitoring Worksheet Summary form (Appendix A).

**A. Water**

A BLM monitoring protocol does not currently exist to quantify the availability of water for wildlife, wild horses and burros and livestock. Therefore field observations and professional judgment will be used to determine if an adequate amount of water is available. Water will be rated using the criteria described in section 4.0 (A) of this document.

**B. Utilization and Stubble Height**

The key species method will be used to determine utilization levels. This method is adapted to areas where perennial grasses, forbs and/or browse plants are the key species. This method is rapid. A key species is determined for the monitoring location based on the vegetation community defined in the Ecological Site Description correlated to the location. In instances where key species referenced in the ESD are absent key species will be identified using site specific and/or past monitoring data.

A transect bearing and distance between observation points is selected. Utilization levels are based on an ocular estimate of the amount of forage removed by weight on individual key species and observations are recorded in one of seven utilization classes rather than as a precise amount. Different examiners are more likely to estimate utilization in the same classes than to estimate the same utilization percentages (USDA and USDI 1996). Utilization estimations are improved through a calibration process prior to the collection of utilization data. Sampling techniques include; walking the pre-determined transect, stopping at the pre-determined interval and estimating and recording the percent utilization of the key species nearest the toe.

The stubble height method will be used to determine stubble heights within riparian areas and areas identified for targeted grazing. Stubble height standards and measurements have been used primarily in riparian areas; however, this method may also be used for upland sites. The concept of this method is to measure stubble height, or height (in centimeters or inches) of herbage left un-grazed at any given time. This method, because of its simple application, is becoming a well-accepted method for expressing rangeland use (USDA and USDI 1996). A key species is determined for the monitoring location based on the vegetation community defined in the Ecological Site Description correlated to the location. A transect bearing and distance between observation points is selected. Sampling techniques include; walking the pre-determined transect, stopping at the pre-determined interval and measuring and recording the stubble height of the key species nearest to the toe. A complete description of these methods, as well as a copy of the appropriate monitoring forms can be found in the Utilization Studies and Residual Measurements Interagency Technical Reference 1996.

**C. Livestock\Wild Horse and Burro Distribution**

The Landscape Appearance Method will be used to determine the distribution of livestock across allotments determined to be affected by drought. This method is adapted to areas where perennial grasses, forbs, and/or browse plants are present and to situations where utilization data must be obtained over large areas using only a few examiners. The method uses an ocular estimate of forage utilization based on the general appearance of the rangeland (USDA and USDI 1996). Utilization levels are determined by comparing observations with written descriptions of each class. A transect bearing and distance between observation points is selected. Sampling techniques include; moving along the pre-determined transect, stopping at the pre-determined interval and estimating and recording the utilization class at each observation point.

A complete description of this method, as well as a copy of the appropriate monitoring form can be found in the Utilization Studies and Residual Measurements Interagency Technical Reference 1996. Wild horse and burro distribution will be evaluated using inventory flights and on the ground observations including trailing, horse and burro scat (droppings) and horse and burro location observations. Location observations will include numbers, behavior, body condition and sighted location.

**D. Plant Production and Drought Stress**

Visual appraisal of production will be used to determine the amount of forage currently available for wildlife, wild horses and burros and livestock. Visual appraisal of production is an efficient means to check whether forage supply and demand are in balance (Allison 2001). Areas determined to be affected by drought will be visited and a visual appraisal of production will be completed. Areas visited will receive one of the following production scores as defined in Allison (2001):

| **Production Scores** | | |
|---|---|---|
| 1. | Extreme Drought | No growth occurred this year. |
| 2. | Below-Average Production | Production appears less than most years. |
| 3. | Average Production | Production is comparable to most years. |
| 4. | Above-Average Production | Production is greater than most years. |
| 5. | Extremely Wet Year | Excellent growing season. Range production is at maximum potential. |

Current year's production will be compared to production data collected in past years. When production data is not available "average production" will be determined for the monitoring location through professional judgment, consultation with local permittees, and based on the normal production as defined in the Ecological Site Description correlated to the location.

A complete description of this method can be found in the Level II monitoring section of Allison, C.D., Baker, T.T., Boren, J.C., Wright, B.D., and Fernald, A. 2001. Monitoring Rangelands in New Mexico: Range, Riparian, Erosion, Water Quality and Wildlife. Range Improvement Task Force, Agricultural Experimental Station, Cooperative Extension Service, New Mexico State University, College of Agricultural Experiment Station, Cooperative Extension Service, New Mexico State University, College of Agricultural and Home Economics, Report 53. 60 pp. Also as referenced in the short term monitoring section of Volume 1 of the Monitoring Manual for Grassland, Shrubland and Savanah Ecosystems by Herrick et al. (2005). Drought stress will be monitored using VegDRI with site visits occurring to ground truth VegDRI reports. VegDRI is a hybrid drought monitoring and mapping tool that integrates satellite observations of vegetation status and climate data with information on land cover, soil characteristics, and other environmental factors. VegDRI reveals vegetation conditions as plants respond to solar energy, soil moisture, and other limiting factors (USGS 2010). Site visits will be used to inspect plants for signs of drought stress. Signs of drought stress include reduced shoot and leaf growth, reduction in seed head development, induced senescence and plant death. A BLM monitoring protocol does not currently exist to quantify signs of drought stress. Therefore field observations and professional judgment will be used to determine and record signs of drought stress on the Drought Monitoring Summary form.

## V. Data Management

Field worksheets, maps and drought monitoring summaries will be stored in the short term/ long term monitoring files for the respective allotment and/or HMA. GPS points of monitoring locations will be uploaded into GIS. All GIS information will be kept to Elko District and Nevada State Office standards and will be incorporated into the Elko Districts GIS data base.

## VI. Management Actions as a Result of Drought Detection and Monitoring

Triggers will, either separate or in combination, activate drought response actions as described in the Elko District Drought Management Environmental Assessment and the Elko District Drought Mitigation and Management Plan. All actions would be implemented through the issuance of full force and affect decisions pursuant to 43 CFR §4110.3-3(b), and would be implemented within all appropriate laws, regulations and policies.

Full force and effect decision would be supported by site specific monitoring data collected as outlined within this DMMP and recorded on the attached Drought Monitoring Summary Form. Justification for Wild Horse and/or Burro Drought Gathers would be thoroughly documented within a site specific Drought Gather Plan (see Attachment 2 of the EA for a Drought Gather Plan Outline).

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**APPENDIX A - Elko District BLM Drought Monitoring Summary Worksheet**

# DOUGHT MONITORING SUMMARY

Allotment/HMA _____ Use Area _____ UTMS N:_____ E:_____

Vegetation Community: ☐ Salt Desert Shrub ☐ Mountain Shrub ☐ Riparian Zone ☐ Monotypic Invasive Annual
☐ Sagebrush Grassland ☐ Pinyon-Juniper Woodland ☐ Mojave Desert Ecological Site _____

Examiner(s): _____ Date: _____

**Drought Indicators:** U.S. Drought Monitor Report: ☐ Moderate ☐ Severe ☐ Extreme ☐ Exceptional Release Date: _____

VegDRI Report: ☐ Normal ☐ Pre-Drought ☐ Moderate ☐ Severe ☐ Extreme Release Date: _____

Drought Indicators verified: ☐ Yes ☐ No Rationale: _____

## Drought Response Triggers:

**Forage**

| Average Stubble height[1] (inches) | Average Utilization[2] | Normal Production Expected for Site[3] | Production Score[4] | Remarks/Rationale (Include any other observations such as: erosion, animal stress, hazardous fuels etc.) |
|---|---|---|---|---|
| | | | | |

**Water** ☐ Available ☐ Unavailable Rationale: _____

**Signs of Drought Stress** ☐ Present * ☐ Not Present * If present, check what signs of drought stress were observed

☐ Reduced shoot & leaf growth ☐ Reduced seed head developement ☐ Induced senescence ☐ Plant death

Rationale: _____

**Livestock/Wild Horse and Burro Distribution**

Describe the current utilization pattern across the allotment/HMA including the average utilization recorded on the associated Landscape Appearance data forms and any livestock and/or wild horse and burro observations:

_____

## Drought Response Action Recommendations: _____

[1]Average stubble height. Use the stubble height method and form as outlined in Utilization Studies and Residual Measurements. BLM Technical Reference (1996). Stubble height will only be recorded in areas outlined in the Elko District Drought Monitoring and Mitigation Plan.

[2]Average utilization. Use the key species method and form as outlined in Utilization Studies and Residual Measurements. BLM Technical Reference (1996).

[3]Normal production expected for site. Use previously collected quantitative production data for the allotment/HMA. When production data is not available "normal production" will be determined through professional judgment, consultation with local permittees, and referencing the Ecological Site Description correlated to the location.

[4]Production score. 1. Extreme Drought (no growth this year) 2. Below Average Production 3. Average Production 4. Above-Average Production 5. Exteremely Wet Year (production is at maximum potential)

**APPENDIX B – Wild Horse Gather Standard Operating Procedures**

## I. Introduction

The purpose of the Standard Operating Procedures is to outline the methods and procedures for conducting drought gather(s) to remove drought affected wild horses and/or burros from public lands administered by the ED. Gather specific details would be discussed in a Decision issued prior to gather commencement.

### *A. Gather Area*

The Gather Area could include any of the 8 HMAs administered by the ED, including areas outside of HMA boundaries and Herd Areas. Refer to Map 3, which display the HMAs administered by the ED.

### *B. Administration of the Contract /Gather Operations*

The National Wild Horse and Burro Gather Contract would be used to conduct drought gathers. BLM personnel would be responsible for overseeing the contract for the capture, care, aging, and temporary holding of wild horses from the capture area. BLM WH&B Specialists would be present during all aspects of the gather activities. BLM personnel may conduct small scale helicopter or bait/water trapping gathers.

Standard Operating Procedures (SOPs) described within this document would be utilized for the capture and handling of wild horses and burros. SOPs have been developed over time to ensure minimal impacts associated with gathering, handling, and transporting wild horses and burros and collecting herd data.

Gather "trap" corrals and central holding corrals would be necessary to complete the gather. Ideally, gather corrals would be established in areas of previous soil or vegetation disturbance (such as gravel pits, roads etc.), to avoid impacts to unaltered vegetation and soils. A cultural resources investigation would be conducted prior to the construction of gather corrals and temporary holding facilities. Refer to the SOPs, Section H for more detailed information.

A notice of intent to impound would be made public prior to the gather. Branded and/or claimed A notice of intent to impound would be made public prior to the gather. Branded and/or claimed horses or burros would be transported to a temporary holding facility. Ownership would be determined under the estray laws of the State of Nevada by a Nevada Brand Inspector. Collection of gather fees and any appropriate trespass charges would be collected per BLM policy and regulation. An APHIS or private veterinarian would be on-call or on-site for the duration of the gather to provide

recommendations to WH&B Specialists for care and treatment of sick or injured wild horses or burros. Consultation with the veterinarian may take place prior to the euthanasia of wild horses in accordance with Washington Office Instruction Memorandum (IM 2009-041). Refer to Part H for more information about the euthanasia policy.

Precautions would be taken to ensure that young or weak foals are safely gathered and cared for appropriately. If a foal were determined to be an orphan, qualified adopters would be contacted immediately to provide proper care for the foal. Milk replacer formula and electrolytes would be available to care for orphan foals if necessary.

### *C. General Overview of Wild Horse Gather Methods*

The gather contractor supplies and transports all equipment needed to conduct a gather to a central location where Holding Corrals are constructed. These corrals consist of six or more pens constructed of sturdy panels, with a central alleyway and working/squeeze chute in the center. Corral panels are covered with snow fencing to keep animals calm, and water tanks located within the pens. The central alley and pen arrangement allows the BLM staff and the contractor to sort recently captured animals, separating animals to ship to the adoption facilities, and mares/jennies and foals from stallions/jacks to prevent fighting and injury. The pen arrangement allows the contractor to off-load animals from stock trailers into the pens, and facilitates the loading of the animals to be transported to facilities onto large straight deck trucks.

At various locations throughout the HMA, smaller sets of gather corrals are constructed called "traps". The trap or gather corrals consists of a series of pens made out of panels, and "wings" made out of jute netting that funnel wild horses into the corrals as they are captured.
Once captured, they are loaded into stock trailers and transported to the central Holding Corrals for sorting. Horses and burros may remain in the gather site or on the stock trailer for no time at all, or up to an hour or more while other groups of animals are brought to the gather corrals.

The contractor utilizes a helicopter and pilot to conduct gathers. Use of a helicopter is humane, safe and effective. Methods for use of helicopter are well established, and the contract pilots very skilled. Wild horses and burros settle down once gathered and do not appear to be more than slightly annoyed by the helicopter. The pilot locates groups of wild horses and burros within the HMA and guides them towards the gather corrals. In most cases, animals are allowed to travel at their own pace, and are not "pushed". Distances average 4-7 miles over mixed terrain which may consist of rolling foothills, or steeper terrain, drainages, ridges and valley bottoms. The horses and burros often follow their own trails. The pilot and the BLM staff monitor the condition of the animals to ensure their safety, checking for signs of exhaustion, injuries etc. The contractor and pilots are very skilled at designing and building gather corrals, and safely herding the horses and burros to them. Generally, wild horses are very fit, and recover quickly from being captured. Distances that the animals travel are modified to account for summer temperatures, snow depth, animals in weakened condition, young foals, or older/lame animals. Under ideal conditions, some animals could be herded 10 miles

or more at the discretion of the COR/WH&B Specialist. Once near the gather site, the contractor holds a "Prada" horse at the mouth of the wings. As the pilot pushes the wild horses and burros closer, the Prada horse is released, who then runs into the gather corrals, leading all of the wild horses and burros with him. Crewmembers rush in to secure gates once the animals are within the corrals.

During summer gathers, the crew often separates foals from adults at the gather site so that they may be transported to the Holding Corrals separately and avoids being injured by adult animals. Foals may be loaded into a separate stock trailer where they can have shade, water, and electrolyte if necessary. Once unloaded at the Holding Corrals, foals may be rejoined with the mothers if not old enough to wean, and monitored to ensure that all of the foals "join-up". Often paint marks are applied to the foals and mothers to assist the contractor and BLM staff in identifying pairs.

Occasionally (and more frequently for difficult to gather areas) helicopter-assisted roping is implemented, in which the pilot moves a small group of animals to the gather area, which the crewmembers rope by horseback. This method often prevents overstressing the horses or burros from repeated attempts to move them into the gather corrals. The roped animals are then led to the corrals, to awaiting stock trailers, or immobilized on the ground until they can be loaded into stock trailers. Once horses are loaded and transported to the Holding Corrals, they are sorted by the contractor's staff and BLM employees. The contractor looks at the animals' teeth to estimate age while held in the chute, and the BLM staff documents age, color, body condition and lactation status of the horse or burro. Aging wild horses is a process of estimation due to the type of wear that can occur to the teeth of a wild horse on the range. Injuries are noted and treated if needed. Once sorted, the animals are normally given hay and unlimited water, if no health concerns exist. During this time, the BLM may consult with a veterinarian to treat sick or injured animals, or make recommendations for euthanasia.

When the pens hold enough horses or burros to transport to the BLM adoption facility, they are loaded into the straight deck trailers that hold 35-45 wild horses depending upon their size. The trailers have three compartments so that mares/jennies, stallions/jacks and foals can be transported separately. It may require 3-8+ hours for the wild horses to arrive at the adoption preparation facility. The ED typically ships horses to National Wild Horse and Burro Center at Palomino Valley near Sparks, Nevada; or may ship horses to the facility at Ridgecrest, California Arizona, Gunnison Correctional Facility in Gunnison, UT, or Indian Lakes Facility in Fallon, NV if needed. During sorting, the BLM staff identifies wild horses to be re-released back to the HMA according to the objectives for the herd. Mares may be held until the end of the gather so that fertility control can be given to them to slow future population growth rates.
When it is time for the release, the mares and stallions are each loaded into separate stock trailers and transported back inside the HMA near water sources, if possible. The rear of the trailer is opened up, and the horses are allowed to step off and travel back into the HMA. Sometimes the horses are released directly from the holding corrals if they are centrally located within the HMA.

Before the wild horses or burros are transported to adoption facilities or released, hair is sampled for genetic testing. Data collected during the gather in conjunction with genetic analysis report would be incorporated into a Herd Management Area Plan (HMAP) in the future.

**D. *Wild Horse Gather Mitigation Measures***

This EA has analyzed the potential impacts that could occur with completion of a gather to remove wild horses and/or burros from drought affected rangeland. The following section summarizes the measures developed to ensure that these potential impacts are minimized or avoided entirely. BLM staff is on-site at all times to observe the gather, monitor animal health, and coordinate the gather activities with the contractor. The SOPs would be implemented to ensure that the gather is conducted in a safe and humane manner, and to minimize potential impacts to or injury of the wild horses.

Specialists and the Gather Contractor and crew are very attentive and sensitive to the needs of all wild horses and burros captured during gathers, and ensuring their health, safety and well-being during and after the gather is a focus and priority. BLM staff would coordinate with the contractor on a daily basis to determine animal locations in proximity to trap corrals, and to discuss terrain, animal health, gather distances and other gather logistics to ensure animal safety.

An Animal and Plant Inspection Service (APHIS) or other veterinarian may be on-site during the gather, as needed, to examine animals and make recommendations to the BLM for care and treatment of wild horses. Injuries would be examined and treated if needed by a veterinarian at the holding corrals. Fertility control treatment (if applicable) would be conducted in accordance with the approved standard operating and post-treatment monitoring procedures (Fertility Control SOPs, Appendix B). The treatment would be controlled, handled, and administered by a trained BLM employee.

BLM policy prohibits the gathering of wild horses with a helicopter, (unless under emergency conditions), during the period of March 1 to June 30 which includes and covers the six weeks that precede and follow the peak of foaling period (mid-April to mid-May). The gather helicopter pilot allows the wild horses to travel at their own pace for most of the distance to the gather location. The pilots are very experienced and do not place undue pressure on the animals until just the right time when entering the wings of the gather trap, when it is important to move the horses safely into the gather corrals and prevent them from turning back or trying to disband at the last minute. This is to avoid the need to re-gather or to rope the animals from horseback which could expose the wild horses or burros to additional stress or injury. Foals separated during the gather process are safely gathered and transported to the gather corrals to be reunited with their mother.

Transport and sorting is completed as quickly and safely as possible so as to move horses and burros into the large holding pens where they can settle in with hay and water. When releasing animals back to the range (if applicable), they would be returned to same general area from which they were gathered.

Any old, sick or lame horses unable to maintain an acceptable body condition (greater than or equal to a Henneke body condition score (BCS 3) or with serious physical defects such as club feet, severe limb deformities, or sway back would be humanely euthanized as an act of mercy. Decisions to humanely euthanize animals in field situations would be made in conformance with BLM policy (Washington Office Instruction Memorandum 2009-041). Individual animals are monitored and veterinary or supportive care is administered as needed. Electrolyte powder can be administered to the drinking water and electrolyte paste administered to individual animals if needed. The overall health and well-being of the animals is continually monitored in order to adjust gather operations as necessary to protect the animals from gather related health issues. Any orphan foals are attentively cared for through administering electrolyte solutions and/or feeding milk replacer as needed to support their nutritional needs. Foster or adoptive homes are identified to ensure good care to these young animals. If dust becomes an issue, BLM ensures that contractors reduce speeds on dusty roads and water down corrals and alleyways.

### *E. Data Collection*

WH&B Specialists would be responsible for collecting population data. The extent to which data is collected may vary among the field offices to meet specific needs pertaining to each HMA.

1) **Hair Samples/Genetics Analysis**

Hair samples could be collected and analyzed to establish genetic baseline data of wild horses (genetic diversity, historical origins, unique markers, and norms for the population). WHB Specialists could collect a minimum sample size of 25 hair samples from both females and males in a ratio similar to the sex ratio released. Age would not be a defining factor in determining which animals to sample. Samples would be sent to Texas A&M University for analysis.

2) **Herd Health and Viability Data Collection**

WHB Specialists would document information related to age, sex, color, overall health, pregnancy, or nursing status from each animal captured. An estimate of the number of animals evading capture would also be recorded.

Information on reproduction would be collected to the extent possible, through documentation of the wild horses and burros captured during the gather, and the age of any horses released following the gather.

3) **Characteristics**

WHB Specialists would record color and size of the animals, and any characteristics as to type would be noted, if determined. Any incidence of negative genetic traits (parrot mouth, club foot etc.) or other abnormalities would be noted as well.

4) **Condition Class**

A body condition class score would be recorded based on the Henneke System. This would be recorded for the population in general and/or for specific animals if necessary.

### *F. Euthanasia*

The Authorized Office (or designee) will make decisions regarding euthanasia, in accordance with BLM policy as expressed in Washington Office Instructional Memorandum No. 2009-041. A veterinarian may be called to make a diagnosis and final determination. Current BLM SOP is to have a Veterinarian from APHIS on site throughout the gather to observe animal health and condition and provide input to BLM staff regarding the potential need to euthanize wild horses or burros on gathers. Euthanasia shall be done by the most humane method available. Authority for humane euthanasia of wild horses or burros is provided by the Wild Free-Roaming Horses and Burros Act of 1971, Section 3(b)(2)(A), 43 CFR 4730.1, BLM Manual 4730 - Euthanasia of Wild horses and Burros and Disposal of Remains.

The following are excerpted from IM 2009 41:
*A Bureau of Land Management (BLM) authorized officer will euthanize or authorize the euthanasia of a wild horse or burro when any of the following conditions exist:*

*(1) Displays a hopeless prognosis for life;*

*(2) Is affected by a chronic or incurable disease, injury, lameness or serious physical defect (includes severe tooth loss or wear, club foot, and other severe acquired or congenital abnormalities);*

*(3) Would require continuous treatment for the relief of pain and suffering in a domestic setting;*

*(4) Is incapable of maintaining a Henneke body condition score (see Attachment 1) greater than or equal to 3, in its present environment;*

*(5) Has an acute or chronic illness, injury, physical condition or lameness that would not allow the animal to live and interact with other horses, keep up with its peers or maintain an acceptable quality of life constantly or for the foreseeable future;*

*(6) Where a State or Federal animal health official orders the humane destruction of the animal(s) as a disease control measure;*

*(7) Exhibits dangerous characteristics beyond those inherently associated with the wild characteristics of wild horses and burros.*
*When euthanasia will be performed and how decisions will be made and recorded in a variety of circumstances is described below.*

***Euthanasia in field situations (includes on-the-range and during gathers):***

*(A) If an animal is affected by a condition as described in 1-7 above that causes acute pain or suffering and immediate euthanasia would be an act of mercy, the authorized officer must promptly euthanize the animal.*

*(B) The authorized officer will report actions taken during gather operations in the comment section of the daily gather report (Attachment 2). Documentation will include a brief description of the animal's condition and reference the applicable criteria (including 1-7 above or other provisions of this policy). The authorized officer will release or euthanize wild horses and burros that will not tolerate the handling stress associated with transportation, adoption preparation or holding. However, the authorized officer should, as an act of mercy, euthanize, not release, any animal which exhibits significant tooth loss or wear to the extent their quality of life would suffer.*

*(C) If euthanasia is performed during routine monitoring, the Field Manager will be notified of the incident as soon as practical after returning from the field.*

***G. Special Stipulations***

1.) Private landowners or the proper administering agency(s) would be contacted and authorization obtained prior to setting up gather corrals on any lands which are not administered by BLM. Wherever possible, gather corrals would be constructed in such a manner as to not block vehicular access on existing roads.

2.) Gather corrals would be constructed so that no riparian vegetation is contained within them. No vehicles would be operated on riparian vegetation or on saturated soils associated with riparian/wetland areas.

3.) The helicopter would avoid eagles and other raptors, and would not be flown repeatedly over any identified active raptor nests. No unnecessary flying would occur over big game on their winter ranges or active fawning/calving grounds during the period of use.

4.) Standard operating procedures in the site establishment and construction of gather corrals will avoid adverse impacts from gather corrals, construction, or operation to wildlife species, including threatened, endangered, or sensitive species.

5.) Archeological clearance by a BLM archaeologist or District Archeology Technician of gather corrals, holding corrals, and areas of potential effects would occur prior to construction of gather corrals and holding corrals. If cultural resources were encountered, those locations would not be utilized unless they could be modified to avoid impacts. Due to the inherent nature of wild horse gathers, gather corrals and holding corrals would be identified just prior to use in the field. As a result, Cultural Resource staff would coordinate with WH&B personnel to inventory proposed locations as they are identified, and complete required documentation.

6.) Wilderness Study Areas: When gathering wild horses from within Wilderness Study Areas (WSAs), applicable policy will be strictly adhered to. Only approved roads will be traveled on. A Wilderness Specialist or designee would be present to ensure that only inventoried ways or cherry stemmed roads are traveled on by vehicles within the WSA.

7.) Wildlife stipulations: The following stipulations would be applied as appropriate.

a. Sage Grouse

i. Avoid active leks (strutting grounds) by 2 miles. March 1- May

ii. Avoid nesting and brood rearing areas (especially riparian areas where broods concentrate beginning usually in June) by 2 miles. April 1 – August 15

iii. Avoid sage grouse wintering areas by 2 miles while occupied. Most known wintering grounds in the Shoshone-Eureka Resource Area occur at high elevations and are not likely to be affected. Dates vary with severity of winter

iv. Minimize and mitigate disturbance to the vegetation in all known sage grouse habitat.

b. Ferruginous Hawk: Avoid active nests by 2 miles. March 15- July 1.

**II. Standard Operating Procedures for Wild Horse Gathers**

Gathers would be conducted by utilizing contractors from the National Wild Horse and Burro Gather Contract, or BLM personnel. The following procedures for gathering and handling wild horses would apply whether a contractor or BLM personnel conduct a gather. For helicopter gathers conducted by BLM personnel, gather operations will be conducted in conformance with the *Wild Horse Aviation Management Handbook* H-4740-1 (January 2009).

Prior to any gathering operation, the BLM will provide for a pre-capture evaluation of existing conditions in the gather area(s). The evaluation will include animal conditions, prevailing temperatures, drought conditions, soil conditions, road conditions, and a topographic map with wilderness boundaries, the location of fences, other physical barriers, and acceptable trap locations in relation to animal distribution. The evaluation will determine whether the proposed activities will necessitate the presence of a veterinarian during operations. If it is determined that a large number of animals may need to be euthanized or capture operations could be facilitated by a veterinarian, these services would be arranged before the capture would proceed. The contractor will be apprised of all

conditions and will be given instructions regarding the capture and handling of animals to ensure their health and welfare is protected.

Gather corrals and temporary holding sites will be located to reduce the likelihood of injury and stress to the animals, and to minimize potential damage to the natural resources of the area. These sites would be located on or near existing roads.
The primary capture methods used in the performance of gather operations include:

- Helicopter Assisted Trapping. This capture method involves utilizing a helicopter to direct wild horses into a temporary corral.
- Helicopter Assisted Roping. This capture method involves utilizing a helicopter to herd wild horses to ropers.
- Bait Trapping. This capture method involves utilizing bait (e.g., water or feed) to lure wild horses into a temporary corral.

The following procedures and stipulations will be followed to ensure the welfare, safety, and humane treatment of wild horses in accordance with the provisions of 43 CFR 4700.

***A. Capture Methods used in the Performance of Gather Contract Operations***

1. The primary concern of the contractor is the safe and humane handling of all animals captured. All capture attempts shall incorporate the following: All gather corral and holding facilities locations must be approved by the Contracting Officer's Representative (COR) and/or the Project Inspector (PI) prior to construction. The Contractor may also be required to change or move corral locations as determined by the COR/PI. All gather corrals and holding facilities not located on public land must have prior written approval of the landowner.

2. The rate of movement and distance the animals travel shall not exceed limitations set by the COR who will consider terrain, physical barriers, access limitations, weather, extreme temperature ( high and low), condition of the animals, urgency of the operation (animals facing drought, starvation, fire rehabilitation, etc.) and other factors. In consultation with the contractor the distance the animals travel will account for the different factors listed above and concerns with each HMA.

3. All gather corrals, wings, and holding facilities shall be constructed, maintained and operated to handle the animals in a safe and humane manner and be in accordance with the following:
a. Gather corrals and holding facilities shall be constructed of portable panels, the top of which shall not be less than 72 inches high for horses and 60 inches for horses, and the bottom rail of which shall not be more than 12 inches from ground level. All gather corrals and holding facilities shall be oval or round in design.
b. All loading chute sides shall be a minimum of 6 feet high and shall be fully covered, plywood, metal without holes larger than 2”x4”.
c. All runways shall be a minimum of 30 feet long and a minimum of 6 feet high for horses, and 5 feet high for horses, and shall be covered with plywood, burlap, plastic snow fence or like material a

minimum of 1 foot to 5 feet above ground level for horses and 1 foot to 6 feet for burros. The location of the government furnished portable fly chute to restrain, age, or provide additional care for the animals shall be placed in the runway in a manner as instructed by or in concurrence with the COR/PI.
d. All crowding pens including the gates leading to the runways shall be covered with a material which prevents the animals from seeing out (plywood, burlap, plastic snow fence, etc.) and shall be covered a minimum of 1 foot to 5 feet above ground level for horses and 2 feet to 6 feet for burros.
e. All pens and runways used for the movement and handling of animals shall be connected with hinged self-locking or sliding gates.

4. No modification of existing fences will be made without authorization from the COR/PI. The Contractor shall be responsible for restoration of any fence modification which he has made.

5. When dust conditions occur within or adjacent to the trap or holding facility, the Contractor shall be required to wet down the ground with water.

6. Alternate pens, within the holding facility shall be furnished by the Contractor to separate mares or mares with small foals, sick and injured animals, estrays, or other animals the COR determines need to be housed in a separate pen from the other animals. Animals shall be sorted as to age, number, size, temperament, sex, and condition when in the holding facility so as to minimize, to the extent possible, injury due to fighting and trampling. Under normal conditions, the government will require that animals be restrained for the purpose of determining an animal's age, sex, or other necessary procedures. In these instances, a portable restraining chute may be necessary and will be provided by the government. Alternate pens shall be furnished by the Contractor to hold animals if the specific gathering requires that animals be released back into the capture area(s). In areas requiring one or more satellite gather corrals, and where a centralized holding facility is utilized, the contractor may be required to provide additional holding pens to segregate animals transported from remote locations so they may be returned to their traditional ranges. Either segregation or temporary marking and later segregation will be at the discretion of the COR.

7. The Contractor shall provide animals held in the gather corrals and/or holding facilities with a continuous supply of fresh clean water at a minimum rate of 10 gallons per animal per day. Animals held for 10 hours or more in the gather corrals or holding facilities shall be provided good quality hay at the rate of not less than two pounds of hay per 100 pounds of estimated body weight per day. An animal that is held at a temporary holding facility through the night is defined as a horse/horse feed day. An animal that is held for only a portion of a day and is shipped or released does not constitute a feed day.

8. It is the responsibility of the Contractor to provide security to prevent loss, injury, or death of captured animals until delivery to final destination.

9. The Contractor shall restrain sick or injured animals if treatment is necessary. The COR/PI will determine if animals must be euthanized and provide for the destruction of such animals. The Contractor may be required to humanely euthanize animals in the field and to dispose of the carcasses as directed by the COR/PI.

10. Animals shall be transported to final their destination from temporary holding facilities within 24 hours after capture unless prior approval is granted by the COR/PI for unusual circumstances. Animals to be released back into the HMA following gather operations may be held up to 21 days or as directed by the COR/PI. Animals shall not be held in gather corrals and/or temporary holding facilities on days when there is no work being conducted except as specified by the COR/PI. The Contractor shall schedule shipments of animals to arrive at final destination between 7:00 a.m. and 4:00 p.m. No shipments shall be scheduled to arrive at final destination on Sunday and Federal holidays, unless prior approval has been obtained by the COR. Animals shall not be allowed to remain standing on trucks while not in transport for a combined period of greater than three (3) hours in any 24 hour period. Animals that are to be released back into the capture area may need to be transported back to the original gather site. This determination will be at the discretion of the COR.

***B. Capture Methods That May Be Used in the Performance of a Gather***

1. Capture attempts may be accomplished by utilizing bait (feed, water, mineral licks) to lure animals into a temporary gather corral. If the contractor selects this method the following applies:

a. Finger gates shall not be constructed of materials such as "T" posts, sharpened willows, etc., that may be injurious to animals.

b. All trigger and/or trip gate devices must be approved by the COR/PI prior to capture of animals.

c. Gather corrals shall be checked a minimum of once every 10 hours.

2. Capture attempts may be accomplished by utilizing a helicopter to drive animals into a temporary trap. If the contractor selects this method the following applies:

a. A minimum of two saddle-horses shall be immediately available at the trap site to accomplish roping if necessary. Roping shall be done as determined by the COR/PI. Under no circumstances shall animals be tied down for more than one half hour.

b. The contractor shall assure that foals shall not be left behind, and orphaned.

3. Capture attempts may be accomplished by utilizing a helicopter to drive animals to ropers. If the contractor with the approval of the COR/PI selects this method the following applies:

a. Under no circumstances shall animals be tied down for more than one half hour.

b. The contractor shall assure that foals shall not be left behind, or orphaned.

c. The rate of movement and distance the animals travel shall not exceed limitations set by the COR/PI who will consider terrain, physical barriers, weather, condition of the animals and other factors.

### *C. Use of Motorized Equipment*

1. All motorized equipment employed in the transportation of captured animals shall be in compliance with appropriate State and Federal laws and regulations applicable to the humane transportation of animals. The Contractor shall provide the COR/PI with a current safety inspection (less than one year old) for all motorized equipment and tractor-trailers used to transport animals to final destination.

2. All motorized equipment, tractor-trailers, and stock trailers shall be in good repair, of adequate rated capacity, and operated so as to ensure that captured animals are transported without undue risk or injury.

3. Only tractor-trailers or stock trailers with a covered top shall be allowed for transporting animals from trap site(s) to temporary holding facilities, and from temporary holding facilities to final destination(s). Sides or stock racks of all trailers used for transporting animals shall be a minimum height of 6 feet 6 inches from the floor. Single deck tractor-trailers 40 feet or longer shall have two (2) partition gates providing three (3) compartments within the trailer to separate animals. Tractor-trailers less than 40 feet shall have at least one partition gate providing two (2) compartments within the trailer to separate the animals. Compartments in all tractor-trailers shall be of equal size plus or minus 10 percent. Each partition shall be a minimum of 6 feet high and shall have a minimum 5 foot wide swinging gate. The use of double deck tractor-trailers is unacceptable and shall not be allowed.

4. All tractor-trailers used to transport animals to final destination(s) shall be equipped with at least one (1) door at the rear end of the trailer, which is capable of sliding either horizontally or vertically. The rear door(s) of tractor-trailers and stock trailers must be capable of opening the full width of the trailer. Panels facing the inside of all trailers must be free of sharp edges or holes that could cause injury to the animals. The material facing the inside of all trailers must be strong enough so that the animals cannot push their hooves through the side. Final approval of tractor-trailers and stock trailers used to transport animals shall be held by the COR/PI.

5. Floors of tractor-trailers, stock trailers and loading chutes shall be covered and maintained with wood shavings to prevent the animals from slipping.

6. Animals to be loaded and transported in any trailer shall be as directed by the COR/PI and may include limitations on numbers according to age, size, sex, temperament and animal condition. The following minimum square feet per animal shall be allowed in all trailers: 11 square feet per adult horse (1.4 linear foot in an 8 foot wide trailer); 8 square feet per adult horse (1.0 linear foot in an 8 foot wide trailer); 6 square feet per horse foal (.75 linear foot in an 8 foot wide trailer); 4 square feet per horse foal (.50 linear feet in an 8 foot wide trailer).

7. The COR/PI shall consider the condition and size of the animals, weather conditions, distance to be transported, or other factors when planning for the movement of captured animals. The COR/PI shall provide for any brand and/or inspection services required for the captured animals.

8. If the COR/PI determines that dust conditions are such that the animals could be endangered during transportation, the Contractor will be instructed to adjust speed.

***D. Safety and Communications***

1. The Contractor shall have the means to communicate with the COR/PI and all contractor personnel engaged in the capture of wild horses utilizing a VHF/FM Transceiver or VHF/FM portable Two-Way radio. If communications are ineffective the government will take steps necessary to protect the welfare of the animals.

a. The proper operation, service and maintenance of all contractor furnished property is the responsibility of the Contractor. The BLM reserves the right to remove from service any contractor personnel or contractor furnished equipment which, in the opinion of the contracting officer or COR/PI violate contract rules, are unsafe or otherwise unsatisfactory. In this event, the Contractor will be notified in writing to furnish replacement personnel or equipment within 48 hours of notification. All such replacements must be approved in advance of operation by the Contracting Officer or his/her representative.

b. The Contractor shall obtain the necessary FCC licenses for the radio system

c. All accidents occurring during the performance of any task order shall be immediately reported to the COR/PI.

2. Should the contractor choose to utilize a helicopter the following will apply:

a. The Contractor must operate in compliance with Federal Aviation Regulations, Part 91. Pilots provided by the Contractor shall comply with the Contractor's Federal Aviation Certificates, applicable regulations of the State in which the gather is located.

b. Fueling operations shall not take place within 1,000 feet of animals.

***E. Site Clearances***

Personnel working at gather sites will be advised of the illegality of collecting artifacts. Prior to setting up a trap or temporary hold

**APPENDIX C - Daily Visitation Protocol and Ground Rules**

## Daily Visitation Protocol and Ground Rules Gathers

BLM recognizes and respects the right of interested members of the public and the press to observe as wild horse gathers. At the same time, BLM must ensure thee health and safety of the public, BLM's employees and contractors, and America's wild horse s. Accordingly, BLM developed these rules to maximize the opportunity for reasonable public access to the gather while ensuring that BLM's health and safety responsibilities are fulfilled. Failure to maintain safe distances from operations at the gather and temporary holding sites could result in members of the public inadvertently getting in the path of the wild horses or gather personnel, thereby placing themselves and others at risk, or causing stress and potential injury to wild horses.

The BLM and the contractor's helicopter pilot must comply with 14 CFR Part 91 federal M1 of the Fed Aviation Regulations, which determines the minimum safe altitudes and distance people must be from the aircraft. Too be in compliance with these regulations, the viewing location at the gather site and holding corrals must be approximately 500 feet from the operating location of the helicopter at all times. The viewing locations may vary depending on topography, terrain and other factors.

**General Daily Protocol:**

- A Wild Horse Gather Info Phone Line will be set up prior to the gather so thee public can call for daily updates on gather information and statistics. Visitors are strongly encouraged to check the phone line the evening before they plan to attend the gather to confirm the gather and their tour of it is indeed taking place the next day as scheduled (weather, mechanical issues or other the ins may affect this) and to confirm the meeting location.
- Visitors must direct their questions/comments to either their designated BLMM representative or the BLM spokesperson on site, and not engage other BLM//contractor staff and disrupt their gather duties/responsibilities - professional and respectful behavior is expected of all. BLM may make the BLM staff available during down times for a Q&A session. However, the contractor and its staff will not be available to answer questions or interact with visitors.
- Observers must provide their own 4-wheeel drive high clearance vehicle, appropriate shoes, winter clothing, food and water. Observers are prohibited from riding in government and contractor vehicles and equipment.
- Gather operations may be suspended if bad weather conditions create unsafe flying conditions.

- BLM will establish one or more observation areas, in the mimed ate area of the gather and holding sites, to which individuals will be directed. These areas will be placed so as to maximize the opportunity for public observation while
- Providing for a safe and effective horse gather. The utilization of such observation areas is necessary due to the use and presence of heavy equipment and aircraft in the gather operation and the critical need to allow BLM personnel and contractors to fully focus on attending to the needs of the wild horses and burros while maintaining a safe environment for all involved. In addition, observation areas will be sited so as to protect the wild horses from being spooked, startled or impacted in a manner that results in increased stress.
- BLM will delineate observation areas with yellow caution tape (or a similar type of tape or ribbon).
- Visitors will be assigned to a specific BLM representative and must stay with that person at all times.
- Visitors are NOT permitted to walk around the gather site or temporary holding facility unaccompanied by their BLM representative.
- Observers are prohibited from climbing/trespassing onto or in the trucks, equipment or corrals, which is the private property of the contractor.
- When BLM is using a helicopter or other heavy equipment in close proximity to a designated observation area, members of the public may be asked to stay by their vehicle for some time before being directed to an observation area once the use of the helicopter or the heavy machinery is complete.
- When given the signal that the helicopter is close to the gather site bringing horses in, visitors must sit down in areas specified by BLM representatives and must not move or talk as the horses are guided into the corral.
- Individuals attempting to move outside a designated observation area will be requested to move back to the designated area or to leave the site. Failure to do so may result in citation or arrest. It is important to stay within the designated observation area to safely observe the wild horse gather.
- Observers will be polite, professional and respectful to BLM managers and staff and the contractor/employees. Visitors who do not cooperate and follow the rules will be escorted off the gather site by BLM law enforcement personnel, and will be prohibited from participating in any subsequent observation days.
- BLM reserves the right to alter these rules based on changes in circumstances that may pose a risk to health, public safety or the safety of wild horses (such as weather, lightening, wildfire, etc.).

**Public Outreach and Education Day-Specific Protocol**

- A public outreach and education day provides a more structured mechanism for interested members of the public to see the wild horse gather activities at a given site. On this day, BLM attempts to allow the public to get an overall sense of the gather process and has available staff who can answer questions that the public may have. The public rendezvous at a designated place and are escorted by BLM representatives to and from the gather site.

**APPENDIX D – BLM IM Number 2010-164**

UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
WASHINGTON, D.C. 20240
http://www.blm.gov

July 22, 2010

In Reply Refer To: 4710 (260) P
EMS TRNASMISSION 07/23/2010 Instruction Memorandum No. 2010-164 Expires: 09/30/2011

To: All Field Officials (except Alaska)

From: Assistant Director, Renewable Resources and Planning

Subject: Public Observation of Wild Horse and Burro Gathers

**Program Area:** Wild Horse and Burro Program

**Purpose:** The purpose of this Instruction Memorandum (IM) is to establish policy for public observation of wild horse and burro (WH&B) gathers.

**Policy/Action:** The Bureau of Land Management's (BLM's) policy is to accommodate public requests to observe a gather primarily through advance appointment, on days and at times scheduled by the authorized officer. Planning for one public observation day per week is suggested.

Specific viewing opportunities will be based on the availability of staff with the necessary expertise to safely and effectively host visitors, as well as other gather-specific considerations (e.g., weather, terrain, road access, landownership). The public should be advised that observation days are tentative and may change due to unforeseen circumstances (e.g., weather, wildfire, trap relocation, equipment repair, etc.). To ensure safety, the number of people allowed per observation day will be determined by the District Manager (DM) and/or Field Office Manager (FM) in consultation with the Contracting Officer's Representative/WH&B Specialist (COR) for the gather.

The DM/FM has the primary responsibility for effectively planning and managing public observation of the gather operation. Advance planning will:

- Ensure that the public have opportunities to safely observe wild horse gathers;
- Minimize the potential for disruption of the gather's execution;
- Maximize the safety of the animals, visitors, and the BLM and contractor personnel;
- Provide for successful management of visitors; and
- Ensure preparedness in the event of unanticipated situations.

The authorized officer will consider the following when planning for public observation of WH&B gather operations. Also see Attachment 1 (Best Practices When Planning for Public Observation at Gathers).

**A. Safety Requirements**

During WH&B gathers, the safety of the animals, the BLM and contractor personnel, and the public is of paramount importance. Because of the inherent risk involved in working with WH&B, the public will not be allowed inside corrals or pens or be in direct contact with the animals. Viewing opportunities during the gather operation must always be maintained at a safe distance (e.g., when animals are being herded into or worked at the trap or temporary holding facility, including sorting, loading) to assure the safety of the animals, the BLM and contractor personnel, and the public.

Unless an emergency situation exists, the BLM's policy prohibits the transportation of members of the public in Government or Contractor-owned or leased vehicles or equipment. Therefore, observers are responsible for providing their own transportation to and from the gather site and assume all liability for such transportation.

The helicopter/aircraft is the private property of the gather contractor. Due to liability and safety concerns, Bureau policy prohibits observers from riding in or mounting cameras onto the aircraft. Should observers create unsafe flying and gathering conditions, for example, by hiring an aircraft to film or view a gather, the COR, in consultation with the gather contractor, will immediately cease gather operations.

The COR has the authority to stop the gather operation when the public engage in behavior that has the potential to result in harm or injury to the animals, employees, or other members of the public.

**B. Planning for Public Observation at WH&B Gathers**

During advance planning for public observation at WH&B gathers, the authorized officer should consult with the State External Affairs Chief or appropriate Public Affairs office. An internal communications plan will be developed for every gather (Attachment 2). It may also be helpful to prepare answers to frequently asked questions (Attachment 3).

**C. Law Enforcement Plan**

A separate Law Enforcement Plan should be developed if the need for law enforcement support is anticipated. The Law Enforcement Plan must be approved in advance by the Special Agent-In-Charge (SAC) or the State Staff Ranger of the State in which the gather is occurring.

**D. Temporary Closure to Public Access**

Under the authority of Section 303(a) of the Federal Land Management and Policy Act (43 U.S.C. 1733(a)), 43 CFR 8360.0-7, and 43 CFR 8364.1, the authorized officer may temporarily close public lands within all or a portion of the proposed gather area to public access when necessary to protect the health and safety of the animals, the public, contractors and employees. Completion of a site-specific environmental analysis of the environmental impacts associated with the proposed closure and publication of a Federal Register Notice is required.

**E. Gather Contract Pre-Work Conference**

- Talk to the contractor about how many members of the public are expected and when. Discuss, and reach mutual agreement, about where best to position the public at the individual trap-sites to allow the gather to be observed, while accomplishing the gather objectives and assuring the humane treatment of the animals and the safety of the BLM and contractor personnel, and public. · No deviation from the selected viewing location(s) should be made, unless the gather operation is being adversely impacted. The COR will consult with the gather contractor prior to making any changes in the selected viewing locations. · The BLM's policy prohibits it from ferrying observers in the helicopter or any other mode of conveyance unless an emergency situation exists. Review this policy with the contractor during the pre-work conference.

**F. Radio Communication**

- Assure there is effective radio communication between law enforcement personnel, gather COR or project inspectors (PIs), and other BLM staff.
- Identify the radio frequencies to be used.
- Communication with the gather contractor is through the BLM COR or PI, and from the gather
- contractor to the helicopter pilot. Direct communication between BLM personnel (other than the COR) and the helicopter pilot is not permitted, unless agreed upon by the BLM authorized officer and the contractor in advance, or the pilot is requesting information from the COR.

**G. Pre- and Post-Action Gather Briefings**

- Pre-briefings conducted by knowledgeable and experienced BLM staff can be helpful to the public.
- The pre-gather briefing is an opportunity to explain what individuals will see, why the BLM is conducting the gather, how the animals will be handled, etc.
- Post-action briefings may also be helpful in interpreting and explaining what individuals saw, what happened, why certain actions were taken, etc.

**H. Summary of Individual Roles and Responsibilities**

1. District and/or Field Office Managers DMs and/or FMs are responsible for keeping the State Director and State WH&B Lead fully informed about the gather operation. Included is

working with State/local public affairs staff to prepare early alerts if needed. An additional responsibility is determining if a law enforcement presence is needed.

2. Public Affairs Staff The local district/field office public affairs staff is responsible for working with the COR, DM/FM, other appropriate staff, the State WH&B Program Lead, and the State Office of Communications to implement the communications strategy regarding the gather

1. Law Enforcement Develop and execute the law enforcement plan in consultation with District/Field Office Managers, the COR/PI, and the State's Special Agent-In-Charge or State Staff Ranger.

2. Contracting Officer's Representative (COR)/Project Inspectors (PIs) The COR and the PI's primary responsibility is to administer the contract and manage the gather. A key element of this responsibility is to assure the safe and humane handling of WH&B. The COR is also responsible for working closely with the DM/FM and Public Affairs Staff to develop the communication plan, and for maintaining a line of communication with State, District, and Field Office managers, staff and specialists on the progress of, and any issues related to, the gather operation.

**Timeframe:** This instruction memorandum is effective immediately.

**Budget Impact:** Higher labor costs will be incurred while accommodating increased interest from the public to attend gather events. The budget impacts of unanticipated situations which can occur during WH&B gathers include substantial unplanned overtime and per diem expense. Through advance planning, necessary support staff can be identified (e.g., law enforcement, public affairs, or other BLM staff) and the cost-effectiveness of various options for providing staff support can be evaluated. In situations where public interest in a gather operation is greater than anticipated, the affected state should coordinate with the national program office and headquarters for assistance with personnel and funding.

**Background:** Heightened interest from the public to observe WH&B gathers has occurred. Advance planning for public observation of gather operations can minimize the potential for unanticipated situations to occur during WH&B gathers and assure the safety of the animals, the BLM and contractor personnel, and the public.

**Manual/Handbook Sections Affected:** No change or affect to the BLM manuals or handbooks is required.

**Coordination:** This IM was coordinated among WO-200 and WO-260 staff, State WH&B Program Leads, field WH&B Specialists, public affairs, and law enforcement staff in the field.

**Contact:** Questions concerning this policy should be directed to Susie Stokke in the Washington Office at (202) 912-7262 or Lili Thomas in the National Program Office at (775) 861-6457.

Signed by:
Bud C. Cribley
Acting, Assistant Director
Renewable Resources and Planning

Authenticated by:
Robert M.Williams
Division of IRM Governance, WO-560

**APPENDIX E - Federal Aviation Administration General Operating and Flight Rules**

Part 91 GENERAL OPERATING AND FLIGHT RULES Subpart B--Flight Rules General Sec. 91.119

Minimum safe altitudes: General. Except when necessary for takeoff or landing, no person may operate an aircraft below the following altitudes:

(a) Anywhere. An altitude allowing, if a power unit fails, an emergency landing without undue hazard to persons or property on the surface.

(b) Over congested areas. Over any congested area of a city, town, or settlement, or over any open air assembly of persons, an altitude of 1,000 feet above the highest obstacle within a horizontal radius of 2,000 feet of the aircraft.

(c) Over other than congested areas. An altitude of 500 feet above the surface, except over open water or sparsely populated areas. In those cases, the aircraft may not be operated closer than 500 feet to any person, vessel, vehicle, or structure. [ (d) Helicopters, powered parachutes, and weight-shift-control aircraft. If the operation is conducted without hazard to persons or property on the surface—

(1) A helicopter may be operated at less than the minimums prescribed in paragraph (b) or (c) of this section, provided each person operating the helicopter complies with any routes or altitudes specifically prescribed for helicopters by the FAA; and

(2) A powered parachute or weight-shift-control aircraft may be operated at less than the minimums prescribed in paragraph (c) of this section.]

Amdt. 91-311, Eff. 4/2/10

## Attachment 2 – Elko District Sample Drought Gather Plan

### Sample Drought Gather Plan

The following is a sample of a Draft Drought Gather Plan to outline the components that would be included should a drought gather of wild horses or burros be necessary in accordance with the Drought Management Plan.

### Name of HMA or Complex

### 1. Introduction

This section would provide an introduction as to how the need for a drought gather had become necessary. An overview of climate/precipitation/animal health concerns/forage or water limitations would be provided. An overview of the planned wild horse or burro removal would also be introduced.

### 2. Background

This section would include the recent history of the area, summary of monitoring activities, wild horse or burro population levels and AML, and gather history. A table of the HMA(s) involved, AML, and the current population would be presented. Any past wild horse or gather EAs which are relevant would be listed/referenced.

### 3. Drought Wild Horse or Burro Gather Rationale

This section would provide detailed information that led to the determination that a drought gather was necessary. The HMA specific information would be provided including but not limited to:

### 3.1. Climate

A summary of the specific drought conditions of the area, precipitation, Drought Response Index etc.

### 3.2. Drought Response Actions and Monitoring results

As detailed in the Drought Mitigation and Monitoring Plan, Drought Response Actions and the results of monitoring would be summarized. Available and unavailable water, forage condition and availability, assessment by Key Area or summary with detailed information attached, riparian conditions, resource impacts by livestock and wild horses, utilization levels, actual use, and animal distribution.

### 3.3. Animal Health and Characteristics

Summary of specific genetic information (if available), wild horse or burro characteristics, inventory and population data. Current observations of animal health and expected results of a gather delay.

**3.4 Status of Livestock**

Overview of actual use, status of livestock, modifications to livestock, removal of livestock, or closure to livestock as a result of drought.

**3.5. Drought Response Actions To Date**

Summary of activities undertaken such as water hauling or other efforts to avoid the need to gather.

**3.6. Other information pertinent to the need for a gather**

**3.7. Summary: Determination of Excess and Rationale for Drought Gather**

This section would summarize the rationale for a wild horse or burro drought gather and the determination of excess based upon the data and information presented in Sections 3.1-3.6.

**4.0. Drought Gather Plan**

This section would detail the plan for the gather:

- Planned gather method – bait/water trap, helicopter or both
- Timeframe for gather
- Locations of gather. If water/bait trapping, where would the trap(s) be set up
- Safety precautions and mitigation measures to ensure mare and foal health
- Nevada Safe Gather Intent Criteria
- If water/bait trapping, logistics for transportation, feed, water,
- Veterinarian
- Gather objectives: number of animals to be captured, removed, released
- Locations where animal removal would be targeted
- Number of animals to remain in the HMA after the gather
- Monitoring follow up -- range and animal health
- In the case of a complete removal, plans to return animals for when that would occur

**5.0. Attachments**

The following is a list of attachments that would be included in a site-specific gather plan:

- Map

- Animal Condition, Water and Upland Monitoring detail and photos
- Drought Response Index and Precipitation Summary
- Public Observation Plan
- Bait/Water Trap Diagram