

ENVIRONMENTAL ASSESSMENT

Carson City District Drought Management

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U.S. Department of the Interior
Bureau of Land Management
Carson City District
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It is the mission of the Bureau of Land Management to sustain the health, diversity, and productivity of the public lands for the use and enjoyment of present and future generations.

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The photo on the cover was taken August 27, 2012 in the Antelope Valley Allotment during BLM Drought Monitoring.

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ACRONYMS AND ABBREVIATIONS

ACEC	Area of Critical Environmental Concern
AML	Appropriate Management Level
AUM	Animal Unit Months
AVMA	American Veterinary Medical Association
BCR	Bird Conservation Regions
BCS	Henneke Body Condition Score
BLM	Bureau of Land Management
CAA	Clean Air Act
CCD	Carson City District
CEQ	Council on Environmental Quality
CESA	Cumulative Effects Study Area
CFR	Code of Federal Regulations
CO	Carbon Monoxide
COR	Contracting Officers Representative
CRMP	Carson City Field Office Resource Management Plan
DDMP	Drought Detection and Monitoring Plan
DMP	Drought Management Plan
DRA	Drought Response Actions
EA	Environmental Assessment
EPA	Environmental Protection Agency
ESA	Endangered Species Act
ESD	Ecological Site Description
FLPMA	Federal Land Policy and Management Act
GAO	Government Accountability Office
GBBDC	Game Birds Below Desired Condition
GPS	Global Positioning System
HMA	Herd Management Area
ID Team	Interdisciplinary Team
IM	Instruction Memorandum
IWM	Integrated Weed Management
LTP	Long Term Pasture
MOU	Memorandum of Understanding
NAAQS	National Ambient Air Quality Standards
NAC	Nevada Administrative Code
nb	Non-breeding
NDOA	Nevada Department of Agriculture
NDOW	Nevada Department of Wildlife
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NO ₂	Nitrogen Dioxide
NO _x	Nitrogen Oxide
NRHP	National Register of Historic Places
O ₃	Ozone
OHV	Off-highway Vehicles

Pb	Lead
PI	Project Inspector
PJ	Pinyon-Juniper
PM _{2.5}	Small Particulate Matter
PM ₁₀	Large Particulate Matter
PZP	Porcine Zona Pellucida
R&PP	Recreation and Public Purposes Act
RAC	Resource Advisory Council
RFFA	Reasonably Foreseeable Future
RHA	Rangeland Health Assessment
RHE	Rangeland Health Evaluation
RMP	Resource Management Plan
ROD	Record of Decision
S&G	Standards and Guidelines
SFFO	Sierra Front Field Office
SHPO	State Historic Preservation Office
SIP	State Implementation Plan
SO ₂	Sulfur Dioxide
SOP	Standard Operating Procedure
SRP	Special Recreation Permit
SWAMP	Surface Water Ambient Monitoring Program
SWFO	Stillwater Field Office
TCP	Traditional Cultural Property
TDML	Total Daily Maximum Loads
TES	Threatened and Endangered Species
TNEB	Thriving Natural Ecological Balance
Triggers	Drought Response Triggers
U.S.	United States
USC	United States Code
USDA	U.S. Department of Agriculture
USFS	U.S. Forest Service
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
VegDRI	Vegetation Drought Response Index
VOC	Volatile Organic Compounds
WFRHBA	Wild Free-Roaming Horses and Burros Act
WO	BLM Washington Office
WSA	Wilderness Study Area

1.0 INTRODUCTION/PURPOSE AND NEED

1.1 INTRODUCTION

The Bureau of Land Management (BLM) Carson City District (CCD) has prepared this Environmental Assessment (EA) to address potential environmental consequences associated with different management actions carried out during drought. The CCD manages approximately 4.8 million acres of public land within Washoe, Carson City, Storey, Lyon, Douglas, Mineral, Churchill, and Nye Counties in Nevada, and Plumas, Lassen and Alpine Counties in California (see Map 1). The CCD has two Field Offices that administer these public lands; the Sierra Front Field Office (SFFO) and the Stillwater Field Office (SWFO) (see Maps 2 and 3). The CCD also administers six grazing allotments for the Winnemucca and Battle Mountain BLM Districts.

The CCD is located within the physiographic area known as the Basin and Range (or Great Basin) Province, which is characterized by discrete, north- or northeast-trending fault bounded mountain ranges, typically about 20 miles wide and less than 80 miles long, separated by narrow, deep, alluvium filled valleys. The varied topography, geology, soils, flora and fauna in the CCD are typical of the high (cold) desert. Drought is considered a recurring event within the CCD.

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; and (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 times 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; and
- Increased death loss of wildlife, wild horses and burros, and livestock.

As of February 27, 2013, the U.S. Department of Agriculture (USDA) has designated three counties and an independent city in Nevada as primary natural disaster areas due to damages and losses caused by the recent drought. The counties are Douglas, Esmeralda, and White Pine. The Independent City is Carson City. Douglas County and Carson City are located within the CCD. Additionally, farmers and ranchers in the following counties in Nevada also qualify for natural disaster assistance because their counties are contiguous. Those counties include Elko, Lincoln, Mineral, Storey, Eureka, Lyon, Nye, and Washoe. Mineral, Storey, Lyon, Nye and Washoe Counties are located within the CCD.

Farmers and ranchers in the following counties in California also qualify for natural disaster assistance because their counties are contiguous. Those counties are Alpine, El Dorado, Inyo, and Mono. Alpine County is located within the CCD.

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, burro, wildlife and livestock starvation; water deprivation and death; major soil erosion events; rangeland degradation; and livestock starvation due to lack of forage, etc.

1.2 PURPOSE AND NEED

The purpose of the EA is to analyze alternatives that would allow for the rapid response to drought situations on public lands in order to alleviate the impacts of authorized uses and activities on natural resources that are at risk of being adversely affected by drought conditions.

Drought is a recurring, albeit unpredictable, environmental feature which must be included in planning (Thurrow and Taylor 1999). The degree to which drought impairs the range depends on the intensity, frequency and timing of livestock grazing (Howery 1999). A Drought Management Plan (DMP) does not currently exist for the CCD. Therefore, the need for the action is to ensure that livestock, wild horse and burro management and other authorized land uses during drought does not adversely impact the range and compromise the CCDs ability 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 by accomplishing the following drought management goals:

1. Provide for the early detection of and response to drought conditions.
2. Promptly identify and prevent further degradation to affected resources on lands affected by drought within the CCD.
3. Provide for the rapid implementation of Drought Response Actions (DRAs) 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 LAND USE PLAN CONFORMANCE

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

- Carson City Field Office Consolidated Resource Management Plan (CRMP), 2001
- Shoshone-Eureka Resource Management Plan (RMP) Record of Decision (ROD), 1986;
- Shoshone-Eureka RMP Amendment ROD, 1987;
- Sonoma-Gerlach Management Framework Plan III, 1982; and
- Sonoma-Gerlach Rangeland Program Summary, 1992.

1.4 RELATIONSHIPS TO STATUTES, REGULATIONS, POLICY, AND OTHER PLANS AND ENVIRONMENTAL ANALYSES

The Proposed Action and Alternatives described below would be in conformance, to the maximum extent possible, with the following:

- Sierra Front-Northwestern Great Basin Resource Advisory Council (RAC) Standards and Guidelines, 1997, as amended;
- Taylor Grazing Act of 1934;
- National Environmental Policy Act of 1969 (NEPA);
- National Historic Preservation Act of 1966, as Amended (NHPA);

- Wild Free-Roaming Horses and Burros Act of 1971 (WFRHBA);
- Endangered Species Act of 1973 (ESA);
- Federal Land Policy and Management Act of 1976 (FLPMA);
- Public Rangelands Improvement Act of 1978;
- Wilderness Act of 1964; and
- 43 Code of Federal Regulations (CFR) §4100 and §4700, range and wild horses and burros regulations, and 43 CFR §8364.1 closures and restrictions.

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.

1.5 SCOPING AND ISSUE IDENTIFICATION

On December 17, 2012 a letter was sent out to the CCDs Interested Parties mailing list which included numerous individuals, organizations, state, federal and Tribal agencies and permittees inviting them to provide comments on any issues they felt should be addressed in the Drought Management EA. The BLM initiated a 30-day scoping period from December 17, 2012 through January 16, 2013. A press release was distributed to all local media outlets. Scoping comments were received from 23 State agencies, Organizations, Permittees and individuals. The BLM Interdisciplinary Team (ID Team) has considered all comments received during the scoping period in the preparation of this EA.

2.0 PROPOSED ACTION AND ALTERNATIVES

2.1 PROPOSED ACTION

The BLM CCD is proposing to implement, either separately or in combination, the DRAs identified below and described in the DMP (Appendix 2) during drought. The Drought Detection and Monitoring Plan (DDMP) (Appendix 1) would be used to facilitate the early detection and monitoring of drought conditions on public lands administered by the CCD.

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 CCD. DRAs would be implemented through the issuance of full force and effect decisions pursuant to 43 CFR §4110.3-3(b) or 43 CFR § 4770.3(c) (as appropriate), after consultation with, or a reasonable attempt to consult with, affected permittees or lessees, the interested public, and the state having lands or responsibility for managing resources within the area. This EA will serve as the basis for issuing these site-specific decisions to respond to drought conditions on public lands when the drought indicators (as described below) are met. 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 DDMP (see Appendix 1) and recorded on the Drought Monitoring Summary Form (attachment to the DDMP). Justification for wild horse and/or burro drought gathers would be thoroughly documented within a site-specific drought gather plan (see Appendix 3 for a 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 as well.

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

A. DROUGHT INDICATORS

Drought indicators are observations signaling the start or continuation of a drought. The following discussion identifies the indicators that the CCD would use to determine the onset and/or continuation of a 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; and (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 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 United States (U.S.) Drought Monitor (<http://droughtmonitor.unl.edu/>), updated weekly, would be consulted to determine if weather conditions indicate drought and to identify affected areas. Site visits to allotments and HMAs within drought-afflicted allotments 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://vegdiri.unl.edu/>) would be consulted to determine drought afflicted allotments and vegetation condition as it pertains to drought stress. Site visits to allotments and HMAs within drought-afflicted allotments 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 forage species referenced in the ESD are absent, key forage 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 Appendix 1.

1. WATER

This Trigger is based on the presence or absence of available water relative to the amount of precipitation (above normal, normal, or below normal). Field visits would be conducted in drought-afflicted allotments 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 and the health of upland areas surrounding developed water sources (e.g., wells, 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, 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 or overuse of existing water resources. Criteria from the state’s water quality standards (Nevada Administrative Code [NAC] 445A.123) will be used to evaluate water quality conditions such as reduced quantity, noticeable accumulation of animal waste, severe hummicking present from hoof shearing, and unsafe conditions due to mud or severely eroded banks.

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 ensure proper utilization levels of upland and riparian key forage species, as described in the ESD associated with the site. In instances where key forage species referenced in the ESD are absent, key forage 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 include: utilization and stubble height triggers by vegetation community, distribution of livestock, wild horses and burros, and plant production/drought stress.

Utilization and Stubble Height

Utilization triggers were developed using the utilization guidelines developed 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 forage species to the lower utilization level (21-40% in accordance with the Range Utilization Monitoring Form, see Appendix 4). 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.

- **Salt Desert Shrub**
 - 25 % utilization of key forage species.
- **Sagebrush Grassland**
 - 30% utilization of key forage species.
- **Pinyon-Juniper Woodland**
 - 30% utilization of key forage species.
- **Mountain Shrub**
 - 30% utilization of key forage species.

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 (USDA/USDI 1999). Key forage species would be identified using the ESD for a specific area. In instances where key forage species referenced in the ESD are absent, key forage species would be identified using site-specific and/or past monitoring data.

- **Riparian Zones**
 - Four inch stubble height of key riparian species.

Livestock\Wild Horse and Burro 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 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 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 forage 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 if the criteria described above under the Drought Response Triggers section are met. A more in depth discussion of each action can be found in Appendix 1. DRAs have been placed into different categories due to the differing nature and capabilities for management of those resources and uses. DRAs would be selected based on site-specific information. For example, in areas where livestock and wild horse and burro use overlaps, both livestock and wild horse and burro DRAs could be implemented concurrently as determined necessary by BLM specialists and management. Follow-up monitoring by the BLM would evaluate whether the implemented DRAs were effective at mitigating resource degradation, if other DRAs should be implemented, or if permitted use could be increased to previously permitted levels of use.

1. LIVESTOCK

DRAs would be selected on a case-by-case basis using site-specific monitoring data collected as outlined in the DDMP. 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 DDMP. All data would be recorded on the Drought Monitoring Summary Form (Appendix 1).

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 a 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 CCD 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 rangeland resources during drought:

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 burros, 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, or delaying the turnout, to a time period 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 forage species) and BLM Sensitive Species. In instances where key forage species referenced in the ESD are absent, key forage 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. Methods to accomplish this could include delaying turn-out until after the hot season or modification of pasture rotation in order to allow riparian pastures or pastures with a vulnerable riparian component rest during the hot season.

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 allow the plants to start the next growing season with energy reserves.

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 was un-grazed or lightly grazed (21-40% utilization, refer to Appendix 4) in previous years.
- Increased herding of livestock to previously un-grazed or lightly grazed areas (21-40% utilization, refer to Appendix 4).
- 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 burros, and livestock while maintaining riparian functionality. Use would not exceed utilization and stubble heights identified in the Drought Response Triggers section of this document.
- Approving applications for voluntary non-use or temporarily suspending use.

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 fencing would not be used within 1.25 miles of active sage-grouse leks (Instruction Memorandum [IM] 2012-043). Temporary electric fences may also be used to confine livestock to areas dominated by invasive annual species. Temporary electric fences would be constructed using $\frac{3}{4}$ inch to 1 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 with the bottom wire being 20 inches above the ground. Signs warning of the electric fence would be firmly attached to the fence at common crossing points and at $\frac{1}{4}$ 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). Intensive grazing would be focused during the early spring and/or fall months to take advantage of early green up of these invasives before the growing season of desirable perennials and also in the fall when desirable species are dormant. Livestock would be removed upon reaching moderate utilization levels (41-60%, refer to Appendix 4) in order to provide some protection from wind and water erosion. Appropriate utilization levels provide adequate residual matter for the maintenance of plant health especially during a drought. 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 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. 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. They also tend to eat a more varied diet of grasses, forbs, and shrubs vs. cattle and horses that prefer to mainly eat grasses. Temporary changes from cattle to sheep would not be authorized in areas of known bighorn sheep habitat or areas within nine miles of known bighorn sheep habitat. Currently there are no goat permits on the CCD; however this could be an option for some permittees.

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 slight use (1-20% utilization) 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 escape ramps would be installed in water troughs to protect wildlife. 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. During the 2012/2013 grazing season the BLM authorized temporary water haul sites within the District for up to 30 days at each location (see Map 4). These areas received archaeological clearances prior to implementation and, to the extent possible, would be utilized for future water

haul sites as they have already been cleared for use as a water haul site and would not need additional environmental analysis.

Temporary Use of Rested, Unused or Vacant Allotments

During drought, temporary use of unused, rested or vacant allotments where water and forage are available could be utilized to alleviate grazing pressure on allotments or pastures where forage production or water is lacking on an annual basis (43 CFR 4130.6-2(a)). These temporary use authorizations would be limited to active permittees within the CCD; however temporary use would not be constricted to the allotment in which they are permitted to graze. Available forage would be identified through site specific monitoring by the BLM.

Under a temporary use permit, as appropriate, a temporary range improvement permit would also be granted to the permittee. Permittees would be responsible for ensuring that all range improvements in these allotments are in functioning order before turnout (43 CFR 4120.3-1(c)). Temporary use may limit the use of that allotment the following year (i.e. that pasture may not be used the following year).

Temporary Partial Closure of an Allotment(s)

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 as identified by the ID Team, and based on monitoring data, or are identified as critical areas to provide forage and/or water for wildlife and/or wild horses and burros could be closed to livestock grazing for the duration of the drought (43 CFR §4710.5). Temporary closures could be implemented in drought-stressed low elevation aspen stands. This could include construction of enclosures if these areas are receiving concentrated grazing pressure. 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 VegDRI in addition to site specific monitoring by the ID Team 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 and burros) 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 VegDRI 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.

2. WILD HORSES AND BURROS

The following is a list of DRAs that would be used either separately or in combination to ensure the welfare of wild horses and burros on public lands administered by the BLM. Wild horses and burros

could be at risk of dehydration or starvation due to drought conditions; special considerations are needed for the management of wild horses and burros during drought. These DRAs would help reduce the impacts of wild horses and burros on rangeland 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 DDMP. 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 DDMP. All data would be recorded on the Drought Monitoring Summary Form (refer to Appendix 1).

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/bait trapping, if needed).

Step 3: Implement DRA(s) in selected order. If a drought gather is included as a DRA, the interested public would be notified that a drought gather plan is being implemented through a full force and effect decision with a 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 using water trucks or trailers. Water haul locations would be determined based on animal population density and distribution, and placed in previously disturbed areas such as existing water sources that are dry or have inadequate flow, gravel pits or roadsides, to the extent possible. 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 birds.

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 and/or burros 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) could be temporarily closed to livestock grazing if necessary to protect the health of wild horses and burros 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 and burros 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 Appendix 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. Typically, small groups of animals enter the traps at a time. This requires many days to 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 Methods

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 and/or burros 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, burros, and rangeland would be the overarching goal of a drought gather. The removal numbers would be determined on a case by case basis. A summary of the data, and rationale for

the removal numbers would be documented in the Decision and gather plan issued prior to a gather commencing.

1. Removal of Sufficient Animals to Achieve the High Appropriate Management Level (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 re-release of horses and/or burros would be subject to Nevada and Washington BLM office approval and could occur several months after the gather, dependent upon when drought conditions have improved. If complete removal and subsequent release is chosen, population control methods, such as the fertility control vaccine Porcine Zona Pellucida (PZP), 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

Depending on animal and rangeland conditions various removal strategies maybe implemented ranging from a complete removal to a selective removal targeting foals and lactating mares which are most vulnerable to deteriorating range conditions. On a larger HMA animals may only need to be removed from certain areas or a certain segment of the population from certain areas. As an example certain situations may warrant that only animals with or expected to reach a body condition class of three be removed, however, if the range conditions are so severe even remaining horses with a higher score may need to be removed as they could be expected to deteriorate in the near future.

3. OTHER RESOURCES

The following is a list of DRAs that would be used either separately or in combination to ensure that vegetation and soils are not further impacted by different land uses and authorizations. These DRAs would help reduce the impacts to vegetative resources and soils during drought. DRAs would be selected on a case-by-case basis using site-specific monitoring data collected as outlined in the DDMP. 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 DDMP. All data would be recorded on the Drought Monitoring Summary Form (refer to Appendix 1).

Step 2: DRAs would be selected based on the evaluation of site-specific monitoring data. 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.

Step 3: Implement DRA(s) in selected order. Order would be determined based on site-specific monitoring data.

Off Highway Vehicle Management

Temporary closures to Off Highway Vehicles (OHV), as provided for in 43 CFR 8364.1 would be implemented to mitigate OHV use impacts on resources that are stressed by drought

(including near surface water sources, in important wildlife habitat, etc...). A ¼ mile setback from all wildlife guzzlers would be implemented.

Recreation

In drought years, Special Recreation Permits should include stipulations that limit uses of the land near water sources and important habitats in order to mitigate drought effects on these resources. Staging areas, parking areas and any vehicle repair would be limited.

Wildlife Habitat Management

- a. Temporary Water Hauls – where practicable, water would be hauled to critical wildlife habitat areas or areas where critical wildlife (Threatened and Endangered Species [TES] and candidate species) are congregating.
- b. Temporary Water-Holding Facilities – where practicable, establish temporary water-holding facilities for critical wildlife habitat areas or areas where critical wildlife (TES and candidate species) are congregating. .
- c. Work with other users (such as private water right holders) and State Agencies (Nevada Division of Water Resources and/or Nevada Department of Wildlife [NDOW]) to maintain in stream flow in critical fish habitat.
- d. Work with private land owners and water right holders to reduce pumping near critical riparian (e.g. fish) habitat.
- e. Work with NDOW to ensure guzzlers and water tanks are in good working order.
- f. Work with producers/permittees that have water containment facilities to have tank overflows directed away from tank to create wet spots for wildlife.

Forestry

- a. Seed Collection would be prohibited or restricted during times of drought on forest and vegetative resources that are stressed by drought conditions.
- b. Temporary closures of areas with low elevation aspen stands that are stressed by drought. These areas would be closed to grazing, OHV activities and other uses until drought conditions ease.
- c. Remove large pockets of dead trees and potential fire hazard by completing a site-specific “plan” targeting areas with Severe, Extreme or Exceptional drought intensities.

Lands and Realty

Consider and analyze water utilization and mitigation for all proposed projects. These mitigation measures would include, but not be limited to the following:

- a. If the project requires the extraction of local surface water for dust abatement, pipeline testing, or similar activities, seasonal timing restrictions for construction periods to higher water seasons could be implemented.
- b. Require water be hauled from offsite location(s) to the project area so as to not impact drought stricken areas.
- c. Require the use of dust (control) palliatives, as appropriate in place of water during times of drought.

- d. Require temporary protection measures to retain moisture for transplanted vegetation areas and/or seeded areas.

2.2 *ALTERNATIVES*

GRAZING CLOSURE ALTERNATIVE

Under the Grazing Closure Alternative, all areas determined to be affected by drought (refer to Appendix 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.

The DRAs described above in Section 2.1 Proposed Action, regarding wild horse and burros and other resources management on public lands administered by the BLM, would be implemented as a part of this alternative as well. As stated above, these DRAs could be used either separately or in combination to ensure the welfare of wild horses and burros on public lands as well as ensuring that vegetation and soils are not further impacted by different land uses and authorizations within the CCD. These DRAs would be selected on a case-by-case basis using site-specific monitoring data collected as outlined in the DDMP (Appendix 1).

NO ACTION ALTERNATIVE

Under the No Action Alternative, management responses to drought would be the preparation of a more extensive environmental analysis for site specific actions that would increase response times and reduce the effectiveness of management during a drought. Without the prompt implementation of management strategies, the effects of drought could be compounded by improper livestock and wild horse and burro use. 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, wildlife, and wild horse and burro use would be concentrated around remaining water sources and riparian areas. 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 deterioration in wild horse, burro, wildlife and/or livestock health, severe debilitation or death.

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 U.S. Code [USC] §1333(a)). Additionally, if range conditions necessitate supplemental feeding, continued use would occur on any remaining forage plants. Under these conditions any regrowth or seed germination would quickly be consumed further stressing the native plants and delaying range recover, perhaps by many years.

The Wild Horses and Burros Management Handbook (H-4700-1), states that, “To achieve TNEB on the public lands, wild horses and burros 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. Wild horse and burro herd health is promoted by achieving and maintaining a TNEB.”

Supplemental feeding of 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 to increased sedimentation from 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.

TEMPORARY ABOVE GROUND PIPELINES

The BLM considered a Temporary above Ground Pipelines Alternative for areas that were devoid of water for livestock, wildlife, and/or wild horses, for use during drought. However, this alternative was eliminated from further analysis due to concerns about the removal of the temporary pipelines after drought conditions have ceased, and the fact that these pipelines tend to be easily damaged and require more maintenance than other types of range improvements, such as water hauls, which accomplish the same purpose. The CCD has previously authorized temporary pipelines that were not removed once they were installed, or were damaged and abandoned. Remnants of these pipelines can still be found today.

3.0 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

This chapter identifies and describes the current condition and trend of elements or resources in the human environment which may be affected by the Proposed Action or Alternatives and the environmental consequences or effects of the action(s).

GENERAL SETTING

The general setting of the project area is the administrative boundary of the CCD and six allotments located within the Winnemucca and Battle Mountain BLM Districts in which grazing is administered by the CCD. The CCD is primarily located in the Central Basin and Range Eco region, which encompasses a total of 120,000 square miles (EPA, 2012 (BLM, REA)). The CCD occupies a portion of northwestern Nevada and a small portion of California. The eastern portion of the CCD is administered by the SWFO and the western portion is administered by the SFFO.

The Central Basin and Range encompasses large areas of Nevada and Utah and extends into California and Idaho. It lies to the immediate east of the Sierra Nevada, to the north of the Mojave Basin and Range, to the west of the Wasatch/Uinta Mountains, and south of the Northern Basin and Range Eco regions.

The CCD has a wide range of minimum and maximum monthly temperatures with 15 to 50°F (degrees Fahrenheit) in the winter months and 40 to the mid-90s°F in the summer months. Annual average total precipitation ranges from 5 to 10 inches, about 70 percent of the annual total typically falls between November and April. Occasional summer thunderstorms can cause flash flooding and debris flows. Within the CCD, elevation gain between the basin and range is typically 5,000 to 7,000 feet. Wind conditions reflect the elevation change and temperature gradient between basin and range. Predominately westerly winds disperse air pollution; i.e. wildland and prescribed fires from California and Washoe County's poor air quality, over the Great Basin.

The Central Basin and Range Eco region is internally drained and is characterized by a mosaic of dry basins, scattered low and high mountains, and salt flats. It has a hotter and drier climate, more shrub land, and more mountain ranges than the Northern Basin and Range Eco region to the north. Between the Sierra Nevada to the west and Wasatch ranges to the east, more than three hundred long, narrow, roughly parallel mountain ranges are separated by broad elongated valleys. Basins are generally covered by Great Basin sagebrush or saltbush-greasewood vegetation. Cool season grasses are less common than in the Snake River Plain and Northern Basin and Range Eco regions. The region is not as hot as the Mojave Basin and Range Eco region to the south and it has a greater percent of land that is grazed. Small areas of wetland habitats including perennial streams, wet meadows, springs, and seeps are scattered throughout the CCD.

During the 2012/2013 grazing season the CCD ID Teams for both the SFFO and SWFO went out to many different livestock grazing allotments and conducted Drought Monitoring to assess conditions of plants, forage, and water availability. Most allotments showed signs of stress from the drought and below average forage vigor. Photographs from several allotments are located in Appendix 6 of this EA.

3.1 SUPPLEMENTAL AUTHORITIES

Appendix 1 of BLM's NEPA Handbook (H-1790-1) identifies Supplemental Authorities that are subject to requirements specified by statute or executive order and must be considered in all BLM

environmental documents. The table below lists the Supplemental Authorities and their status in the project area. Supplemental Authorities that may be affected by the Proposed Action or Alternatives are further described in this EA.

Table 1 - Supplemental Authorities*

Resource	Present Yes/No	Affected Yes/No	Rationale
Air Quality	Yes	Yes	See discussion in Section 3.3.1.
Areas of Critical Environmental Concern	Yes	Yes	See discussion in Section 3.3.15.
Cultural Resources	Yes	Yes	See discussion in Section 3.3.3.
Environmental Justice	No	No	The Proposed Action or Alternatives would not disproportionately impact any low income or minority populations as described in the Environmental Justice Executive Order 12898.
Farm Lands (prime or unique)	No	No	No federally designated farmlands, prime or unique, exist within the CCD.
Floodplains	Yes	No	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.
Invasive, Nonnative Species	Yes	Yes	See discussion in Section 3.3.5.
Migratory Birds	Yes	Yes	See discussion in Section 3.3.2.
Native American Religious Concerns	Yes	Yes	See discussion in Section 3.3.4.
Threatened or Endangered Species (animals)	Yes	Yes	See discussion in Section 3.3.2.
Threatened or Endangered Species (plants)	Yes	Yes	See discussion in Section 3.3.13.
Wastes, Hazardous or Solid	Yes	No	No wastes, hazardous or solid would be utilized, stored, created, or encountered by implementing the Proposed Action or Alternatives contained in this EA.
Water Quality (Surface/Ground)	Yes	Yes	See discussion in Section 3.3.7.
Wetlands/Riparian Zones	Yes	Yes	See discussion in Section 3.3.6.
Wild and Scenic Rivers	No	No	No federally designated wild and scenic rivers exist within the CCD.
Wilderness/Wilderness Study Area (WSA)	Yes	Yes	See discussion in Section 3.3.15.

**See H-1790-1 (January 2008) Appendix 1 Supplemental Authorities to be Considered. Supplemental Authorities determined to be Not Present or Present/Not Affected need not be carried forward or discussed further in the document.*

Supplemental Authorities determined to be Present/May Be Affected may be carried forward in the document.

3.2 RESOURCES OR USES OTHER THAN SUPPLEMENTAL AUTHORITIES

The following resources or uses, which are not Supplemental Authorities as defined by BLM’s Handbook H-1790-1, are present in the area. BLM specialists have evaluated the potential impact of the Proposed Action on these resources and documented their findings in the table below. Resources or uses that may be affected by the Proposed Action or Alternatives are further described in this EA.

Table 2 - Resources or Uses Other than Supplemental Authorities

Resource or Issue**	Present Yes/No	Affected Yes/No	Rationale
BLM Sensitive Species (animals)	Yes	Yes	See discussion in Section 3.3.2.
BLM Sensitive Species (plants)	Yes	Yes	See discussion in Section 3.3.13.
Fire Management	Yes	No	Wildland fire management activities would not change under the Proposed Action or the alternatives. Therefore, wildland fire management would not be impacted.
Forest Resources	Yes	Yes	See discussion in Section 3.3.13.
General Wildlife	Yes	Yes	See discussion in Section 3.3.2.
Lands With Wilderness Characteristics	Yes	No	Lands with wilderness characteristics are present within the district; however, because of the temporary nature of the drought response actions as described in the Proposed Action, 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 purpose of the Drought Response Actions are to increase the health and vitality of natural communities within the district, these actions would only serve to enhance qualifying characteristics, such as naturalness, within the District and promote wilderness character for current and future generations.
Land Use Authorization	Yes	Yes	See discussion in Section 3.3.9.
Livestock Grazing Management	Yes	Yes	See discussion in Section 3.3.8.
Minerals	Yes	No	Mineral resources exist on the CCD; however, no major soil disturbing activities would occur under the Proposed Action or Alternatives. Therefore, mineral resources would not be impacted.
Paleontological	Yes	No	Paleontological resources exist on the CCD; however, no major soil disturbing activities would occur under the Proposed Action or Alternatives. Therefore, paleontological resources would not be impacted.
Recreation	Yes	Yes	See discussion in Section 3.3.10.
Socioeconomics	Yes	Yes	See discussion in Section 3.3.11.
Soils	Yes	Yes	See discussion in Section 3.3.12.
Travel Management	Yes	No	Travel routes exist on the CCD; however they would not be affected by the Proposed Action or Alternatives. Therefore, travel management will not be further analyzed within this

Resource or Issue**	Present Yes/No	Affected Yes/No	Rationale
			document.
Vegetation	Yes	Yes	See discussion in Section 3.3.13.
Visual Resources	Yes	No	No large structures would be constructed and no major disturbances would occur under the Proposed Action or Alternatives. Therefore, visual resources would not likely be impacted.
Wild Horses and Burros	Yes	Yes	See discussion in Section 3.3.14.

***Resources or uses determined to be Not Present or Present/Not Affected need not be carried forward or discussed further in the document.*

Resources or uses determined to be Present/May Be Affected may be carried forward in the document.

3.3 RESOURCES PRESENT AND BROUGHT FORWARD FOR ANALYSIS (ALL RESOURCES)

The following resources are present in the area and may be affected by the Proposed Action or Alternative. The description of the Affected Environment is the same for the Proposed Action and Alternatives.

3.3.1 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). 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.

Nevada is one of the few states without their own Clean Air Act. Areas that are classified as non-attainment by the EPA are required to prepare and implement a State Implementation Plan (SIP) that identifies and quantifies sources of emissions and presents a comprehensive strategy to control and reduce locally generated emissions. The EPA has summarized Nevada's emission sources in a map based on 1996 principle pollutant data. The map highlights volatile organic compounds (VOC) and nitrogen oxides (NO_x) sources (<http://www.epa.gov/air/emissions/where.htm>).

Washoe County is non-attainment for Carbon Monoxide (CO). In 2008, the EPA approved Nevada's SIP intended to provide for attainment and maintenance of the carbon monoxide NAAQS and approved Nevada's request to re-designate the Truckee Meadows carbon monoxide non-attainment area to attainment.

Air quality within the region can be analyzed based on pollutant levels in the air; visibility across Nevada's expansive vistas; and pollutant deposition that affects soils, streams, and lakes. The CAA places restrictions on impacts on air quality and visibility within Class I and II areas. Class I areas consist of many national wildlife refuges and most national parks and designated wilderness that existed when legislation was enacted in 1977. Class II areas include most other western public lands. Little degradation of air quality is allowed in Class I areas; less stringent requirements apply to Class II areas. There are no Class I areas in the CCD; the nearest Class I areas are the north/south spine of the Sierra Nevada mountain range. The CCD receives minimal air pollution from California, except for wildfire smoke that can be intense for short periods of time. The jet stream or air flow patterns generally come from the south and

west across the CCD and continue up and out into the Great Basin. It is common for Carson City and Reno to experience low visibility days from wildfires in Northern California, i.e. Yosemite National Park, El Dorado National Forest, or Tahoe National Forest.

CCD has no national parks and designated wilderness that existed when the Clean Air Act was enacted in 1977, nor are any Class I areas nearby for potential impacts on strict ambient air quality standards. In 2010, ambient air in Washoe County was in serious non-attainment for PM₁₀ (large particulate matter), attainment for PM_{2.5} (small particulate matter) and CO, and unclassifiable for O₃ (ozone), NO₂ (nitrogen dioxide), and Pb (lead). Sulfur dioxides (SO₂) were better than national standards (Washoe County, Nevada Air Quality Trends (2001-2010), 2011). All other counties within the CCD are within attainment levels.

ENVIRONMENTAL CONSEQUENCES

1. Environmental Consequences of the Proposed Action on Air Quality

Under the Proposed Action, DRAs would be implemented to maintain vegetation within the CCD 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 and any voluntary grazing reductions in this action would be beneficial to air quality.

2. Environmental Consequences of the Grazing Closure Alternative on Air Quality

The Grazing Closure Alternative would remove all grazing from public lands determined to be affected by drought (refer to Appendix 1). Removing livestock grazing during drought would help to 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). Wild horses, burros and wildlife would continue to graze on forage species, however with the reduced grazing pressure from removing livestock, the 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 on Air Quality

The No Action Alternative would require the preparation of a more extensive environmental analysis for site specific actions that 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 and burro use, which may lead to a further reduction in plant cover. Inadequate plant cover can lead to substantial wind or water erosion of valuable top soil (Reece et al. 1991). 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.

3.3.2 WILDLIFE (INCLUDING SPECIAL STATUS SPECIES AND MIGRATORY BIRDS)

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 CCD are typical of the Great Basin ecosystem and are well-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., several bird species), 4) dense understory vegetation as cover from predators, or 5) insect species, grass or forbs for large portions of their diet.

Special Status Species

The BLM manages, by policy, special status species, which are species listed or proposed for listing under the ESA together with species designated as Bureau sensitive by BLM State Directors (BLM Manual 6840). The objectives of the BLM special status species policy are: 1) to conserve and/or recover ESA-listed species and the ecosystems on which they depend so that ESA protections are no longer needed, and 2) to initiate proactive conservation measure that reduce or eliminate threats to sensitive species to minimize the likelihood of and need for listing under the ESA.

Federally Listed Species (Animals). Five federally listed animal species currently occur in the CCD, but no designated critical habitat occurs (See Table 3 below). The only population of Railroad Valley springfish (*Crenichthys nevadae*) in CCD is on private land.

Table 3 – Federally Listed Animal Species in the Carson City District

Taxa	Common Name	Scientific Name	Federal Designation
Insect	Carson wandering skipper	<i>Pseudocopaeodes eunus obscurus</i>	Endangered
Fish	Cui-ui	<i>Chasmistes cujus</i>	Endangered
	Hiko White River springfish	<i>Crenichthys baileyi grandis</i>	Endangered
	Railroad Valley springfish	<i>Crenichthys nevadae</i>	Threatened
	Lahontan cutthroat trout	<i>Oncorhynchus clarki henshawi</i>	Threatened

BLM Sensitive Species (Animals). In 2011 the Nevada list of BLM Sensitive Species was revised (IM NV-2011-059). Table 4 lists the BLM Nevada sensitive animal species within the CCD. There are two federal candidate species on the Nevada sensitive species list; greater sage-grouse (*Centrocercus urophasianus*) and mountain yellow-legged frog (*Rana muscosa*). Candidate species are managed as BLM sensitive species. There are currently no known populations of mountain yellow-legged frogs in Nevada; all populations are in California on Forest Service land.

Table 4 – BLM Nevada Sensitive Animal Species in the Carson City District

	Common Name	Scientific Name
Mammals	Pallid bat	<i>Antrozous pallidus</i>
	Pygmy rabbit	<i>Brachylagus idahoensis</i>
	Townsend's big-eared bat	<i>Corynorhinus townsendii</i>
	Big brown bat	<i>Eptesicus fuscus</i>
	Spotted bat	<i>Euderma maculatum</i>
	Silver-haired bat	<i>Lasionycteris noctivagans</i>
	Western red bat	<i>Lasiurus blossevillei</i>
	Hoary bat	<i>Lasiurus cinereus</i>
	Dark kangaroo mouse	<i>Microdipodops megacephalus</i>
	Pale kangaroo mouse	<i>Microdipodops pallidus</i>
	California myotis	<i>Myotis californicus</i>
	Western small-footed myotis	<i>Myotis ciliolabrum</i>
	Long-eared myotis	<i>Myotis evotis</i>
	Little brown myotis	<i>Myotis lucifugus</i>
	Fringed myotis	<i>Myotis thysanodes</i>
	Long-legged myotis	<i>Myotis volans</i>
	Yuma myotis	<i>Myotis yumanensis</i>
	Pika	<i>Ochotona princeps</i>
	Bighorn sheep	<i>Ovis canadensis</i>
	Western pipistrelle	<i>Pipistrellus heperus</i>
Brazilian free-tailed bat	<i>Tadarida brasiliensis</i>	
Birds	Northern goshawk	<i>Accipiter gentilis</i>
	Golden eagle	<i>Aquila chrysaetos</i>
	Western burrowing owl	<i>Athene cunicularia</i>
	Ferruginous hawk	<i>Buteo regalis</i>
	Swainson's hawk	<i>Buteo swainsoni</i>
	Greater sage-grouse	<i>Centrocercus urophasianus</i>
	Snowy plover	<i>Charadrius alexandrinus</i>
	Peregrine falcon	<i>Falco peregrinus</i>
	Pinyon jay	<i>Gymnorhinus cyanocephalus</i>
	Bald eagle	<i>Haliaeetus leucocephalus</i>
	Loggerhead shrike	<i>Lanius ludovicianus</i>
	Lewis's woodpecker	<i>Melanerpes lewis</i>
	Sage thrasher	<i>Oreoscoptes montanus</i>
	Brewer's sparrow	<i>Spizella breweri</i>
Reptiles	Shasta alligator lizard	<i>Elgaria coerulea shastaensis</i>
Amphibians	Dixie Valley toad	<i>Bufo boreas sp.</i>
	Mountain yellow-legged frog	<i>Rana muscosa</i>
	Northern leopard frog	<i>Rana pipiens</i>
Fish	Wall Canyon sucker	<i>Catostomus sp 1</i>
Molluscs	Ovate Cain Spring pyrg	<i>Pyrgulopsis pictilis</i>
	Wongs pyrg	<i>Pyrgulopsis wongi</i>
Insects	Hardy's aegialian scarab	<i>Aegialia hardyi</i>
	Bee	<i>Anthophora sp. nov. 1</i>

Common Name	Scientific Name
Sand Mountain aphodius scarab	<i>Aphodius sp. 3</i>
Click beetle	<i>Cardiophorus sp. nov.</i>
Sand Mountain pygmy scarab beetle	<i>Coenonycha pygmaea</i>
Early blue	<i>Euphilotes enoptes primavera</i>
Sand Mountain blue	<i>Euphilotes pallescens arenamontana</i>
Bee	<i>Hesperapis sp. nov. 2</i>
Mono Basin skipper	<i>Hesperia uncas giulianii</i>
Bee	<i>Perdita haigi</i>
Bee	<i>Perdita sp. nov. 3</i>
Great Basin small blue	<i>Philotiella speciosa septentrionalis</i>
Carson Valley silverspot	<i>Speyeria Nokomis carsonensis</i>

Big Game

Big game species in the CCD include black bear (*Ursus americanus*), mule deer (*Odocoileus hemionus*), pronghorn (*Antilocapra americana*), Rocky Mountain elk (*Cervus canadensis nelsoni*) (part of Desatoya Mountains only), and bighorn sheep (*Ovis canadensis*) (BLM sensitive species). These animals are considered prominent species due to the public's interest for hunting and aesthetic enjoyment.

Birds

Waterfowl. Streams, rivers, reservoirs, ponds, playas, canals, and associated riparian vegetation provide habitat for waterfowl and shorebirds. Canada goose, northern shoveler, ruddy duck, redhead, American coot, green-winged teal, northern pintail, and gadwall are a few of the more common game waterfowl species found in the area. Great blue herons, egrets, white-faced ibis, and other wading and shorebirds typically occur along major rivers, valleys, and irrigated fields, as well as some playas where permanent water sources exist or in years when water is maintained. When playas contain water for extended periods of time lush vegetation can grow in addition to producing many aquatic invertebrates that provide forage for shorebirds, waterfowl, and small water birds. For instance, Dixie Meadows hot spring and other cold springs provide the playa with a permanent water source. Therefore, numbers and abundance of species in any given year is less variable here than for playas without a permanent water source.

Upland Game Birds. The quality of upland game bird habitat depends on the availability of mixed shrubby and herbaceous vegetation for nesting, brood rearing, foraging, and thermal cover. Riparian habitat plays an important role as a source of food, water, and cover for most upland birds. Chukar partridges are the most broadly distributed across the CCD while California and mountain quail, wild turkey, and blue grouse have more limited distribution. Mourning doves also occupy a variety of habitats across the CCD.

Raptors. Raptors in the CCD include eagles, falcons, hawks, and owls. Golden eagles, red-tailed, ferruginous, Swanson's, and Cooper's hawks, peregrine and prairie falcons, and American kestrel are the most common diurnal species observed, while the nocturnal great horned owl occupies a variety of habitats in the CCD. Cliffs, rocky outcrops, and large trees provide suitable nesting habitat for many of these species. Because they are top (or apex) predators on the food chain, raptors are an important indicator of overall ecosystem health.

Migratory Birds

Known and potentially occurring migratory birds in the CCD are listed in Table 5 based on the U.S. Fish and Wildlife Service (USFWS) Birds of Conservation Concern 2008 List and the USFWS Division of Migratory Bird Management List of game birds below desired condition (GBBDC).

Table 5 - Migratory Birds in the Carson City District

Common Name	Scientific Name	USFWS Birds of Conservation Concern		GBBDC
		BCR ¹ 9 (Great Basin)	BCR 15 (Sierra Nevada)	
Tricolored blackbird	<i>Agelaius tricolor</i>	X		
Wood duck	<i>Aix sponsa</i>			X
Northern pintail	<i>Anas acuta</i>			X
Golden eagle	<i>Aquila chrysaetos</i>	X		
Sage sparrow	<i>Artemisospiza belli</i>	X		
Lesser scaup	<i>Aythya affinis</i>			X
Redhead	<i>Aythya americana</i>			X
Ferruginous hawk	<i>Buteo regalis</i>	X		
Snowy plover (c)	<i>Charadrius nivosus</i>	X		
Band-tailed pigeon	<i>Columba fasciata</i>			X
Olive-sided flycatcher	<i>Contopus cooperi</i>		X	
Black swift	<i>Cypseloides niger</i>	X	X	
Willow flycatcher (c)	<i>Empidonax traillii</i>	X	X	
Peregrine falcon (b)	<i>Falco peregrinus</i>	X	X	
Pinyon jay	<i>Gymnorhinus cyanocephalus</i>	X		
Cassin's finch	<i>Haemorhous cassinii</i>		X	
Bald eagle (b)	<i>Haliaeetus leucocephalus</i>	X	X	
Loggerhead shrike	<i>Lanius ludovicianus</i>	X		
Marbled godwit (nb)	<i>Limosa fedoa</i>	X		
Lewis's woodpecker	<i>Melanerpes lewis</i>	X	X	
Long-billed curlew	<i>Numenius americanus</i>	X		
Sage thrasher	<i>Oreoscoptes montanus</i>	X		
Virginia's warbler	<i>Oreothlypis virginiae</i>	X		
Flammulated owl	<i>Otus flammeolus</i>	X	X	
White-headed woodpecker	<i>Picoides albolarvatus</i>	X		
Green-tailed towhee	<i>Pipilo chlorurus</i>	X		
Eared grebe (nb)	<i>Podiceps nigricollis</i>	X		
Calliope hummingbird	<i>Selasphorus calliope</i>	X	X	
Williamson's sapsucker	<i>Sphyrapicus thyroideus</i>	X	X	
Brewer's sparrow	<i>Spizella breweri</i>	X		
Spotted owl (c)	<i>Strix occidentalis</i>		X	
Mourning dove	<i>Zenaida macroura</i>			X

¹ BCR – Bird Conservation Regions; (b) ESA delisted (c) non-listed subspecies or population of TES, (nb) non-breeding in this BCR.

The CCD refers to the most current Nevada county list that is provided on the USFWS website (http://www.fws.gov/nevada/protected_species/species_by_county.html) and project-specific species request letters to the USFWS to obtain information on federally listed species and designated critical habitat (USFWS).

ENVIRONMENTAL CONSEQUENCES

1. Environmental Consequences of the Proposed Action on Wildlife

The Proposed Action defines drought response triggers for each major vegetation community known to occur within the CCD. The response triggers would activate DRAs to reduce impacts of grazing to wildlife during drought by providing for proper use of vegetation. Although the specific benefits of the Proposed Action vary depending on the wildlife species, the drought triggers for implementing management action would ensure that habitat conditions provide resources for viable wildlife populations to persist over the long-term. Vegetation and water resources important to wildlife can be severely degraded by the interactive effects of drought and overgrazing.

Partial or complete rest of an area from grazing would reduce adverse impacts on habitat by allowing vegetation to make the best use of limited resources during drought. Changes in season of use would be used to avoid hot season grazing of vegetation and to shift to a time outside of the critical growth period. Plants would be able to complete their life cycle thus allowing for seed dissemination and root growth and replacement. Vegetation could then be grazed after sufficient growth or dormancy occurs. Reducing grazing duration would increase a plant's ability to use available resources to regrow after grazing and would provide plants more time to recover after grazing pressure. Reducing AUMs would help match stocking rates to forage and water availability. Reducing stocking rates during a drought is an important management tool for preventing overgrazing and maintaining critical wildlife habitats. By reducing stocking rates, wildlife would benefit from reduced competition for plant and water resources. Reducing stocking rates may especially benefit ground-nesting animals during the spring and early summer. Many of these animals require a dense understory of grasses and forbs for food and nesting cover. 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 cattle grazing (Knick and Connelly 2010). 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).

Measures that exclude and/or intensely manage grazing during drought would provide for the maintenance and protection of wildlife habitat, particularly riparian habitat. Changes in livestock management practices such as strategic placement of salt and/or mineral supplements and temporary range improvements such as water hauls or fences would benefit wildlife by improving livestock distribution to prevent overuse of vegetation and reduce impacts on natural water sources. Livestock tend to concentrate and linger around water sources, especially during dry conditions, which can lead to degraded water quality and adversely affect vegetation (Saab et al. 1995); during drought, these adverse effects can be amplified. Wildlife is known to avoid areas near water that are heavily used by livestock (Leeuw et al. 2001), and these areas are thought to increase predation risk, interspecies competition, and provide avenues for disease transmission. Overcrowding of livestock, wild horses, and wildlife at water sources also increases stress on wildlife as a result of their subordinate stature; drought can affect stress on wildlife to a greater degree in relation to livestock and horses. Water augmentation would reduce competition between wildlife and livestock for these important riparian resources, and reduce stress on wildlife attempting to access water sources where livestock and/or horses are present. Concentrations of livestock near 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 depends on understory vegetation during portions of their life-cycle would benefit from reduced grazing impacts range-wide. Escape ramps would be installed in water troughs to protect wildlife.

Augmenting water sources could also directly benefit some wildlife species that cannot subsist entirely on metabolic water. Augmented water sources are most likely to benefit mobile species that can move relatively long-distances to access water sources (e.g., upland game birds, some songbirds, deer, pronghorn antelope, and bighorn sheep). Conversely, augmented water sources would largely be unavailable to many populations of sedentary animals that cannot access the water (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.

Ecologically functioning riparian areas, springs, and seasonally wet meadows are crucially important for wildlife and fish, thus, using temporary fences to restrict livestock and wild horse and burro access to these areas during a drought is an effective management tool to prevent degradation and potentially improve wildlife habitat. Several studies have shown that removing livestock from streams and riparian zones is a key method of improving habitat for wildlife and fish (Schulz and Leininger 1991; Mosely et al. 1997; Giuliano and Homyack 2004; Nelson 2010). Negative impacts to wildlife include bird fence-impact mortality, particularly of sage-grouse, but this impact can be largely avoided by adopting specific measures to reduce sage grouse fatal collisions (Stevens 2011). Temporary fencing would not be used within 1.25 miles of active leks (IM 2012-043). Fences can also limit access to water sources by large wildlife (e.g., mule deer, bighorn sheep, and elk).

If changing kind or class of livestock, BLM would not authorize temporary changes from cattle to sheep in areas of known bighorn sheep habitat or areas within nine miles of known bighorn sheep habitat.

If necessary, wild horse and burro gathers could occur in drought-affected areas. Wildlife and wildlife habitat would benefit from wild horse and burro gathers. Reduction of wild horse and/or burro populations during a drought would protect wildlife habitat from overuse, reduce competition for forage and water, and reduce drought-induced stress on wildlife. Habitat conditions in riparian areas and uplands would be maintained, benefitting many wildlife species including sage-grouse.

Wild horse and burro gathers could have some short-term negative impacts on wildlife. Some localized disturbance to vegetation could occur and wildlife present on or near trap sites or holding facilities could be temporarily displaced or disturbed during the gather activities, but trap sites would typically be located in previously disturbed areas (i.e., gravel pits, roads and washes) for short periods of time (1-3 days). Thus, disturbance to vegetation and wildlife would likely be minimal at gather sites and holding corrals. Impacts to nesting migratory birds from gather activities would be minimized because traps and corrals would be located in previously disturbed areas away from water and known nesting areas. Refer to the Special Stipulations in Attachment A of the DMP (Appendix 2) for stipulations to minimize impacts to wildlife. Overall, improvement and/or maintenance of wildlife habitat would be expected to occur as a result of a decrease in use because of lower numbers of wild horses and burros.

2. Environmental Consequences of the Grazing Closure Alternative on Wildlife

Impacts of the Grazing Closure Alternative are the same as those under the DRA for Temporary Complete Closure of an Allotment(s) in the Proposed Action. Like the Complete Closure DRA in the Proposed Action, the removal of livestock under the Grazing Closure Alternative would have the greatest benefit to wildlife because livestock are removed from the range for the duration of the drought

plus one growing season following cessation of the drought. This maximizes protection of wildlife and their habitat during drought and maximizes recovery afterwards by eliminating any impacts from livestock grazing including reduced competition for food, water and space between wildlife and livestock.

Potential negative impacts to wildlife from implementation of 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, and 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 CCD during drought.

3. Environmental Consequences of the No Action Alternative on Wildlife

Under the No Action Alternative, wildlife species would not benefit by the management activities outlined in the Proposed Action. Preparation of a more extensive environmental analysis would be needed to address site-specific actions which would delay drought response times. Without the prompt implementation of management strategies, the effects of drought on wildlife could be compounded and, wildlife would be fully subjected to the potentially adverse impacts of livestock, wild horse, and burro use during drought. These include exacerbated competition for forage and water between non-native and native wildlife, and impacts on riparian areas and other water sources. Impacts on riparian areas and water sources can be severe because livestock tend to congregate in these areas, trampling and overgrazing vegetation. Competition between wildlife and livestock, wild horses and burros would also be substantial when water and forage are limited. Moreover, wild horses and burros are known to drive away 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 drought can be a slow and expensive process. Thus, the long-term viability of wildlife populations could be substantially compromised.

3.3.3 CULTURAL/HISTORICAL RESOURCES

AFFECTED ENVIRONMENT

The CCD contains archaeological evidence of habitation and use for at least the past 11,000 years. For most of this vast period of time, the ancestors of today's Native American tribes occupied the area that is now the CCD. Only within the last 170 years have other cultures come to use this landscape, often in great numbers and for a variety of reasons. Whereas less than 10,000 people lived in the CCD in 1800, today's population totals more than 600,000. Throughout time, the range of human activities has been bound by the constraints of climate, weather, geology, hydrology, landform, and the plants and animals that adapt to the local conditions.

At this time, the vast majority of the recorded cultural resources on the land administered by the CCD are archaeological sites. At present, less than 500,000 acres, about 10 percent, of the land administered by the CCD have been inventoried for cultural resources, although many older inventories do not meet modern Class III standards. Cultural resources surveys have led to the documentation of approximately 9,000 prehistoric and historic archaeological sites. Only a few sites have been formally nominated for listing on the National Register of Historic Places (NRHP), but many more have met the eligibility criteria or have not been evaluated for inclusion in the NRHP.

Western Great Basin cultural resource sites are often exposed on eroded soils and geology that lack dense vegetation. Accretion of sediment is generally slow. Areas of exception, such as the floodplains of the perennial drainages and of the Truckee, Walker, and Carson rivers, are not typically public lands, but privately or tribally held. Therefore, as a result of desert climate conditions throughout the period of human use, prehistoric- and historic-era sites are typically visible on the surface. Because of their visibility, the distribution of known sites can be accurately gauged. Known site numbers, densities, and periods of use vary for historic-era and prehistoric sites, and the sites are unevenly distributed across the landscape.

Some regions are dominated by historical sites with remains that include collapsing and ruined buildings, structures, equipment and other artifacts and features that are visible on or above the present ground surface. These sites occur at and around the historic mines that are throughout the CCD. Between the initial boom of mining in the 1860s to the advent of automobiles, settlement generally occupied a similar location as the place searched for ore. Supporting towns, ranches, and agriculture followed a pattern that left cultural resource remains in specific valley landscapes and corridors. Therefore the vast majority of historic-era sites and historic properties are in and around areas of modern or abandoned towns, mines, and ranches.

Additionally, development and resource use of public lands continues to be driven by the relative location of recent human activities. These activities include mines, grazing allotment improvements, military and other resource use of public lands and occupy specific positions on the landscape and do not occur evenly across the entire CCD. With cultural resources laws, regulations, and policies often requiring inventory prior to these actions being approved, looking for cultural resources in these areas will result in more sites being identified.

Therefore, the irregular patterns of known distribution and density of cultural resource sites are twofold. One factor is that prehistoric- and historic-era people used some areas of the landscape more intensely and more often than others. The second factor is modern resource use, where specific, non-randomly distributed areas proposed for use are subject to necessary cultural resource identification efforts, thereby shaping our geographic awareness of known sites.

ENVIRONMENTAL CONSEQUENCES

1. Environmental Consequences of the Proposed Action on Cultural/Historical Resources

The effects of BLM DRAs on cultural resources would be addressed through compliance with the NHPA, as implemented by following the Nevada State Protocol Agreement between the BLM, Nevada and the Nevada State Historic Preservation Office (SHPO). Adverse impacts from cattle and wild horse use can include compaction, post holing (hammering), soil displacement, hummicking, pedestalling, trailing, and trampling. These effects can cause artifacts to become broken, damaged or cause displacement of artifacts. With implementation of the Proposed Action DRAs, impacts would be reduced as pressure from wild horses, burros and livestock are alleviated

2. Environmental Consequences of the Grazing Closure Alternative on Cultural/Historical Resources

Drought afflicted areas would experience more rest under the Grazing Closure Alternative as there would be no livestock grazing in these areas. This would allow for increased plant cover and reduced potential for soil erosion. The increase in vegetation and lessening soil erosion would positively affect archaeological sites by maintaining surface and subsurface artifacts, features, and soil matrix integrity. .

3. Environmental Consequences of the No Action Alternative on Cultural/Historical Resources

The No Action Alternative would require the preparation of a more extensive environmental analysis for site specific actions that would delay drought response times and potentially result in a continuation of current management practices. This could result in increased damage to cultural resources through accelerated erosion caused by trampling, and by the effect of trampling by livestock, wild horses and burros on newly exposed cultural resources. Further, exposure could in turn increase the potential for illegal collection of these cultural resources. 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 of livestock and wild horses and burros within archaeological sites, especially those that are also within riparian areas, causes irreparable damage to those sites.

3.3.4 NATIVE AMERICAN RELIGIOUS CONCERNS

AFFECTED ENVIRONMENT

The CCD manages public lands within the aboriginal territory of people identified based on commonality and differences in language and culture as Washoe, Northern Paiute, and Western Shoshone. Six tribal governments have reservations within the CCD and four additional tribes hold reservation lands beyond the CCD boundary (see Table 6). Each of the ten groups is a federally recognized Indian Tribe (25 USC 479a). Each tribe, as well as the California Native American Heritage Commission and the Inter-Tribal Council of Nevada, maintains a general concern for protection of and access to areas of traditional and religious importance, and the welfare of plants, animals, air, landforms, and water on reservation and public lands. Table 6, Tribal Reservations in and near the Carson City CCD, includes the geographic area(s) that CCD utilizes for consulting with tribal leaders and staff, recognizing that each tribe’s ancestral use area(s) may extend beyond the listed locations.

Table 6 - Tribal Reservations Within and Near the Carson City District

Tribe	Cultural Division(s)	General Location	CCD Geographic Area of Specific Concern
Bridgeport Paiute Indian Colony	Northern Paiute	Mono County, California (outside of planning unit)	SWFO and SFFO – Southern Lyon and Western Mineral Counties
Fallon Paiute-Shoshone Tribe	Northern Paiute and Western Shoshone	Churchill County, Nevada	SWFO and SFFO – Northeastern Lyon and Western Churchill Counties
Lovelock Colony	Northern Paiute	Pershing County, Nevada (outside of planning unit)	SWFO only – Northern Churchill County
Pyramid Lake Paiute Tribe	Northern Paiute	Washoe, Storey and Lyon Counties, Nevada	SFFO only – Northern Storey and Northern Lyon Counties; Washoe County north of I-80
Reno-Sparks Indian	Northern Paiute,	Washoe County,	SFFO only – Northern Storey

Tribe	Cultural Division(s)	General Location	CCD Geographic Area of Specific Concern
Colony	Washoe, Western Shoshone and other Tribes	Nevada	County and Washoe County from Truckee Meadows north
Susanville Indian Rancheria	Northern Paiute, Washoe, Atsugewi, Achumawi and Maidu	Plumas County, California (outside of planning unit)	SFFO only – Plumas, Lassen, and Sierra Counties (California); Washoe County west of Peterson Mountain and north of Fort Sage Mountains
Walker River Paiute Tribe	Northern Paiute	Churchill, Lyon, and Mineral Counties, Nevada	SWFO and SFFO – Eastern Lyon, Western Churchill, and Northern Mineral Counties
Washoe Tribe of Nevada and California	Washoe	Alpine County, California; Carson City and Douglas Counties, Nevada	SFFO only – Alpine, Plumas, Lassen, and Sierra Counties (California); Washoe County west of Virginia Mountains; Carson City and Storey Counties; Douglas and Lyon Counties west of the Pine Nut Mountain crest
Yerington Paiute Tribe	Northern Paiute	Lyon County, Nevada	SFFO and SWFO – Lyon, Southern Storey, and Eastern Douglas Counties
Yomba Shoshone Tribe	Western Shoshone	Nye County, Nevada (outside of planning unit)	SWFO only – Eastern Churchill, Eastern Mineral, and Western Nye Counties

The CRMP and existing CCD documents do not specifically identify Native American Interests as a topic separate from Cultural Resources. In the CRMP (2001, p. CUL-5), “the view of Native Americans will be considered prior to BLM decisions or approvals that could result in changes in land use, physical changes to lands and resources, changes in access, or alienation of lands.” This captures some of the intent of current laws, regulations and policies; it does not describe the means for identifying and managing traditional and sacred sites, or for obtaining and utilizing the perspective of tribal people.

Topics consistently identified by Tribes include access to natural, medicinal, and sacred resources and places. Traditional Cultural Properties (TCPs)/Sacred Sites such as Black Point Petroglyph, Grimes Point, Hidden Cave are important to a respective tribal cultural heritage and to families within the Tribe(s).

Each tribe maintains interest in specific cultural and traditional resources, tribal access locations, and heritage properties. Tribal concerns within the CCD may include, but are not limited to, specific places on the landscape where spiritual and ceremonial events occur or have previously occurred, known and unknown burial and cemetery sites, pre-contact or historic-era cultural resources, hot springs and geysers, and localities with difficult-to-find or special plant, animal, or mineral resources.

All Tribes in the CCD have interest in access to ranges that contain pinyon pine nut gathering locations. This includes the Pine Nut Mountains, Desatoya Range, Stillwater Range, Clan Alpine Mountains, Wassuk Range, and Virginia Range, and ranges beyond the CCD. Due to the 3-5 year cycle of nut production, the tribal members go where there are pine nuts available, and specific locations that yield

pine nuts one year will not be the location of use the following few years. Gathering includes both green and ripe cone harvesting. Some ranges, such as the Virginia and Flowery Ranges, have been used historically but changes to land status and fire management have reduced the potential for using these locations for pine nut gathering.

BLM manages the sensitive tribal information collected through consultation, including electronic and hard copy files, by utilizing a geospatial layer consistent with the management of public lands. The geospatial layer of historic and current acquired tribal information would facilitate the avoidance or mitigation for future projects including visual effects on sacred sites and traditional cultural properties during the planning phase.

In accordance with the NHPA (PL. 89-665), the NEPA (PL. 95-341), the FLPMA (PL. 94-579), the American Indian Religious Freedom Act (PL. 95-341) the Native American Graves Protection and Repatriation Act (PL. 101-601) and Executive Order 13007, the BLM must also provide affected tribes an opportunity to comment and consult on proposed projects. BLM must attempt to limit, reduce, or possibly eliminate any negative impacts to Native American traditional/cultural/spiritual sites, activities and resources. Consultation with Native American tribes would occur through the decision process prior to the implementation of any actions.

ENVIRONMENTAL CONSEQUENCES

1. Environmental Consequences of the Proposed Action on Native American Religious Concerns

Although site-specific plans for the implementation of the DRAs identified in the Proposed Action are not analyzed under this document, the potential does exist to impact Native American sites and activities of a spiritual/cultural/traditional nature. Specific impacts are dependent on DRAs selected and dates of implementation. Therefore, affected tribes must be given the opportunity to give input and participate in the decision making process.

It is believed that Native American resources and sites of cultural, traditional and spiritual use maintain their physical and spiritual integrity due to their undisturbed and pristine locations. However, even if an area has been physically impacted, it does not mean that it has lost its importance or sacredness. Some areas within the CCD have experienced past and present ground disturbance, but still maintain spiritual integrity. The fact that an important site has been disturbed in the past does not lessen its sacredness. However, ongoing disturbance can have an impact to the existing cultural/traditional/spiritual activities that currently take place in certain areas.

The Proposed Action is designed to alleviate the impacts of livestock and wild horses and burros during drought. The implementation of the DRAs described in the Proposed Action would reduce the probability of soil erosion, which would have a beneficial impact on the protection of Native American resources. Any of the DRAs that have the potential to be ground disturbing (e.g., temporary water hauls, and electric fences) would be surveyed for cultural resources prior to implementation. The specific placement of temporary projects is flexible and would avoid any known cultural resources. Any temporary electric fences constructed would be designed in a manner that would allow access at all current access points (e.g., trails, roads, etc.). BLM should not bar or prevent traditional practitioners from gaining access to existing and known medical/edible plant locations and other culturally important sites.

2. Environmental Consequences of the Grazing Closure Alternative on Native American Religious Concerns

The implementation of the Grazing Closure Alternative would protect vegetation and reduce the probability of soil erosion, which would have a beneficial impact on the protection of Native American resources.

3. Environmental Consequences of the No Action Alternative on Native American Religious Concerns

The No Action Alternative would require the preparation of a more extensive environmental analysis for site specific actions that 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 and burro use. Drought reduces the health and production of vegetation. This may 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. Edible and medicinal plants may be reduced or eliminated from traditional cultural sites if overgrazing occurs during drought. Riparian areas may experience heavy use by livestock and/or wild horses and burros as upland vegetation dries out and becomes less palatable and water resources become scarce. The delayed implementation of DRAs under the No Action Alternative would have adverse impacts on Native American resources.

3.3.5 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).

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/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.

Noxious weed species are present throughout the CCD, and continue to arrive and spread at rates that exceed our ability to treat and eradicate these species. Degraded or disturbed ecosystems are most easily invaded by these species. Noxious weeds are found in places where the native plant community has been degraded and where there is sufficient soil moisture. Consequently noxious weeds are not found in widespread contiguous areas throughout the CCD but instead are typically found in numerous large and small patches, primarily in riparian areas, ephemeral drainages, playa lake margins, burned areas and along roadsides.

Within the CCD there are numerous areas infested with noxious weeds in patches of varying sizes and weed densities. Currently the aggregate acreage of all noxious weeds is approximately 300 acres. As not all noxious weeds are mapped the total acreage is undoubtedly larger. Current surveying and mapping of noxious weeds is ongoing within the CCD. Table 7 outlines noxious weed found in the CCD.

Table 7 – Noxious Weeds Found Within the Carson City District

Common Name	Scientific Name
Russian knapweed	<i>Acroptilon repens</i>
Hoary cress	<i>Cardaria draba</i>
Musk thistle	<i>Carduus nutans</i>
Diffuse knapweed	<i>Centaurea diffusa</i>
Yellow starthistle	<i>Centaurea solstitialis</i>
Spotted knapweed	<i>Centaurea stoebe</i> ssp. <i>Mincranthos</i>
Canada thistle	<i>Cirsium arvense</i>
Poison hemlock	<i>Conium maculatum</i>
Perennial pepperweed/ Tall whitetop	<i>Lepidium latifolium</i>
Dalmatian toadflax	<i>Linaria dalmatica</i>
Purple loosestrife	<i>Lythrum salicaria</i>
Scotch thistle	<i>Onopordum ancanthium</i>
African rue	<i>Peganum harmala</i>
Mediterranean sage	<i>Salvia aethiopsis</i>
Medusahead	<i>Taeniatherum caput-medusae</i>
Tamarisk	<i>Tamarix</i> sp.
Puncturevine	<i>Tribulus terrestris</i>

The CCD has traditionally surveyed and treated noxious weeds following guidance from the national office. Current efforts are designed to move toward an integrated weed management (IWM) strategy which includes mapping; treating, evaluating and revegetation of weed infested areas. This effort will allow staff to prioritize and focus on treating areas having high priority such as priority sage grouse habitat.

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 USDA and can be found at their website, <http://plants.usda.gov/java/noxious?rptType=Federal>.

ENVIRONMENTAL CONSEQUENCES

1. Environmental Consequences of the Proposed Action on Noxious Weeds/Invasive Non-native Species

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 intensity, frequency and timing of grazing can compound already existing vegetative stress caused by drought (Howery 1999). 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 invasive annual dominated communities (e.g., cheatgrass dominated sites). Targeted grazing of invasive annual dominated communities would be used to reduce grazing pressure on areas dominated by native species. On these sites, prescribed livestock grazing can be applied to achieve maximum damage to annual grasses with little concern for non-target plants (Peischel and Henry 2006). Intensive grazing would be focused during the early spring and/or fall months to take advantage of early greening up of these invasives before the growing season of desirable perennials and also in the fall when desirable species are dormant. . Livestock would be removed upon reaching moderate utilization levels (41-60%, refer to Appendix 4) in order to provide protection from wind and water erosion. This, in turn, would result in the reduction of invasive annual species and limit adverse impacts to native perennial species.

A wild horse or burro drought gather could result in the spread of existing populations of noxious weeds, invasive or 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.

To the extent possible, temporary trap sites and holding facilities would be selected in previously disturbed areas such as gravel pits. 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 on Noxious Weeds/Invasive Non-native Species

The Grazing Closure Alternative would provide rest for all drought afflicted allotments. 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.

The Grazing Closure Alternative would not provide for the targeted grazing of invasive annual species, which would limit the opportunity to reduce the vigor of invasive species that may compete with native vegetation for soil moisture and nutrients.

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 on Noxious Weeds/Invasive Non-native Species

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 a more extensive environmental analysis for site specific actions that 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 that are appropriate for drought conditions there would be an increase in 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.

3.3.6 WETLANDS/RIPARIAN ZONES

AFFECTED ENVIRONMENT

The US Army Corps of Engineers (Federal Register 1982) and the EPA (Federal Register 1980) jointly define wetlands as, “those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas.” Wetlands are protected as part of the Clean Water Act, Section 404, and therefore, accurate delineation of wetlands is important so that these features are not damaged by human activities. Wetland characteristics include: vegetation, soil, and hydrology.

Riparian and wetland areas adjacent to surface waters are the most productive and important ecosystems on the CCD. Riparian and wetland areas represent approximately 2% of the CCD. 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; recreation, fisheries, wildlife habitat, increased water supply, cultural, historic and economic. Wetlands provide multiple uses, such as biodiversity conservation, fish production, migrating bird habitat, water purification, and erosion control. Wetlands also accumulate carbon. Depending on the intensity of drought, wetlands can act as sinks or sources of carbon (Chen et al. 2012). The ability of wetlands to store carbon is directly related to their preservation and is an increasingly important topic at a time of accelerated climate change caused by increased carbon entering the atmosphere. Furthermore, protection of properly functioning meadows is important for the overall carbon budget, where a recent study found that degraded hydrological conditions leads to loss of nearly half the soil organic carbon stored in meadows that are in proper functioning condition (Norton et al. 2011).

Ecological importance of riparian-wetland areas are highlighted by the ESA, the Taylor Grazing Act of 1934, FLPMA, the Clean Water Act of 1977, the Emergency Wetlands Act of 1986, Executive Order 11990 (Protection of Wetlands), 43 CFR 4180 (Fundamentals of Rangeland Health), and the Standards and Guidelines (BLM 1997; BLM 2007).

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. Non-functioning 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 non-functioning and degraded, especially during times of drought.

The Great Basin Foothill and Lower Montane Riparian Woodland and Shrubland system occurs in mountain ranges throughout the CCD mostly between 4,000 and 7,000 feet in elevation. There is a wide variety of plant associations, depending on the system's elevation, stream gradient, floodplain width and overall system dynamics. The dominant trees usually include species such as white fir (*Abies concolor*) (which is only found in the Sierra, within the CCD), water birch (*Betula occidentalis*), Fremont cottonwood (*Populus fremontii*), and Douglas-fir (*Pseudotsuga menziesii*). The shrub component is ordinarily comprised of silver sagebrush (*Artemisia cana*), dogwood (*Cornus sericea*), narrowleaf willow (*Salix exigua*), and Lemmon's willow (*Salix lemmonii*). There is potential for a prolific and diverse herbaceous component. Rushes (*Juncus ssp.*) and sedges (*Carex ssp.*) are often dominant in the herbaceous layer, but perennial grasses and mesic forbs are also commonly found. Common perennial grasses and mesic forbs include tufted hairgrass (*Deschampsia caespitosa*), slender wheatgrass (*Elymus trachycaulus*), Rocky mountain iris (*Iris missouriensis*), False lily of the valley (*Maianthemum stellatum*), or Fendler's meadow-rue (*Thalictrum fendleri*).

Although riparian systems are only 2% of the CCD, they provide a much greater percentage of the desirable resources for livestock, wild horses, wildlife, and recreationists. These systems often experience overuse or misuse, since there are so many user groups that concentrate on the riparian systems.

ENVIRONMENTAL CONSEQUENCES

1. Environmental Consequences of the Proposed Action on Wetlands/Riparian Zones

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 CCD. It is expected that livestock and wild horses and burros 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 burros and protect riparian areas from overgrazing and trampling during drought. Implementing the drought response triggers described in the Proposed Action would require that livestock be removed upon reaching the 2-4 inch stubble height of key forage species and other special status species within riparian zones (USDA/USDI 1999). Accumulating this level 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).

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

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 electric fences would be used to reduce the impacts of livestock and/or wild horse and burro use on riparian areas. Temporary water hauls would be used to provide water to livestock and/or wild horses in areas 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 electric fences would be used to protect and/or manage riparian areas separately. Sensitive areas can be separated from other areas and managed differently (Bailey 2004). The ability to manage riparian areas independently would ensure drought response triggers developed for riparian areas are not exceeded. Upon reaching the triggers, livestock could be excluded from the areas, which would reduce negative impacts of grazing to riparian areas during drought.

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. Wild horse or burro gather activities would not have any direct impacts to riparian wetland zones or water quality as trap sites and holding corrals would not be constructed near riparian areas.

2. Environmental Consequences of the Grazing Closure Alternative on Wetlands/Riparian Zones

The Grazing Closure Alternative would require all drought afflicted allotments to be closed to grazing. The closure would remove livestock grazing from the public lands to eliminate the impacts of grazing during the drought and provide one additional growing season of rest for plant recovery following the cessation of the 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 above in the proposed action and would result in similar effects.

3. Environmental Consequences of the No Action Alternative on Wetlands/Riparian Zones

The No Action Alternative would require the preparation of a more extensive environmental analysis for site specific actions that 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 and burro use. Grazing can have a negative impact on streams and riparian vegetation. When not managed properly, livestock can remain in riparian areas damaging stream banks, over grazing riparian vegetation, compacting soils, and contaminating streams with waste and sedimentation. 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. These non-

native plant species may out-compete native species, altering the natural ecosystem. The No Action Alternative would adversely impact riparian resources within the CCD.

3.3.7 WATER QUALITY

AFFECTED ENVIRONMENT

The US Geological Survey (USGS) has divided and subdivided the US into successively smaller hydrologic units which are classified into six levels: regions (largest), sub-regions, accounting units, cataloging units, sub-basins, watersheds, and sub-watersheds. These hydrographic regions are geographic areas drained by a single major stream or an area consisting of a drainage system comprised of streams and often natural or man-made lakes. The hydrologic regions contained or touched by the CCD include the Truckee River Basin, Carson River Basin, Walker River Basin, Northwest Region, West Central Region, Central Region and Black Rock Desert Region.

Water resources on the CCD mainly consist of upland spring and seep sources. A few creeks and streams (less than 25 acre feet annual flow) are tributaries to larger bodies of water or groundwater aquifers. The CCD is a prime area of interest for surface water quality because of tremendous population growth. Surface water quality is an important issue as federal, State, and local agencies attempt to supply water to growing communities. Furthermore, protection of sensitive surface water resources from contaminants brought on by increased development and use is necessary.

The Clean Water Act requires that federal actions comply with State water quality standards and do not impair surface or ground waters. Standards are established in relation to the beneficial use provided, such as human consumption, irrigation, fisheries, livestock or recreation. The natural quality and composition of water is driven by soil interactions, transported solids, rocks, vegetation, groundwater and the atmosphere.

Additionally, the Clean Water Act's anti-degradation policy is addressed in the 303(d) list to ensure maintenance of high quality waters. Standards for toxic materials (NAC 445A.123 to 445A.127) apply to designated waters and waters such as the Truckee, Carson, and Walker Rivers (445A.145 to 445A.225). For California, the combined 305(b) and 303(d) report is called the California 303(d)/305(b) Integrated Report. Measurements to evaluate protection and restoration efforts are carried out by the Surface Water Ambient Monitoring Program (SWAMP). SWAMP implements the Lahontan Basin Plan, covering lands within the CCD, and the California Toxics Rule established under the California Water Code (Article 3 174-188.5). SWAMP determines compliance with chemical and physical water quality objectives, and develops indices of biological integrity. The Lahontan Region, which is the second largest Water Board region in California, spans eastern California from the Oregon border to the Mojave Desert. Total daily maximum loads (TDMLs) incorporated into Lahontan Water Board's Basin Plan include Revised Sodium-Related Standards for the Carson and Walker River Watersheds and Truckee River Sediment TDML (Agency, 2008). California's 2008-2010 lists of water quality limited segments still requiring a TDML report includes the East Fork of the Carson River for Total Dissolved Solids.

Both States focus efforts on their most important water bodies, such as municipal water supplies and critical wildlife habitats. They do not have the capability to designate uses and establish specific standards for every water body; especially in the uplands (BLM managed lands). For example, many of the water bodies that concern the BLM during rangeland health evaluations are small, remote springs, seeps, and creeks that do not have designated uses or specific standards. The isolated springs and seeps within the CCD draw from general narrative standards, of visual and olfactory senses within the

Standards and Guidelines for Rangeland Health Assessment (RHA). RHAs point toward NAC 445A relative to the area being assessed. With consideration to what is present on the landscape, narratives mostly apply within the CCD.

Unique factors that affect water quality in the CCD include:

- Locally high concentrations of pollutants; i.e. boron, arsenic, lead, mercury, and other heavy metals from Historic milling sites;
- Evaporative concentration in desert environments, and
- Volcanic and geothermal sources.

Within the CCD uplands, nonpoint source impacts potentially result from transportation corridors (railways and roads), urban runoff and construction-related impacts from rapid land development, recreation developments (authorized and unauthorized), livestock grazing, use of herbicides for weed control, numerous abandoned mines, septic systems, and wildland fires. Sedimentation resulting from hydro-modification activities, such as reservoir management or irrigation, is also a concern, as are impacts on wetlands and riparian areas from fill or channelization.

Indicators of water quality within the CCD come from narrative accounts included in signed Standards and Guidelines (S&G) determinations. Based on 29 signed S&G determinations that had enough surface water to observe water quality, 80% are meeting water quality standards. The documents noted that there were no visual signs, odors, or other indications that water quality was being impaired. The remaining 20% were not meeting water quality standards for various reasons. No class or designated waters were located within these grazing allotments.

ENVIRONMENTAL CONSEQUENCES

1. Environmental Consequences of the Proposed Action on Water Quality

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 CCD. It is expected that livestock and wild horses and burros 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. As livestock and/or wild horse and burro use of riparian areas increases, the probability of disease-causing organisms contaminating human water supplies increases (Belsky 1999). Increased animal waste associated with riparian grazing also introduces nutrients to aquatic systems and reduces palatability (Willms, et al., 2002), this could increase the food base for the aquatic system and if excessive, could lead to large algae blooms and subsequent decomposition. This could lead to low dissolved oxygen concentrations and endanger aquatic organisms (Belsky 1999).

The concentrated use of preferred areas in the landscape results in uneven distribution of animal impact, drought compounds the effects of herbivory, providing periods of accelerated deterioration (Teague et al. 2004). This could lead to an increase in sedimentation and a reduction in overall water quality.

The DRAs described in the Proposed Action are designed to limit the time livestock and/or wild horses and burros spend in riparian areas. Depending on the action(s) selected, livestock may be excluded from riparian areas during times of drought. The reduction of time or complete exclusion of livestock and/or wild horses and burros from riparian areas would reduce fecal deposition and ensure grazing use does not exceed drought response triggers (i.e., maintain a 4-inch stubble height). Clary and Leininger (2000) found that 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. Adhering to drought response triggers and implementing the DRAs would have a positive effect on water quality.

2. Environmental Consequences of the Grazing Closure Alternative on Water Quality

The Grazing Closure Alternative would close all drought-afflicted allotments to grazing. The closure would remove livestock grazing from the public lands to eliminate the impacts of grazing during the drought and provide one growing season of rest for plant recovery following the cessation of the drought. Rest of these areas would allow riparian vegetation the ability 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. No new animal waste would be deposited in or near water, which would eliminate the introduction of bacterial contamination. The Grazing Closure Alternative would have a positive effect on water quality.

3. Environmental Consequences of the No Action Alternative on Water Quality

The No Action Alternative would require the preparation of a more extensive environmental analysis for site specific actions that 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 on water quality could be compounded by improper livestock and wild horse and burro use. As stated earlier, the concentrated use of riparian areas is exacerbated during drought. This would lead to the increased use of riparian areas by livestock and/or wild horses and burros. The result would be an increase in the introduction of animal wastes, a decrease in vegetative cover and increased erosion. A reduction in water quality would occur and may be long lasting depending on erosion and sedimentation rates.

3.3.8 GRAZING MANAGEMENT

AFFECTED ENVIRONMENT

There are currently 111 allotments and 52 permittees on the CCD, which are authorized to graze livestock across 4.8 million acres of public land. These allotments vary in size from 120 to 512,449 acres, with grazing allocations ranging from 29 to 11,410 AUMs in each allotment. There are 34 allotments that are currently closed to grazing for wildlife, voluntary relinquishment, base property issues or other reasons.

In addition, the CCD has Memorandums of Understanding (MOUs) with other Districts that establish our management of their grazing allotments, or vice versa. New Pass, Porter Canyon, South Smith Creek and a portion of Boyer Ranch Allotments are within the Battle Mountain District; however they are managed by the Stillwater Field Office. Hole in the Wall and Rochester Common Allotments are within the Winnemucca District, with management provided by the SWFO.

Grazing within the CCD occurs throughout the year, with much of the use concentrated during winter and spring months. Summer use allotments are commonly found at higher elevations, while winter use allotments are primarily located in lower elevations associated with an arid climate.

Most allotments in the CCD contain portions that are only slightly used or not used at all by livestock due to topography, distance from water, limitations caused by natural barriers, or for other reasons. In addition to livestock grazing, multiple range improvements (e.g., fences and wells) have been authorized

on the public lands administered by the CCD. These range improvements have been constructed to aid in the control of livestock and improve grazing management.

ENVIRONMENTAL CONSEQUENCES

1. Environmental Consequences of the Proposed Action on Grazing Management

The Proposed Action would result in an increase in grazing management practices on allotments occurring within drought-afflicted areas of the CCD. Depending on the DRAs selected, grazing management would be modified. This would lead to increased inputs of time, energy, and monetary expenditures from permittees. The consequences of these inputs have been analyzed within the Socio-Economic Values section of this document. Implementation of drought gathers to remove wild horses or burros 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 on Grazing Management

The Grazing Closure Alternative would require the removal of livestock from the drought afflicted public lands within the CCD. The removal of livestock would result in the elimination of grazing management on public lands for the duration of the drought. If no livestock were being grazed on public land, no grazing management would be needed as none would be authorized during this time frame. 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 allotments for the duration of the drought and one additional growing season following the cessation of the drought. 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 on Grazing Management

Under the No Action Alternative, management responses to drought would require the preparation of a more extensive environmental analysis for site specific actions that would delay drought response times. This would increase response time 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 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 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. Any wild horse or burro gathers would continue to be coordinated with the Nevada State Office and Washington Office to determine if there is funding and holding facility capacity for gathering excess horses taking into consideration the condition of the range and the wild horses and burros.

3.3.9 LAND USE AUTHORIZATIONS

AFFECTED ENVIRONMENT

The BLM administers the majority of the land within the CCD and provides for land use authorizations including utility lines, water pipelines, access roads, temporary use permits, public purpose leases, airport leases, wind energy monitoring towers and communication use leases located on mountaintops. Surface land ownership within the CCD is summarized in the Table 8 below.

Table 8 - Surface Land Ownership in the Carson City District

Land Status	Acres
BLM	4,805,862
Private	1,517,253
State of Nevada and California	42,679
Other federal (Tribal, Bureau of Reclamation, National Wildlife Refuge, U.S. Forest Service (USFS), and other BLM)	2,278,570
Other	43,794
Water	252,786
Total	8,940,944

There is a large acreage of public land within the urban interface of the Sierra Front Field Office. The urban areas of Reno/Sparks, Carson City and Gardnerville/Minden have experienced significant growth over the past 10-15 years. Although the growth rate has declined in the past few years, the demands on the public lands remain. The local communities expect public lands to be made available for future commercial and residential development, infrastructure, schools, flood protection, parks and open space among other things. Some of the demands have been met through the sale of land with commercial and residential development potential, acquisition of environmentally sensitive lands, leasing or conveying lands under the Recreation and Public Purposes (R&PP) Act for schools, parks and other public purposes.

ENVIRONMENTAL CONSEQUENCES

1. Environmental Consequences of the Proposed Action on Land Use Authorizations

The Proposed Action would reduce the impacts of authorized uses and activities on natural resources that are at risk of being adversely affected by drought. The DDMP identified in the Proposed Action would provide for the early detection and prompt response to drought. A quick response to drought would prevent further degradation to affected resources within the CCD.

The maintenance of rangeland health would reduce soil erosion and the potential for noxious weed invasion. This would have a positive impact on land use authorizations by reducing the maintenance cost of right-of-ways as well as protect access to sites or the sites themselves.

2. Environmental Consequences of the Grazing Closure Alternative on Land Use Authorizations

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.

3. Environmental Consequences of the No Action Alternative on Land Use Authorizations

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 and burro management actions 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. Noxious weeds and non-native invasive species are more likely to invade areas that are in poor condition. Noxious weeds increase the costs for maintenance and soil erosion could damage access to sites or the sites themselves; therefore, the No Action Alternative would negatively impact land use authorizations.

3.3.10 RECREATION

AFFECTED ENVIRONMENT

The CCD offers a wide variety of dispersed recreation opportunities. The CCD manages developed and undeveloped recreational areas consisting of trailheads, campgrounds, interpretive sites, and fishing/floating access sites. Some of the trailheads are day-use only while others allow camping. There are two Recreation Use Permit fee campgrounds; and one Individual Special Recreation Permit (SRP) site (Sand Mountain Recreation Area). The recreation sites provide excellent opportunities for activities such as camping, hiking, backpacking, horseback riding, wildlife viewing, and sightseeing, OHV touring, fishing, hunting, and floating.

By definition, dispersed recreation is made up of small events distributed over large areas. Impacts, such as minor disturbances to soil and vegetation, are negligible and the environment tends to recovery quickly. However, long-term cumulative impacts do occur in association with dispersed recreational activities. They are normally, but not exclusively, linked to heavily used areas and can include soil compaction and erosion, noxious weed dispersal, the creation of unauthorized two-track, single track and non-motorized trails as well as the purposeful vandalism of natural and cultural resources. Over time, recreational activities can adversely affect sensitive soils, wildlife habitat, riparian areas and important cultural and historical sites. Dispersed OHV use, both authorized and unauthorized, has affected areas in the majority of the CCD.

Within the SFFO urban interface demands on recreation resources and public lands are significant. Constant community based recreation use places tremendous daily pressure on the resources, BLM staff and the communities to provide quality outdoor recreation experiences to the local public. Community based recreation users expect public lands to provide daily recreation opportunities consistently throughout the year regardless of resource damage or user conflicts.

Existing facilities, including trailhead access to public lands, maintenance and public information, generally do not meet the needs of the recreating public within the CCD. This typically results in user created social trails or staging areas that account for the proliferation of new user defined recreation opportunities in areas that may not normally be impacted.

SRP activities define the primary function of the CCD recreation program. The CCD administers over fifty commercial and competitive permits. These single and multiple event permits generally include OHV races and tours, horse endurance rides, dog trials, vendors, back country touring and outfitters and guides. Counties generally support and encourage these events as they provide economic benefits to the surrounding communities.

Individual SRPs are only issued at Sand Mountain Recreation Area for camping and use of the recreation area primarily by OHV enthusiast.

Recreational Use Permits are issued to individuals or groups for short term recreational use at the Indian Creek Campground near Markleeville, California and Sportsman's Beach Campground at Walker Lake.

Outfitter and Guide permits are issued at the District level for a period of 10 years with the requirement for annual validation. The CCD manages approximately 10 guide permits annually.

ENVIRONMENTAL CONSEQUENCES

1. Environmental Consequences of the Proposed Action on Recreation

The Proposed Action would have a minimal negative impact on recreation within the CCD due to the installation of temporary water sources and fencing (e.g., temporary water hauls, and fencing). These installations could affect the aesthetics of rangeland and riparian resources within the CCD, and depending on location, could limit access to areas used for recreation.

Changes in 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 the kind or class of livestock) under the Proposed Action would have a minimal positive impact on recreation within the CCD. Recreation within the CCD is dispersed and primitive in nature and livestock grazing occurs in areas that coincide with recreational use. Some recreation areas could see a reduction in interactions with livestock in these areas.

As water hauls are needed, some of these sites would likely be located near roads (see Proposed Action discussion above) which would allow for wild horses and burros to concentrate near these sites. This would allow for public access to view the wild horses and burros on public lands.

Wild horse and burro gathers under the proposed action could have a negative impact on wild horse and burro viewing within the CCD. In recent years, there has been an increased interest in wild horses and wild horse viewing within the CCD. If gathers are implemented under drought conditions, this could reduce opportunities to view wild horses and burros within the CCD in the short-term. Implementation of the Proposed Action would provide for the viewing of healthy wild horses and burros in future years.

2. Environmental Consequences of the Grazing Closure Alternative on Recreation

The Grazing Closure Alternative would have a positive impact on recreation within the CCD. Recreation within the CCD is dispersed and primitive in nature and livestock grazing occurs in areas that coincide with recreational use. Removing livestock from the range would reduce the potential for conflicts between livestock and the recreating public. Additionally, safety would improve as the potential for collisions between vehicles and livestock would be eliminated. These benefits would last for the duration of the drought plus one growing season following the cessation of the drought.

3. Environmental Consequences of the No Action Alternative on Recreation

The No Action Alternative would negatively impact recreation within the CCD. Under drought conditions, livestock, wild horses and burros would congregate in areas that receive a higher abundance of moisture, especially riparian areas. Some of these riparian areas could be used by recreationists. Potential negative impacts include the degradation of rangeland and riparian resources. Degradation could include, but is not limited to, vegetation trampling, soil compaction, erosion, and water contamination.

3.3.11 *SOCIO-ECONOMIC VALUES*

AFFECTED ENVIRONMENT

The CCD is responsible for the management and stewardship of approximately 4.8 million surface acres of BLM-administered lands within the CCD. The CCD includes all or portions of Churchill, Douglas, Lyon, Mineral, Nye, Storey, Washoe and Carson City Counties, Nevada and Alpine, Lassen and Plumas Counties, California. The CCD is comprised of two field offices. The SFFO comprises the small portions of the California counties that are within the CCD as well as Carson City, Washoe Douglas, Lyon, and Storey counties. The SFFO contains the majority of the population in the CCD and has fewer acres of public lands. The SWFO in the eastern portion of the CCD comprises Churchill and Mineral counties and a portion of Nye County. In the SWFO, population density is lower, and public lands represent a larger portion of total acres in the county.

The 4.8 million acres of BLM-administered land in the CCD includes a diverse range of natural landscapes and unique social and economic conditions, ranging from wildland-urban interface, grazing lands, and mining towns to rural communities and large expanses of federally managed land. Approximately 0.9% of all employment within the District is within the agriculture sector (which includes all forms of agricultural production, including livestock operations) (Headwaters Economics 2012).

Carson City –

The Carson City Consolidated Municipality is located on the western edge of the CCD and is the state capitol of Nevada. Carson City began as a mining town during the Comstock Lode in the 1860s and secured itself as a commercial center after the construction of the Virginia and Truckee Railroad in 1869 (Carson City, Nevada 2012). After experiencing cycles of economic gains and losses from the fluctuating mining industry and the removal of the Railroad in 1950, the economy of Carson City now relies on public administration, education and healthcare, and entertainment and recreation, with almost half of the population employed by these sectors (US Census Bureau 2010). As of 2010, approximately 0.1% of the economy within Carson City County is employed within the agriculture sector (Headwaters Economics 2012).

As of the census of 2010, there were 55,274 people, 21,427 households, and 13,311 families residing in the county. The population density was 382.1 people per square mile. The racial makeup of the county was 85.1% White, 1.4% Black or African American, 2.0% Native American, 2.0% Asian, 0.2% Pacific Islander, 6.6% from other races, and 2.7% from two or more races. The population includes 20.1% of people that self-identify as Hispanic or Latino of any race (US Census Bureau 2010).

There were 21,427 households out of which 26.2% had children under the age of 18 living with them, 44.6% were married couples living together, 12.0% had a female householder with no husband present, and 37.9% were non-families. Approximately 30.4% of all households were made up of individuals. The average household size was 2.41 and the average family size was 3.00. The median age was 41.1 years (US Census Bureau 2010).

The median income for a household in the county was \$52,067. The per capita income for the county was \$27,568. About 9.6% of families and 14.0% of the population were below the poverty line, including 21.6% of those under age 18 and 5.0% of those ages 65 or over (US Census Bureau 2010).

Churchill County –

Churchill County is a rural county that is located in western Nevada. The county seat of Fallon was established in 1908 in conjunction with the development of the Bureau of Reclamation Newlands Irrigation Project. Due to this project, the area developed an economy that is based primarily on agriculture, this tradition continues today (Fallon Convention and Tourism Authority 2012). There is also a strong military presence in the county as Fallon is home to the Naval Air Station Fallon. The Naval Air Station Fallon has a strong economic impact on the surrounding area due to its relatively large size in a sparsely populated area. Approximately 3.5% of the labor force in Churchill County is in the armed forces (US Census Bureau 2010). As of 2010, approximately 3.1% of the economy within Churchill County is employed within the agriculture sector (Headwaters Economics 2012).

As of the census of 2010, there were 24,877 people, 9,671 households, and 6,631 families residing in the county. The population density was 5 people per square mile. The racial makeup of the county was 85.3% White, 1.5% Black or African American, 4.0% Native American, 2.9% Asian, 0.7% Pacific Islander, 2.1% from other races, and 3.5% from two or more races. The population includes 11.5% of people that self-identify as Hispanic or Latino of any race (US Census Bureau 2010).

There were 9,671 households out of which 29.5% had children under the age of 18 living with them, 52.0% were married couples living together, 11.3% had a female householder with no husband present, and 31.4% were non-families. Approximately 25.2% of all households were made up of individuals. The average household size was 2.53 and the average family size was 3.01. The median age was 38.4 years (US Census Bureau 2010).

The median income for a household in the county was \$51,597. The per capita income for the county was \$22,997. About 6.8% of families and 8.8% of the population were below the poverty line, including 7.3% of those under age 18 and 10.4% of those ages 65 or over (US Census Bureau 2010).

Douglas County –

Douglas County is located on the southwestern edge of the CCD, changing in terrain from the shores of Lake Tahoe, over the eastern slope of the Sierra Nevada Mountains, and down into the Carson Valley. Genoa, one of the oldest permanent settlements in Nevada, is located in Douglas County and was established in 1851 as a trading post for wagon trains. Due to fertile soils on the valley floor, Douglas County has some of the most productive agricultural areas in the state and is able to support the population centers of Minden and Gardnerville. Many retirees also come to Douglas County for the scenic values and temperate climate, while many tourists frequent the area for recreation and gaming opportunities (Douglas County, Nevada 2012). These populations support the two largest employment sectors in the area: education and health care and entertainment and recreation (US Census Bureau 2010). As of 2010, approximately 1.0% of the economy within Douglas County is employed within the agriculture sector (Headwaters Economics 2012).

As of the census of 2010, there were 46,997 people, 19,638 households, and 13,519 families residing in the county. The population density was 66.2 people per square mile. The racial makeup of the county was 91.8% White, 0.2% Black or African American, 1.6% Native American, 1.2% Asian, 0.1% Pacific Islander, 2.0% from other races, and 3.1% from two or

more races. The population includes 10.3% of people that self-identify as Hispanic or Latino of any race (US Census Bureau 2010).

There were 19,638 households out of which 24.0% had children under the age of 18 living with them, 55.5% were married couples living together, 8.9% had a female householder with no husband present, and 31.2% were non-families. Approximately 24.0% of all households were made up of individuals. The average household size was 2.38 and the average family size was 2.8. The median age was 46.6 years (US Census Bureau 2010).

The median income for a household in the county was \$60,721. The per capita income for the county was \$35,239. About 5.4% of families and 7.9% of the population were below the poverty line, including 10.8% of those under age 18 and 6.1% of those ages 65 or over (US Census Bureau 2010).

Lyon County –

Lyon County is located in western Nevada, bordering California on its southern edge. It first prospered in the mid-1800s as an agricultural and commercial center to support the booming Comstock Lode. The city of Fernley flourished in the early 1900s as part of the Newlands Reclamation Project that brought water to parts of western Nevada for agriculture. The economy still relies heavily on agriculture, both in rural areas and near the population centers of Fernley and Yerington (City of Fernley, Nevada 2012). Manufacturing and construction are also important employment sectors in Lyon County (US Census Bureau 2010). In the 1950s, the Anaconda Mine opened just west of Yerington, and was the third largest open pit copper mine in the world until it shut down in 1978 (City of Yerington, Nevada 2012). Lyon County has transformed from mostly rural areas to suburban areas as the Northern Nevada region continues to grow. For three out of the past ten years, it has been one of the fastest growing counties in the US (Lyon County, Nevada 2012). As of 2010, approximately 4.3% of the economy within Lyon County is employed within the agriculture sector (Headwaters Economics 2012).

As of the census of 2010, there were 51,980 people, 19,808 households, and 14,137 families residing in the county. The population density was 26 people per square mile. The racial makeup of the county was 88.8% White, 1.0% Black or African American, 2.1% Native American, 1.6% Asian, 0.3% Pacific Islander, 2.6% from other races, and 3.5% from two or more races. The population includes 14.5% of people that self-identify as Hispanic or Latino of any race (US Census Bureau 2010).

There were 19,808 households out of which 29.4% had children under the age of 18 living with them, 55.3% were married couples living together, 10.2% had a female householder with no husband present, and 28.6% were non-families. Approximately 22.1% of all households were made up of individuals. The average household size was 2.61 and the average family size was 3.02. The median age was 39.6 years (US Census Bureau 2010).

The median income for a household in the county was \$48,433. The per capita income for the county was \$21,041. About 8.7% of families and 12.8% of the population were below the poverty line, including 14.9% of those under age 18 and 6.6% of those ages 65 or over (US Census Bureau 2010).

Mineral County -

Mineral County is located in southwestern Nevada, bordering California. The region gained prominence during the 1860s when gold was discovered in Aurora, Nevada. Hawthorne was founded in 1883 in response to the construction of the southern extension of the Virginia and Truckee Railroad. In 1911, Mineral County was annexed from Esmeralda County, and Hawthorne became the county seat. In Mineral County, Hawthorne remains the county seat and is the largest population center in the county. Mining has been historically very important to the area, and there continues to be active mining operations as well as a high potential for future mineral extraction. In 1930, the Naval Ammunition Depot, now called the Hawthorne Army Depot, was established. The depot is used for ammunition storage and maintenance and, at its peak during 1945, employed over 5,600 people (NDEP 2012). Although the current employment levels are much lower and it is now run by a private contractor, the depot remains vital to the economy of Hawthorne and Mineral County. The Marine Corps Mountain Warfare Training Center, located in Bridgeport, California, also utilizes BLM land in Mineral County to perform training exercises. As of 2010, approximately 3.1% of the economy within Mineral County is employed within the agriculture sector (Headwaters Economics 2012).

As of the census of 2010, there were 4,772 people, 2,240 households, and 1,258 families residing in the county. The population density was 1.3 people per square mile. The racial makeup of the county was 80.4% White, 2.3% Black or African American, 9.8% Native American, 2.0% Asian, 0.0% Pacific Islander, 0.3% from other races, and 5.1% from two or more races. The population includes 8.5% of people that self-identify as Hispanic or Latino of any race (US Census Bureau 2010).

There were 2,240 households out of which 18.4% had children under the age of 18 living with them, 39.0% were married couples living together, 11.2% had a female householder with no husband present, and 43.8% were non-families. Approximately 36.7% of all households were made up of individuals. The average household size was 2.11 and the average family size was 2.7. The median age was 50.6 years (US Census Bureau 2010).

The median income for a household in the county was \$35,446. The per capita income for the county was \$23,226. About 11.4% of families and 19.1% of the population were below the poverty line, including 11.0% of those under age 18 and 12.6% of those ages 65 or over (US Census Bureau 2010).

Nye County –

Nye County is located in the southwestern part of the state, and is the third largest county in the contiguous US. The majority of the population lives in Pahrump, a bedroom community for Las Vegas with a population of over 36,000 (US Census Bureau 2012). Over 93 percent of the county is public land, managed mostly by the BLM, U.S. Forest Service (USFS), Department of Energy, and the Department of Defense. Nye County also encompasses part of Death Valley National Park and includes Ash Meadows National Wildlife Refuge. While some of this land is closed to public use for safety and security purposes, there are vast acres of land available for public recreation, including hiking, camping, hunting, and fishing (USFWS 2012). As of 2010, approximately 2.1% of the economy within Nye County is employed within the agriculture sector (Headwaters Economics 2012).

The majority of the land and population in Nye County lies outside of the CCD. Only one percent of Nye County is with the CCD, and the only population center is Gabbs, with a population of 269 people in 2010 (US Census Bureau 2010). The land that does lie within the CCD is largely rural, and it is estimated that less than 1,000 people live in this area. Due to the remote location, attracting tourism and pass through visitor services is a low priority in this area.

As of the census of 2010, there were 43,946 people, 18,032 households, and 11,929 families residing in the county. The population density was 2.4 people per square mile. The racial makeup of the county was 89.3% White, 2.3% Black or African American, 2.3% Native American, 1.3% Asian, 0.1% Pacific Islander, 3.1% from other races, and 1.6% from two or more races. The population includes 13.1% of people that self-identify as Hispanic or Latino of any race (US Census Bureau 2010).

There were 18,032 households out of which 21.0% had children under the age of 18 living with them, 51.5% were married couples living together, 9.3% had a female householder with no husband present, and 33.8% were non-families. Approximately 26.8% of all households were made up of individuals. The average household size was 2.42 and the average family size was 2.9%. The median age was 47.4 years (US Census Bureau 2010).

The median income for a household in the county was \$41,181. The per capita income for the county was \$22,687. About 14.2% of families and 18.9% of the population were below the poverty line, including 27.8% of those under age 18 and 9.8% of those ages 65 or over (US Census Bureau 2010).

Storey County -

Storey County is located in west central Nevada, between Lake Tahoe and Pyramid Lake. It is the second smallest county in Nevada, with a largely rural population. Storey County is home to Virginia City, the epicenter of the Comstock Lode. While the time of economic prosperity was relatively short-lived, the character of the old mining days still lives on in Virginia City. Tourism plays a major role in the economy of Storey County, as does manufacturing and construction. This is primarily due to a \$30 million dollar reconstruction, renovation, and expansion of the historic Virginia and Truckee Railroad. Storey County also contains one of the largest industrial parks in the nation and hopes to continue attracting major businesses to the area (Storey County, Nevada 2012). As of 2010, approximately 0.0% of the economy within Storey County is employed within the agriculture sector (Headwaters Economics 2012).

As of the census of 2010, there were 4,010 people, 1,742 households, and 1,141 families residing in the county. The population density was 15.3 people per square mile. The racial makeup of the county was 91.3% White, 0.0% Black or African American, 1.7% Native American, 0.5% Asian, 0.4% Pacific Islander, 0.0% from other races, and 6.0% from two or more races. The population includes 6.6% of people that self-identify as Hispanic or Latino of any race (US Census Bureau 2010).

There were 1,742 households out of which 19.9% had children under the age of 18 living with them, 53.6% were married couples living together, 7.6% had a female householder with no husband present, and 34.5% were non-families. Approximately 26.0% of all households were made up of individuals. The average household size was 2.3 and the average family size was 2.76. The median age was 46.4 years (US Census Bureau 2010).

The median income for a household in the county was \$61,525. The per capita income for the county was \$31,079. About 0.4% of families and 5.6% of the population were below the poverty line, including 2.6% of those under age 18 and 0.0% of those ages 65 or over (US Census Bureau 2010).

Washoe County -

Washoe County is located in western Nevada, along the eastern slope of the Sierra Nevada mountain range and adjacent to the California border. The county encompasses both rural agricultural regions and bustling metropolitan areas, creating a wide variety of economic sectors and tourism opportunities. The majority of the population and economic activity in the county is based in the Reno-Sparks metropolitan area, which has many casinos, an international airport, the University of Nevada Reno, and contains headquarters for many mining and energy companies (The Chamber, Reno-Sparks-Northern Nevada 2012). In this area, tourism, education, and management and professional services are the main pillars of the economy. Washoe County also contains many acres of agricultural land in the central and northern parts of the county, which plays a smaller role in the economy (US Census Bureau 2010). Though only 34 percent of Washoe County lies within the CCD, this area contains the major population and economic centers. As of 2010, approximately 0.2% of the economy within Washoe County is employed within the agriculture sector (Headwaters Economics 2012).

As of the census of 2010, there were 421,407 people, 163,445 households, and 102,768 families residing in the county. The population density was 66.9 people per square mile. The racial makeup of the county was 79.9% White, 2.4% Black or African American, 1.7% Native American, 5.1% Asian, 0.6% Pacific Islander, 7.2% from other races, and 3.1% from two or more races. The population includes 21.5% of people that self-identify as Hispanic or Latino of any race (US Census Bureau 2010).

There were 163,445 households out of which 28.7% had children under the age of 18 living with them, 45.6% were married couples living together, 11.3% had a female householder with no husband present, and 37.1% were non-families. Approximately 27.2% of all households were made up of individuals. The average household size was 2.55 and the average family size was 3.11. The median age was 36.6 years (US Census Bureau 2010).

The median income for a household in the county was \$55,658. The per capita income for the county was \$29,687. About 8.5% of families and 12.6% of the population were below the poverty line, including 17.0% of those under age 18 and 6.4% of those ages 65 or over (US Census Bureau 2010).

Alpine County –

Alpine County is located in eastern California, just south of Lake Tahoe and bordering Nevada. It is the smallest county in California by both size and population. Alpine County was formed when prospectors and pioneers came to the eastern Sierra looking for silver after the Comstock Lode began in 1859, forming temporary mining towns and producing a sudden spike in population. When very little silver was discovered, most people left, dropping the population to a few hundred people by the 1920s. In the past few decades, however, outdoor recreation and tourism have increased the population and created a new, steady source of economic activity (Alpine County Chamber of Commerce 2012). Less than one percent of the land within Alpine

County is managed by the CCD. The descriptions below describe the entire county, which may not present an accurate representation of the lands comprised by the CCD.

As of 2010, approximately 0.0% of the economy within Alpine County is employed within the agriculture sector (Headwaters Economics 2012). As of the census of 2010, there were 1,175 people, 497 households, and 297 families residing in the county. The population density was 1.6 people per square mile. The racial makeup of the county was 64.5% White, 0.0% Black or African American, 23.6% Native American, 4.1% Asian, 0.0% Pacific Islander, 3.4% from other races, and 4.5% from two or more races. The population includes 5.4% of people that self-identify as Hispanic or Latino of any race (US Census Bureau 2010).

There were 497 households out of which 22.1% had children under the age of 18 living with them, 46.5% were married couples living together, 8.0% had a female householder with no husband present, and 40.2% were non-families. Approximately 29.4% of all households were made up of individuals. The average household size was 2.32 and the average family size was 2.92. The median age was 40.9 years (US Census Bureau 2010).

The median income for a household in the county was \$63,478. The per capita income for the county was \$32,159. About 4.6% of families and 13.1% of the population were below the poverty line, including 14.8% of those under age 18 and 1.7% of those ages 65 or over (US Census Bureau 2010).

Lassen County -

Lassen County is located in northeastern California, north of Lake Tahoe and bordering Washoe County in Nevada. White Americans began passing through the area during the gold rush of 1849 and created a flurry of economic activity until the mineral resource was diminished after a few decades. Once the gold rush was over, lumber became the primary export and economic driver of the area from the early 1900s until early in the 21st century, when the last major timber mill closed down. Utilizing the location in the mountains and the basin and range, the main economic driver of the region is now outdoor recreation and the tourism industry (Lassen County, California 2001). Education and public administration are also significant contributors to the economy, with forestry playing a still-significant but smaller role than in recent years (US Census Bureau 2010). Less than one percent of the land within Lassen County is managed by the CCD. The descriptions below describe the entire county, which may not present an accurate representation of the lands comprised by the CCD.

As of 2010, approximately 5.3% of the economy within Lassen County is employed within the agriculture sector (Headwaters Economics 2012). As of the census of 2010; there were 34,895 people, 10,058 households, and 6,800 families residing in the county. The population density was 7.7 people per square mile. The racial makeup of the county was 71.2% White, 8.5% Black or African American, 3.7% Native American, 1.9% Asian, 0.6% Pacific Islander, 11.8% from other races, and 2.4% from two or more races. The population includes 17.0% of people that self-identify as Hispanic or Latino of any race (US Census Bureau 2010).

There were 10,058 households out of which 29.3% had children under the age of 18 living with them, 51.3% were married couples living together, 10.3% had a female householder with no husband present, and 32.4% were non-families. Approximately 25.6% of all households were

made up of individuals. The average household size was 2.5 and the average family size was 2.98. The median age was 37.2 years (US Census Bureau 2010).

The median income for a household in the county was \$50,317. The per capita income for the county was \$19,756. About 10.5% of families and 14.2% of the population were below the poverty line, including 17.8% of those under age 18 and 8.6% of those ages 65 or over (US Census Bureau 2010).

Plumas County -

Plumas County is located in eastern California, north of Lake Tahoe and south of Lassen County. Multiple forks of the Feather River flow through the county, and were the epicenter of the gold rush that occurred here from the 1850s through the early 1900s. Once the gold supply was depleted and the construction of the Western Pacific Railroad was completed in 1910, timber sales became the largest economic driver in the area (Plumas County, California 2012). While timber still plays a role in today's economy, tourism, construction, and education and health care are the main employment sectors in the county (US Census Bureau 2010). Less than one percent of the land within Plumas County is managed by the CCD. The descriptions below describe the entire county, which may not present an accurate representation of the lands comprised by the CCD.

As of 2010, approximately 1.4% of the economy within Plumas County is employed within the agriculture sector (Headwaters Economics 2012). As of the census of 2010; there were 20,007 people, 8,977 households, and 5,661 families residing in the county. The population density was 7.8 people per square mile. The racial makeup of the county was 91.7% White, 1.1% Black or African American, 2.9% Native American, 0.9% Asian, 0.0% Pacific Islander, 0.9% from other races, and 2.3% from two or more races. The population includes 7.8% of people that self-identify as Hispanic or Latino of any race (US Census Bureau 2010).

There were 8,977 households out of which 20.1% had children under the age of 18 living with them, 50.7% were married couples living together, 8.0% had a female householder with no husband present, and 36.9% were non-families. Approximately 29.8% of all households were made up of individuals. The average household size was 2.20 and the average family size was 2.68. The median age was 48.5 years (US Census Bureau 2010).

The median income for a household in the county was \$44,000. The per capita income for the county was \$28,732. About 8.4% of families and 12.1% of the population were below the poverty line, including 16.9% of those under age 18 and 6.4% of those ages 65 or over (US Census Bureau 2010).

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 CCD 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 burros, and livestock herds. And where carrying capacity is limited by drought conditions, BLM is compelled 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 CCD 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 AUM changes and costs associated installing temporary range improvement projects (i.e., water troughs and 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 CCD 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.

ENVIRONMENTAL CONSEQUENCES

1. Environmental Consequences of the Proposed Action on Socio-Economic Values

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 and burros, 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 many of these 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 CCD, traditions associated with the ranching communities within the CCD would be maintained.

Under the Proposed Action, public lands within the CCD 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], 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 directed in BLM Washington Office (WO) 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 graze livestock on BLM managed 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 CCD 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 CCD 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 CCD. 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, and the BLM would assess a \$4.08/AUM surcharge (BLM WO IM No. 2012-070) if the permittee leases livestock in Nevada and would assess a \$5.58/AUM surcharge (BLM WO IM No. 2012-070) if the permittee leases livestock in California.

If wild horses and burros 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 and burros during drought would prevent additional degradation of rangeland resources thereby promoting rangeland sustainability and providing available forage resource to support wild horse and burro populations in the future.

2. Environmental Consequences of the Grazing Closure Alternative on Socio-Economic Values

Under this alternative, grazing closure of drought afflicted allotments 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 and in California is estimated at \$17.30 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. The CCD currently authorizes permits for livestock grazing totaling 362,869 AUMs. Under this alternative, the projected annual cost to permittees to graze private land may total up to approximately \$5 million (assuming 2012 estimated rates). Additionally, the BLM CCD would not collect up to \$489,873.15 (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 CCD 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 CCD could decline in periods of prolonged drought, potentially affecting their way of life.

Closing drought-afflicted allotments 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 many of these 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 CCD, traditions associated with the ranching communities within the CCD would be maintained.

3. Environmental Consequences of the No Action Alternative on Socio Economic Values

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 and burro management activities would be implemented. The No Action Alternative would require the preparation of a more extensive environmental analysis for site specific actions that would delay drought response times. Without the prompt implementation of management strategies, the effects of drought could be compounded by improper livestock and wild horse and burro use.

Continuation of current livestock and wild horses and burros 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 CCD 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.

3.3.12 *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.

Order 3 soil surveys have been completed for the counties within the CCD. An Order 3 soil survey is one that was created for extensive land uses that do not require precise knowledge of small areas. The soil boundaries are defined by interpretation of remotely sensed data and verified by direct observations. The information obtained from these surveys is used in evaluating land-use potential, potential natural plant communities and developing reclamation and rehabilitation plans. Of the 10 soil orders, most of the soils within the CCD 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 CCD 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 CCD. 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.

ENVIRONMENTAL CONSEQUENCES

1. Environmental Consequences of the Proposed Action on Soils

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 CCD, 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 (Thurrow 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 particles 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 (Thurrow 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 DDMP. The triggers defined in the plan would be used to activate the DRAs described in the Proposed Action. These actions are designed to promote proper utilization of vegetation by livestock and wild horses and burros within the CCD. 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 DDMP referenced in the Proposed Action.

A majority of the DRAs are intended to improve livestock and/or wild horse and burro distribution and prevent the over grazing 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, and partial reduction in AUMs, partial closure of an allotment, and wild horse and burro 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 or electric fences would result in a temporary congregation of livestock and/or wild horses and burros within certain areas (i.e., the immediate area near the improvement). The congregation of livestock and/or wild horses and burros 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 and burros. This would limit the overuse of vegetation by evenly distributing grazing pressure across an 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 and burro use around temporary improvement projects would be monitored. Once the aforementioned utilization triggers are met, livestock and the temporary range improvement projects would be removed from the area. In circumstances where wild horses and burros 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 (including any BLM special status species).

DRA 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 communities dominated by invasive annuals 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 and burro 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 horses and burros needs, temporary AUM reductions may be implemented. DRAs that improve livestock and/or wild horse and burro 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 and burro needs, continuation of pre-drought stocking rates would result in overutilization of plants and an increase in soil erosion.

During wild horse or burro drought gathers, direct impacts such as soil displacement and compaction would occur at trap sites (less than one 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 Appendix 2 for Gather Plan and Standard Operating Procedures [SOPs]).

2. Environmental Consequences of the Grazing Closure Alternative on Soils

The Grazing Closure Alternative would provide rest for all allotments 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 provide one growing season of rest for plant recovery following the cessation of the drought.

DRAs for wild horses and burros 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 on Soils

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 a more extensive environmental analysis for site specific actions that 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 and burro use. The No Action Alternative would negatively impact soils resources within the CCD due to an increased likelihood of erosion, increased sedimentation leading to degraded water quality, and further distance the landscape and vegetation from stable recovery.

3.3.13 VEGETATION (INCLUDING SPECIAL STATUS SPECIES)

AFFECTED ENVIRONMENT

The ecological systems discussed below are those that provide the most important land cover across the CCD. Vegetation can be generally characterized by plant community types (associations). A terrestrial ecological system is defined as a group of plant community types (associations) that tend to co-occur within landscapes with similar ecological processes, substrates, and/or environmental gradients. Based on SynthMap (Peterson E. B., 2008) the CCD can be grouped into vegetation communities. These vegetation communities represent different vegetation and habitat types and potentials.

Sagebrush:

There are several different types of sagebrush systems throughout the CCD. Elevation, amount of precipitation and the type of soil are all important factors on the type of vegetation present. Although some other sites are present throughout this vegetative community, the predominant systems are detailed below.

Great Basin Xeric Mixed Sagebrush Shrubland – This system occurs on dry flats and plains, alluvial fans, rolling hills, rocky hill slopes and saddles, usually at lower elevations between 3,200 and 8,500 feet in elevation. These sites are dry, with vegetation dominated by black sagebrush (*Artemisia nova*), low sagebrush (*Artemisia arbuscula*), and may also have rabbitbrush (*Chrysothamnus sp.*), shadscale (*Atriplex confertifolia*), Mormon tea (*Ephedra spp.*), Spiny hopsage (*Grayia spinosa*), greasewood (*Sarcobatus vermiculatus*), and horsebrush (*Tetradymia spp.*) as shrub components. The grass and forb component is often sparse, and is composed of perennial bunchgrasses such as Indian ricegrass (*Achnatherum hymenoides*), Thurber's needlegrass (*Achnatherum thurberianum*), squirreltail (*Elymus elymoides*) and Sandberg's bluegrass (*Poa secunda*).

Inter-mountain Basins Big Sagebrush Steppe – This is widespread throughout the Great Basin. This system is found at slightly higher elevations, and the soils are typically deep and non-saline, sometimes with a microphytic crust. The shrub-steppe is dominated by perennial grasses and forbs, with basin big sagebrush (*Artemisia tridentata ssp tridentata*), Wyoming big sagebrush (*Artemisia tridentata spp. wyomingensis*), and bitterbrush (*Purshia tridentata*) dominating or co-dominating the shrub component. Other shrub species often present include shadscale (*Atriplex confertifolia*), rabbitbrush (*Chrysothamnus*

sp.), and horsebrush (*Tetradymia spp.*). The native perennial grasses associated with this system include: Indian ricegrass (*Achnatherum hymenoides*), Idaho fescue (*Festuca idahoensis*), Prairie junegrass (*Koeleria macrantha*), Sandberg's bluegrass (*Poa secunda*) and bluebunch wheatgrass (*Pseudoroegneria spicata*). The natural fire regime of this system likely maintained a patchy shrub component, but the shrubs increase with overgrazing or lack of fire.

Inter-Mountain Basins Big Sagebrush Shrubland – This system occurs in broad basins between mountain ranges, usually between 4,900 and 7,500 feet in elevation. The soils are typically deep and well-drained. These shrublands are co-dominated by Basin big sagebrush (*Artemisia tridentata spp. tridentata*) and Wyoming big sagebrush (*Artemisia tridentata spp. tridentata*). There is often a scattered juniper component (*Juniperus spp.*), as well as greasewood (*Sarcobatus vermiculatus*), Atriplex (*Atriplex spp.*) species, rabbitbrush (*Chrysothamnus spp.*), and bitterbrush (*Purshia tridentata*). The grass component is usually about 25% of the vegetative cover, and species include: Indian ricegrass (*Achnatherum hymenoides*), needle and thread grass (*Hesperostipa comata*), Idaho fescue (*Festuca idahoensis*), Basin wildrye (*Leymus cinereus*), Sandberg's bluegrass (*Poa secunda*) and bluebunch wheatgrass (*Pseudoroegneria spicata*).

Intermountain Cold Desert Scrub:

Several different systems are included in the Intermountain Cold Desert Scrub vegetative community; however the most common are detailed below:

Inter-Mountain Basins Semi-Desert Shrub-Steppe – This system occurs at lower elevation on alluvial fans and flats with moderate to deep soils. This system is dominated by grasses, with an open shrub layer. The most typical grasses include Indian ricegrass (*Achnatherum hymenoides*), needle and thread grass (*Hesperostipa comata*), and Sandberg's bluegrass (*Poa secunda*). Shrubs present include fourwing saltbush (*Atriplex canescens*), rabbitbrush (*Chrysothamnus spp.*), Mormon tea (*Ephedra spp.*), and winterfat (*Krascheninnikovia lanata*). Although big sagebrush may be present, it will not be a dominant component of this system. This system is open and spotty, with uneven distribution of vegetation.

Inter-Mountain Basins Mixed Salt Desert Scrub – This system is extensive, and is found in saline basins, alluvial slopes, and plains. This system has very low amounts of annual precipitation, and has very open canopies. Shrub species often present include an Atriplex component, such as shadscale (*Atriplex confertifolia*) or fourwing saltbush (*Atriplex canescens*). Other shrubs present include Wyoming big sagebrush (*Artemisia tridentata spp. wyomingensis*), rabbitbrush (*Chrysothamnus spp.*), Mormon tea (*Ephedra spp.*), spiny hopsage (*Grayia spinosa*), and winterfat (*Krascheninnikovia lanata*). The herbaceous layer varies greatly, being quite sparse in some areas and fairly dense in other areas. Grasses commonly include: Indian ricegrass (*Achnatherum hymenoides*), thickspike wheatgrass (*Elymus lanceolatus ssp. lanceolatus*), western wheatgrass (*Pascopyrum smithii*), and Sandberg's bluegrass (*Poa secunda*).

Inter-Mountain Basins Greasewood Flat – This system occurs on stream terraces and flats or may form rings around more sparsely vegetated playas. The soils are typically saline, with a shallow water table and intermittent flooding. Although these sites dry out during the growing season, the water table remains high enough to maintain vegetation despite the salt accumulations. The shrub canopy is often open to moderately dense, with such shrubs as: greasewood (*Sarcobatus vermiculatus*), fourwing saltbush (*Atriplex canescens*), shadscale (*Atriplex confertifolia*), and winterfat (*Krascheninnikovia lanata*). The grass component includes alkali sacaton (*Sporobolus airoides*), saltgrass (*Distichlis spicata*) and some amount of basin wildrye (*Leymus cinereus*).

Forests and Woodlands:

There are eight distinct forest and woodland types within the CCD. The pinyon-juniper (PJ) woodland community type is a mixture of single leaf pinyon (*Pinus monophylla*) and Utah juniper (*Juniperus osteosperma*) with some pure stands of pinyon and juniper occurring in limited amounts.

Mountain mahogany stands are typically located on rocky, coarse textured soils and occur as either pure stands of curl-leaf mountain mahogany (*Cercocarpus ledifolius*) or transitional stands that are mixed with pine and juniper trees. The groves are seemingly quite old, evidenced by the fact that the trees are fairly large, and this is a slow growing species. Regeneration is limited and as such senescence is occurring in older groves, which diminishes the browse potential of these stands. Often the trees lack leaves to the level that browse species can reach.

Three needled pine type is dominated by a mixture of Jeffrey pine (*Pinus jeffreyi*) and ponderosa pine (*Pinus ponderosa*) or a combination of the two. This community type is found on xeric montane to subalpine regions of the Great Basin and Sierra Nevada. They tend to have a semi-open canopy leaving room for associates incense cedar (*Calocedrus decurrens*), western juniper (*Juniperus occidentalis ssp. Australis*), single leaf pinyon, and white fir (*Abies concolor ssp. lowiana*), as well as common sage steppe shrubs and bunchgrasses.

The riparian deciduous community type is the most dispersed forest and woodland type with stands occurring in all the major mountain ranges within the CCD. These stands are generally found where there is surface water or a shallow water table. Dominant trees include quaking aspen (*Populus tremuloides*) and black poplar (*Populus balsamifera ssp. trichocarpa*) at higher elevations, and Fremont cottonwood (*Populus fremontii*) and pacific willow (*Salix lasiandra*) at lower elevations. There are quaking aspen stands that occupy non-riparian sites but the majority of these stands are found in areas that have more available water than upland forests. Riparian deciduous and aspen dominated stands are a mix of densities and age classes throughout the planning area.

The soft pine type is dominated by western white pine (*Pinus monticola*) and sugar pine (*Pinus lambertiana*) and grows in association with lodgepole pine (*Pinus contorta var. murrayana*) and Jeffrey pine. Both sugar pine and western white pine are highly susceptible to the introduced pathogen blister rust (*Cronartium ribicola*), which often results in rapid mortality once infected.

Dominant tree species in the mixed conifer type include Jeffrey pine, white fir, incense cedar, and to a lesser extent western juniper and single leaf pinyon. The pure fir type is comprised of nearly pure stands of white fir with dense canopies and almost no understory. The limber pine type occupies rocky mountaintop sites exposed to windy conditions and is dominated by a sparse over story of limber pine (*Pinus flexillis*) with a sparse understory of xeric shrubs or cushion plants. Poor growing conditions preclude other trees from inhabiting this zone.

Annual Grasslands:

Approximately 93,118 acres of the CCD has been converted to annual grassland comprised of invasive nonnative species. As dominant native species lose dominance in the ecosystem, nonnative invasive species, such as cheatgrass (*Bromus tectorum*) are provided an avenue to gain dominance in the system (Prevey, Germino, et al. 2010). Cheatgrass then provides a fine fuel with great horizontal continuity that creates different fire behavior than native fuels would. Cheatgrass germinates early in the season, before the majority of native perennials have come out of dormancy. Cheatgrass often becomes established in

the understory of a Sagebrush or Intermountain Cold Desert Scrub system and then gains dominance once a disturbance, such as fire, temporarily eliminates the native over story competition.

Special Assemblages:

Island or Geographically Isolated Perennial Plant Communities—Within the area managed by the CCD there are several island or geographically isolated plant communities that exist within specialized habitats that are distinct from the larger vegetation matrix. Examples of these non-sensitive types of geographically isolated plant species include: limber pine (*Pinus flexilis*), western whitebark pine (*Pinus albicaulis*), white fir (*Abies concolor*) and other species on the Nevada Natural Heritage Program watch list.

Unique Habitats—Unique habitats are distinct from the surrounding vegetation matrix and require management that is different from the broader landscape. Examples of unique habitats are playa lakes, vernal pools, sand dunes, salt marshes, hot springs, cold springs, and vegetation communities dependent upon unique soils. Each of these unique habitats were created by some natural process in the past and rely upon the continuation of these natural processes for maintenance and replenishing of chemical and physical properties that support the vegetation and wildlife found at these unique sites. Many of these sites may harbor BLM special status species and may have management that is specific to these sites. Other sites may be managed as recreation areas, such as Sand Mountain.

BLM Designated Sensitive Plant Species:

The BLM manages, by policy, special status species, which are species listed or proposed for listing under the Endangered Species Act together with species designated as Bureau sensitive by BLM State Directors (BLM Manual 6840). The objectives of the BLM special status species policy are: 1) to conserve and/or recover ESA-listed species and the ecosystems on which they depend so that ESA protections are no longer needed, and 2) to initiate proactive conservation measure that reduce or eliminate threats to sensitive species to minimize the likelihood of and need for listing under the ESA.

Table 9 - BLM Designated Sensitive Plant Species Found in the Carson City District

Common Name	Scientific Name	Known Acres of Habitat
Altered andesite buckwheat	<i>Eriogonum robustum</i>	813
Altered andesite popcornflower	<i>Plagiobothrys glomeratus</i>	unknown
Ames milkvetch	<i>Astragalus pulsiferae</i> var. <i>pulsiferae</i>	unknown
Beatley buckwheat	<i>Eriogonum rosense</i> var. <i>beatleyae</i>	2.8+
Bodie Hills rockcress	<i>Boechera bodiensis</i>	54.1
Brodie Hills draba	<i>Cusickiella quadricostata</i>	unknown
Churchill Narrows buckwheat	<i>Eriogonum diatomaceum</i>	17.9 (based on 2011 survey)
Eastwood milkweed	<i>Asclepias eastwoodiana</i>	unknown
Lahontan beardtongue	<i>Penstemon palmeri</i> var. <i>macranthus</i>	unknown
Lavin milkvetch	<i>Astragalus oophorus</i> var. <i>lavinii</i>	93.7
Margaret rushy milkvetch	<i>Astragalus convallarius</i> var. <i>margaretiae</i>	unknown
Masonic Mountain jewelflower	<i>Streptanthus oliganthus</i>	41.8
Mono County Phacelia	<i>Phacelia monoensis</i>	52.1
Nevada dune beardtongue	<i>Penstemon arenarius</i>	554+

Common Name	Scientific Name	Known Acres of Habitat
Oryctes	<i>Oryctes nevadensis</i>	146+
Pine Nut Mountains mousetails	<i>Ivesia pityocharis</i>	104
Playa phacelia	<i>Phacelia inundata</i>	unknown
Rough dwarf greasebush	<i>Glossopetalon pungens</i> var. <i>pungens</i>	unknown
Sagebrush pygmyleaf	<i>Loeflingia squarrosa</i> ssp. <i>Artemisiarum</i>	5+
Sand cholla	<i>Grusonia pulchella</i>	7.2+
Shevock bristlemoss	<i>Orthotrichum shevockii</i>	unknown
Sierra Valley mousetails	<i>Ivesia aperta</i> var. <i>aperta</i>	11.1
Smooth dwarf greasebush	<i>Glossopetalon pungens</i> var. <i>glabrum</i>	unknown
Sodaville milkvetch	<i>Astragalus lentiginosus</i> var. <i>sesquimetricus</i>	10.1
Steamboat buckwheat	<i>Eriogonum ovalifolium</i> var. <i>williamsiae</i>	51.4
Tahoe yellowcress	<i>Rorripa subumbellata</i>	unknown
Tiehm blazingstar	<i>Mentzelia tiehmii</i>	unknown
Tiehm peppergrass	<i>Stroganowia tiehmii</i>	635
Tonopah milkvetch	<i>Astragalus pseudiodanthus</i>	unknown
Washoe pine	<i>Pinus ponderosa</i> ssp. <i>washoensis</i>	30.1+
Wassuk beardtongue	<i>Penstemon rubicundus</i>	unknown
Webber ivesia	<i>Ivesia webberi</i>	32.1
Williams Combleaf	<i>Polycytenium williamsiae</i>	457+
Windloving buckwheat	<i>Eriogonum anemophilum</i>	108+

ENVIRONMENTAL CONSEQUENCES

1. Environmental Consequences of the Proposed Action on Vegetation

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 CCD. Differences in vegetation communities and the condition of those communities would determine their ability to withstand drought. The Proposed Action defines drought response triggers for each major vegetation community known to occur within the CCD. The utilization triggers 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 CCD.

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 and burros on vegetation including special status species during drought. These actions would be implemented in combination or separately once drought response triggers are met.

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 or electric fences would result in a temporary congregation of livestock and/or wild horses and burros within certain areas (i.e., the immediate area near the improvement) but would improve the overall distribution of livestock and/or wild horses and burros. This would limit the overuse of vegetation by evenly distributing grazing pressure. Livestock and wild horse and burro use around temporary improvement projects would be monitored. Once the utilization triggers are met, livestock and the temporary projects would be removed from the area. In circumstances where wild horses and burros are the primary grazers, conditions would be assessed to determine if an adequate amount of forage and water remain to support the animals. Temporary electric fences would facilitate targeted grazing within communities dominated by invasive annuals plant communities. 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 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 herd 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 (high intensity grazing – more cattle in an area for a shorter period of time) 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, and partial reduction in AUMs, partial or complete closure of an allotment, and wild horse and burro removal from drought afflicted allotments.

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 as well as other resource considerations such as sensitive plant species. In most areas, shifting the season of use to a time that is outside of the critical growth period would allow forage plants and other BLM special status species 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 green up of these invasives before the growing season of desirable perennials and also in the fall when desirable species are dormant.

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 wild horse and burro 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 and burros, temporary AUM reductions could occur. DRAs intended to improve livestock and/or wild horse and burro distribution are only viable when adequate resources exist within an allotment or HMA. A continuation of permitted stocking rates during drought 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 of wild horses and burros could occur. Some disturbance to vegetation as a result of a drought gather would occur localized at 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.

2. Environmental Consequences of the Grazing Closure Alternative on Vegetation

The Grazing Closure Alternative would provide rest for all allotments 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 one growing season of rest for plant recovery following the cessation of the drought.

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 compete with native vegetation. Closing drought-afflicted allotments 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 CCD.

3. Environmental Consequences of the No Action Alternative on Vegetation

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 a more extensive environmental analysis for site specific actions that 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 and burro use. Livestock and wild horse and burro 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 and burro use. The No Action Alternative would negatively impact vegetation resources within the CCD directly affecting the present condition and limiting the ability of vegetation to survive and recover from dry periods in future years. Unsustainable range use by livestock during a drought increases the potential for degradation of the soil and vegetation resources (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.

3.3.14 WILD HORSES AND BURROS

AFFECTED ENVIRONMENT

There are seventeen HMAs in the CCD supporting wild horses and burros and encompass a combined total of 1.4 million acres. Horse Mountain (52,222 acres) and Tule Ridge/Mahogany Flats (4,009 acres) do not support any wild horses or burros but is still HMAs bringing the total HMAs to nineteen. Only the Marietta HMA supports burros (AML is 104, current population estimate is 172). The total horse AML for the CCD is 2,508 with a current population estimate of 2,151 wild horses.

Within the CCD there are seven HMAs that extend beyond the CCD boundary. These HMAs have been assigned a lead District or Agency. The CCD is the lead District for managing the Desatoya and Pilot Mountain HMAs which is shared with the Battle Mountain District.

The Fort Sage HMA is shared with the Susanville District and they have the lead on management of the HMA. The North Stillwater and Augusta HMAs are shared with the Winnemucca District and they have the lead on management of the HMA. The New Pass HMA is shared with the Battle Mountain District and they have the lead on management of the HMA. The Montgomery Pass HMA is shared

with the Humboldt-Toiyabe National Forest, Forest Service and they have the lead on management of the HMA.

Within California and Nevada, the BLM and Forest Service manage approximately 130 HMAs and herd territories (herd territories are the U.S. Forest Service [USFS] equivalent of an HMA). These HMAs and territories have a combined total of approximately 20 million acres. The Forest Service has not established AML's though it is likely that an AML of approximately 2,000 horses and burros would be established on their herd territories. BLM has established a combined total AML for horses in California and Nevada of approximately 13,800 horses and 1,300 burros.

Table 10: Carson City District Wild Horse and Burro Herd Management Area Populations Effective June 2012

HMA	AML	Current #	BLM Acres Carson City ³	Acres Entire HMA ⁴	Lead District
Augusta Mountains	42-71 ¹ 185- 308 ²	42	90,347	178,929	Winnemucca
Clan Alpine	612-979	503	313,122	304,763	Carson City ⁵
Desatoya	73-98 ¹ 127-180 ²	174	23,110	162,962	Carson City
Dogskin	10-15	29	6,871	6,605	Carson City ⁵
Flanigan	80-124	119	16,181	17,362	Carson City ⁵
Fort Sage	36 ⁶	67	2,043	16,138	Susanville
Garfield Flat	83-125	83	135,974	144,118	Carson City ⁵
Granite Peak	11-18	18	3,862	4,052	Carson City ⁵
Horse Mountain	60-118	0	52,222	50,319	Carson City ⁵
Horse Springs	HA status ⁷	0	28,676	25,691	Carson City ⁵
Lahontan	7-10	36	10,446	9,686	Carson City ⁵
Marietta	78-104	144	66,500	66,694	Carson City ⁵
Montgomery Pass		286 ⁸	38,615	207,921	USFS has lead
New Pass	69-90	20	24,699	287,948	Battle Mt.
North Stillwater	49	217	45,773	180,444	Winnemucca
Pah Rah	HA status ⁷	0	7,164	23,514	Carson City ⁵
Pilot Mt.	228-346 ¹ 249-415 ²	402	255,040	481,391	Carson City
Pine Nut Mountains	119-179	293	90,900 ⁹	105,594	Carson City ⁵
South Stillwater	16	9	9,940	9,864	Carson City ⁵
Tule Ridge/ Mahogany Flat	HA status ⁷	0	4,009	4,401	Carson City ⁵
Wassuk	109-165	139	51,742	52,309	Carson City ⁵

1- AML for the CCD portion of the HMA.
 2- AML for the entire HMA.
 3- Acres used in previous plans were based on original calculations using a compensating polar planimeter. The CRMP did not mention acres, however, Herd Management Area Plans and Capture Plans did.

HMA	AML	Current #	BLM Acres Carson City ³	Acres Entire HMA ⁴	Lead District
<p>4- From GIS, private land is included in the total.</p> <p>5- Entire HMA within Carson City.</p> <p>6- Susanville has lead; AML has not been set through analysis of monitoring data to date.</p> <p>6- HA status means that the area is a Herd Area and not an HMA and that there are no horses.</p> <p>7- All but 35 head were in California; most of the 35 head were on land administered by the USFS.</p> <p>8- The HMA is 90,000 BLM acres the HA is 182,668 acres. The southern portion of this HMA was reverted back to HA status due to checker board land pattern.</p>					

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 or burros. Abundance and productivity of water sources within the HMAs are widely varied. 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 or burros 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.

Wild horses and burros 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 or burros 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 disproportionately impacting foals and lactating mares.

Wild horses and burros 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. Burros are able to utilize brush and other browse and lesser quality forage and maintain better body condition than wild horses during drought conditions. Burros are also able to survive with less water and less frequent visits to water. Therefore, emergency situations in burro HMAs are less likely, but do still occur under severe drought conditions especially when coupled with large numbers of animals.

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 and burros 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 from mid-April through early May. Throughout the CCD, populations increase by 10-22% annually. Burros may foal year-round, yet burro populations may not increase at the same rates as wild horses.

Wild horses usually produce one offspring per year, with an observed or projected annual herd rate of increase between 18 and 25% (Wolfe 1980, L. Eberhardt, A. Majorowicz, and J. Wilcox 1982, Eberhardt 1985, M. Wolfe, L. Ellis, and R. MacMullen 1989, Garrott and Taylor 1990, R. Garrott, D.

Siniff, and L. Eberhardt 1991). Herds with a 20% rate of annual increase will more than double in four years.

Herd rate of increase is influenced by adult survival rate, foaling rate, and foal mortality. Adult horse survival is usually very high, estimated between and 80 and 97%, and may be the key determinant of wild horse population increases (Wolfe 1980, L. Eberhardt, A. Majorowicz, and J. Wilcox 1982, Garrott and Taylor 1990).

Throughout the CCD, there are few predators to control wild horse or burro 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.

Monitoring data is collected annually within HMAs managed by the CCD. During times of drought monitoring is focused on the assessment of forage and water availability for wild horses and burros (see DDMP, Appendix 1). 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 and/or burro use on riparian areas, resource degradation and ultimately the reduced health and/or death of wild horses and burros. When a drought occurs the CCD would collect site-specific data in accordance with the DDMP and consider wild horse and burro population levels and past drought related issues to select appropriate DRAs.

ENVIRONMENTAL CONSEQUENCES

1. Environmental Consequences of the Proposed Action on Wild Horses and Burros

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 or burros. Actions implemented within HMAs would indirectly affect wild horses and burros. Temporary water hauls would improve distribution of livestock and wild horses and burros as well as reduce impacts to drought affected water sources.

Additionally, the DRAs implemented within HMAs would indirectly affect wild horses and burros by reducing competition among wild horses or burros, 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 and burros. 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 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 or burros if necessary to protect for wild horses and burros. These actions implemented either separately or in combination with other DRAs would help ensure that adequate forage and water are available for wild horses, burros and wildlife. Additionally, these DRAs would promote the recovery of rangelands afflicted by drought.

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

2. Wild Horse and Burro Drought Response Actions

Temporary Water Hauls

In order to augment water sources for wild horses or burros 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 within HMAs. Large (500 gallon or larger) water trucks or trailers could 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 botanical and cultural resources inventory. Where possible, supplemental water troughs would be placed on existing wild horse or burro trails to encourage use. All water troughs would be equipped with bird ladders to protect bird species.

Minor soil disturbance would be expected depending upon the number of animals using the water source. No adverse impacts to wild horses or burros 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 reduce the existing population to levels that can be sustained with the existing resources.

Wild Horse and Burro Removal

If it is determined that wild horse and/or burro 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 and burros. 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 and burros.

Helicopter Capture

The BLM has been conducting wild horse and burro gathers since the mid-1970s and has been using helicopters for such gathers since the late 1970s. During this time, methods and procedures have been identified and refined to minimize stress and impacts to wild horses during gather implementation. The gather SOPs in Attachment A of Appendix 2 would be implemented to ensure a safe and humane gather occurs and to minimize

potential stress and injury to wild horses. Various impacts to wild horses as a result of gather activities have been observed. Under the Proposed Action, impacts to wild horses would be both direct and indirect, occurring to both individual animals and the population as a whole.

Since fiscal year 2008, the BLM has removed over 31,680 excess wild horses or burros from the Western States. Of these, gather related 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, according to the Government Accountability Office (GAO-09-77). The 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 public lands. The BLM also avoids gathering wild horses by helicopter during the six weeks prior to and six weeks following the peak of foaling (mid-April to mid-May), therefore the BLM does not normally use a helicopter to gather wild horses between March 1 through June 30, unless emergency conditions exist.

Over the past 35 years, various impacts to wild horses have been observed during gathers. Individual, direct impacts to wild horses include the stress associated with the roundup, capture, sorting, handling, and transportation of the animals. The intensity of these impacts varies by individual animal, and is indicated by behaviors ranging from nervous agitation to physical distress. When being herded to trap site corrals by the helicopter, injuries sustained by wild horses may include bruises, scrapes, or cuts to feet, legs, face, or body from rocks, brush or tree limbs. Rarely wild horses might encounter barbed wire fences and receive wire cuts. These injuries are very rarely fatal and are treated on-site until a veterinarian can examine the animal and determine if additional treatment is indicated. Wild horses are very adaptable animals and assimilate into the environment with new members quite easily. Observations made through completion of gathers indicate that many of the wild horses captured acclimate quickly to the holding corral situation, becoming accustomed to water tanks and hay, as well as human presence. Both the BLM wild horse and burro specialists and the gather contractor and crew are very attentive and sensitive to the needs of foals as well as all wild horses captured during the gathers and ensure that their health, safety and well-being during and after the gather is a focus and priority.

Other injuries may occur after a horse has been captured and is either within the trap site corral, the temporary holding corral, during transport between facilities, or during sorting and handling. Occasionally, horses may sustain a spinal injury or a fractured limb, but based on prior gather statistics serious injuries requiring humane euthanasia are rare. Similar injuries could be sustained if wild horses were captured through bait and/or water trapping, as the animals still need to be sorted, aged, transported, and otherwise handled following their capture. These injuries result from kicks and bites, or from collisions with corral panels or gates.

Once captured, the animals are transported from the trap site to the temporary (or short-term) holding facility where they are sorted as quickly and safely as possible, then moved into large holding pens where they are provided with hay and water. On many gathers, no wild horses are injured or die. On some gathers, due to the temperament of the horses, they are not as calm and there are more injures. Indirect individual impacts are those

which occur to individual wild horses after the initial event. These may include miscarriages in females, increased social displacement, and conflict between males. These impacts, like direct individual impacts, are known to occur intermittently during wild horse gather operations. An example of an indirect individual impact would be the brief 1-2 minute skirmish between males which ends when one male retreats. Injuries typically involve a bite or kick with bruises which do not break the skin. Like direct individual impacts, the frequency of these impacts varies with the population and the individual. Observations following capture indicate that the potential for miscarriages varies, but is more likely 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 potential physical defects. Decisions to humanely euthanize animals in field situations would be made in conformance with BLM policy. BLM Euthanasia Policy IM-2009-041 is used as a guide to determine if animals meet the criteria and should be euthanized (refer to the SOPs in Attachment A of Appendix 2). Animals that are euthanized for non-gather related reasons include those with old injuries (broken or deformed limbs) that cause lameness or prevent the animal from being able to maintain an acceptable body condition (greater than or equal to Body Condition Score [BCS] 3); old animals that have serious dental abnormalities or severely worn teeth and are not expected to maintain an acceptable body condition, and wild horses that have serious physical defects such as club feet, severe limb deformities, limb and dental deformities, or sway back. Some of these conditions have a causal genetic component and the animals should not be returned to the range in order to prevent suffering, as well as to avoid amplifying the incidence of the problem in the population.

During summer gathers, roads and corrals may become dusty, depending upon the soils and specific conditions at the gather area. The COR and PI and the contractor mitigate any potential impacts from dust by slowing speeds on dusty roads and watering down corrals and alleyways. Despite precautions, it is possible for some animals to develop complications from dust inhalation and contract dust pneumonia. This is rare, and usually affects animals that are already weak or otherwise debilitated due to old age or poor body condition. The BLM and the contractor are pro-active in controlling dust in and around the holding facility and the gather corrals to limit the horses' exposure.

During summer gathers, wild horses may travel long distances between water and forage and become more easily dehydrated. The COR and/or PI are continuously at the gather site to monitor weather conditions and health and well-being of the wild horses. Adjustments to gather operations are made as necessary to ensure animal health and safety. If extreme environmental conditions exist (temperature) during this gather, the overall health and well-being of the animals will be monitored and the COR will adjust gather operations as necessary to protect the animals from climatic and gather related health issues. There may be days when gather operations cease based on temperatures. Most summer related concerns can be mitigated by conducting gather activities during the early morning hours when it is cooler and by removing the helicopter pressure from wild horses exhibiting the symptoms of heat fatigue and dehydration until the horses regain their stamina.

A winter gather may result in less stress as the cold and snow may not affect wild horses to the degree that heat and dust might during a summer gather. Wild horses may be able to travel farther and over terrain that is more difficult during the winter, even if snow covers the ground. Water requirements are lower during the winter months, making distress from heat exhaustion extremely rare. By comparison, during summer gathers, wild horses may travel long distances between water and forage and have the potential to become more easily dehydrated. In any case, wild horses are typically in top physical fitness and are able to endure the physical demands of a wild horse gather (whether in winter or summer) better than a domestic horse, regardless of breed due to the requirements of surviving in the wild. Most temperature related issues during a gather can be mitigated by adjusting daily gather times to avoid the extreme hot or cold periods of the day.

Wild horses may be located at higher elevations and denser tree cover during summer months, increasing the difficulty of the gather. Wild horses are often located in lower elevations, in less steep terrain during winter gathers due to snow cover in the higher elevations. Consequently, the horses are closer to the potential gather corrals, and need to maneuver less difficult terrain in many cases. Deep snow cover can increase fatigue and stress during winter gathers. The helicopter pilot, regardless of season, allows horses to travel slowly at their own pace. The BLM or contractor may plow trails in the snow leading to the gather corrals to make it easier for horses to travel to the gather site.

The BLM does not gather wild horses by helicopter -- unless emergency conditions exist -- during the six weeks before or after the peak of foaling (mid-April and mid-May) which correlates to the four month period between March 1 and June 30. It is not uncommon for a very small number of foals to be encountered during any month of the year; however, most are born between mid-April and mid-May. If newborn foals or foals too young to wean are gathered, they are matched up with their mares after being gathered. Fall and winter time-frames are less stressful to foals than summer gathers. Young foals in summer months may be more prone to dehydration and complications from heat stress. Additionally, the handling, sorting and transport can be a stress to the young animals however, the BLM staff on site takes every precaution to assure that the horses are handled and maintained to reduce these concerns.

A few foals may be orphaned during a gather. This can occur if the mare rejects the foal, the foal becomes separated from its mother and cannot be matched up following sorting, the mare dies or must be humanely euthanized during the gather, the foal is ill or weak and needs immediate care that requires removal from the mother, or the mother 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 mother rejected it or died. These foals are usually in poor, unthrifty condition. Every effort is made to provide appropriate care to orphan foals. Gather crew and BLM may provide electrolyte solutions or orphan foals may be fed milk replacer as needed to support their nutritional needs. Orphan foals may be placed in a foster home in order to receive additional care. Despite these efforts, some orphan foals may die or be humanely euthanized as an act of mercy if the prognosis for survival is very poor.

The COR would ensure that the distance animals are brought to the gather site is based on the terrain, environmental conditions, and animal health. With foals, pregnant mares, or horses that are weakened by body condition, age or poor health the appropriate trailing/gather distance will be determined on a case by case basis considering the weakest or smallest animal in the group and the range and environmental conditions present. The maximum gather distance will depend on the specific animal and environmental conditions on the day of the gather, and direct dialogue with the pilot/contractor and COR will take place to provide important information as to horse numbers, number of foals, locations, distance from trap and/or overall animal and/or environmental conditions. The trap locations will be moved closer to horse locations as much as possible to ensure the humane treatment of the animals.

Adherence to the gather SOPs as well as the techniques utilized by the gather contractor minimizes heat stress. Individual animals are monitored and veterinary or supportive care is administered as needed.

Bait or Water Trapping

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 or burros through water trapping. The use of hay or supplement (a.k.a. bait) could also be used to trap animals targeted for removal due to drought conditions. Impacts of this method of removal are similar to impacts of 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 survey has 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.

Trapping involves setting up portable panels around an existing water source or in an active wild horse area, or around a pre-set water or bait source. The portable panels would be set up to allow wild horses to move freely in and out of the corral until they have become habituated to it. When the wild horses freely enter the corral, it is fitted with a gate system. Horses may experience stress as some may be reluctant to enter the corrals for water and other water sources may need to be fenced to entice the animals into the corrals.

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 gathers which would be accomplished in a matter of days. As a result, access to adequate food and water may be delayed for animals affected by drought conditions.

Injuries to wild horses and burros through bait or water trapping are similar to those described for helicopter removals. Animals would not be 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 or burros fighting.

Gathering of the excess horses utilizing bait/water trapping could occur during anytime of the year and extend until the number of animals remaining is in balance with available forage and water. Since the possibility of causing undue stress to young foals from herding is eliminated with bait and water trapping this technique can be safely used at any time of the year.

Wild Horses and Burros Remaining (or Released into the HMAs following complete removal)

Following a wild horse or burro drought gather, deterioration of the range associated with wild horses or burros 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 and burros. Reducing population size would help ensure that the remaining wild horses remain healthy and vigorous, and that the wild horses in the HMA are not at risk of death or suffering as a result of starvation/dehydration due to insufficient forage and/or water as a result of frequent drought conditions.

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 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 or burros may remain on the range following the gather. The wild horses or burros that are not captured may be temporarily disturbed and moved to another area during gather operations. Over the last 20 years, it has been found 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 or burros 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 or burro 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 an emergency drought gather. Justification for a drought gather would be thoroughly documented within a site-specific gather plan and Decision. 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 issued prior to the gather commencing. Depending on the gather objectives, numerous outcomes would be expected. These would range from a complete removal of the entire HMA to removing selected animals from certain areas of an HMA. In some instances an emergency removal could focus on mainly on foals and

lactating mares, often the animals most stressed by drought conditions. Various gather types are discussed below:

Wild horses or burros 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.

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. If it is only necessary to remove animals to low AML genetic health would not be expected to be impacted. Most wild horse herds sampled have high genetic heterozygosity, genetic resources are lost slowly over periods of many generations, and wild horses (and burros) are long-lived with long generation intervals (Singer, 2000). The following scenarios are provided for analysis.

Removal of Animals to a Point below the Low AML

Removal of wild horses and/or burros 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. 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.

In order to safeguard genetic variability of the animals remaining on the range, genetic analysis of the horses and/or burros 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, burros and the 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.

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.

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 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, animals could be re-introduced back into the HMA.

In the case of a complete removal of animals from an HMA and subsequent re-introduction, changes to the genetic makeup of the future herd would be expected. The genetic background of horses re-introduced would likely vary somewhat from the original population, however, they would be excess horses from other HMAs similar to the re-introduced one. If the re-introduced horses came from several HMA, genetic diversity would be increased, which would likely have beneficial effects.

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 recover has occurred. Population controls would not be administered to burros. 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 PZP or similar vaccine/fertility control and released back to the range. Immuno-contraceptive (fertility control) treatments would be conducted in accordance with the approved SOPs (as outlined in Attachment A of Appendix 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).

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:

Table 11 - Fertility Control Efficacy (Effectiveness)

Year 1	Year 2	Year 3	Year 4
Normal	80%	65%	50%

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 a HMA population which would result in some continuing environmental effects by those individuals. 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. Additionally, fertility control treatment could cause breeding and foaling seasons to become “out of sync” with foals born earlier or later in the year, or throughout the year but is generally associated with the timing of the treatment and not the vaccine itself. These effects are based on anecdotal information, and currently undocumented through studies. Research is continuing to document and quantify these effects.

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 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 AML ranges if implemented successfully, with the need to remove few if any wild horses from the range. As a result, few horses would need to be removed that might ultimately be held in Long Term Pastures (LTPs) 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, but not burro herds. Wild horses would be released in a manner 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 excessive departures from natural sex ratios. 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. Additionally, 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 for a post-gather population 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 numbers of horses gathered and removed in future gathers.

It is well documented that wild stallions maintain body condition better than gestating and lactating 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, lactating mares or young mares 3-4 years of age are often very thin with Henneke BCSs 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 LTPs, thus leaving a larger population on the range.

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 health of the studs.

Though this could result in sex ratios with higher than 60% studs, the sex ratio would eventually even-out over the course of time and expedited in the next gather cycle if necessary.

Temporary Holding Facilities during Helicopter Gathers

Wild horses or burros gathered would be transported from the gather corrals (a.k.a. trap sites) to a temporary holding corral 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 or jennies 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 or burros 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 semi-trailers or goose-neck stock trailers.

Vehicles would be inspected by the BLM COR or PI 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 or jennies 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 or burros 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 and burros 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 the horses or burros 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 or burros 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 mares or Jennies may have spontaneous abortions as a result of the stresses of a gather due to their poor physical conditions. 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 and burros have adjusted to their new environment, they are prepared for adoption, grassland pasture facilities or sale (horses only). 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 and burros 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, and 5 feet tall for burros. Applicants are required to provide adequate shelter, feed, and water. The BLM retains title to the horse or burro 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 or burro after an inspection from an official, veterinarian, or other individual approved by the Authorized Officer to ensure humane care, at which point the horse or burro becomes the property of the adopter. Adoptions are conducted in accordance with 43 CFR §4750.

Potential buyers (horses only) 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 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 BCS 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 2011. It is unknown if a similar limitation will be placed on the use of Fiscal Year 2013 appropriated funds.

2. Environmental Consequences of the Grazing Closure Alternative on Wild Horses and Burros

Similar to the Proposed Action, the Grazing Closure Alternative would have indirect impacts to wild horses or burros 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 or burros 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 and burro distribution is good as a result of adequate and dispersed available water. In areas where wild horse or burro populations exceed AML or are concentrated, the beneficial impacts to the range from grazing animals would be lessened, yet drought recovery would be enhanced.

3. Environmental Consequences of the No Action Alternative on Wild Horses and Burros

The No Action Alternative would require the preparation of a more extensive environmental analysis for site specific actions that would delay drought response times and potentially result in a continuation of current management practices, which are often poorly suited to periods of drought.

Implementation of livestock and wild horse and burro drought management actions would be delayed which could result in further 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 or burros.

Wild horse and burro habitat could be affected by concentrated use by livestock and wild horses or burros. Drought affected forage and riparian resources would be more likely to be degraded or irreparably damaged 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.

Competition for the available water and forage between wild horses, and native wildlife would continue and further increase. Wild horses and burros are a long-lived species with documented survival rates exceeding 92%, resulting from little predation and low incidence of disease. 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 or jennies affected most severely. Without implementation of drought management actions, it is likely that many of these animals would suffer from starvation and/or dehydration with high rates of mortality. 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 and burros 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.

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 or burros at greatly reduced levels in the future. As a result, the No Action Alternative would adversely impact the health and wellbeing of wild horses or burros 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 horses or burros 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).

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).

3.3.15 SPECIAL DESIGNATIONS

WILDERNESS

AFFECTED ENVIRONMENT

Wilderness Study Areas (WSAs) are designated by the BLM as having wilderness characteristics worthy of consideration by Congress for permanent Wilderness designation. 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. All noxious weeds and invasive, non-native species treatments within WSAs must be compliant with BLM Handbook H-6330, Management of Wilderness Study Areas. This handbook provides specific policy and procedure for managing public lands under wilderness review. 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 and cultural resources within the WSA.

In 1964, Congress passed the Wilderness Act, which established a national system of lands for the purpose of preserving a representative sample of ecosystems in a natural condition for the benefit of future generations. Until 1976, most lands considered for, and designated as, wilderness were managed by the National Park Service and the USFS. This changed in 1976 with the passage of the FLPMA when Congress directed the BLM to inventory, study, and recommend which public lands under its administration should be designated and managed as wilderness. From 1977 through 1979, the BLM conducted inventories for lands with wilderness characteristics and in November of 1980, BLM designated nine WSAs within the CCD for further review. Between 1980 and 1991, each WSA was analyzed through the NEPA process for suitability for wilderness designation. In 1991, BLM completed a Wilderness Study Report that was submitted to Congress that contained recommendations for wilderness and non-wilderness suitability within each WSA. There are no time limitations placed on Congress to act on these recommendations and Congress has sole authority to designate areas as wilderness or release them from further study.

The CCD administers eight of the nine WSAs; within the CCD. Three WSAs totaling 20,213 acres located within the SFFO (Burbank Canyons, Slinkard [which is also administered by the Bishop FO in California] and the Carson-Iceberg WSA) and five WSAs totaling 511,946 acres located within the SWFO (Clan Alpine Mountains, Stillwater Range, Desatoya Mountains, Job Peak, and Gabbs Valley Range WSAs). The Augusta Mountains WSA lies within three field offices and is managed by the Humboldt River Field Office in the Winnemucca District. Roughly 52% of the WSA falls within the Stillwater Field Office, 20% in the Mount Lewis Field Office, and 28 % in the Humboldt River Field Office. The Carson-Iceberg and the Slinkard WSAs are located in California but are managed by the CCD due to access issues. In 2009, Douglas County, Nevada submitted the Douglas County Conservation Bill to Congress which contained a proposal to designate the Burbank Canyons WSA as a wilderness area.

AREAS OF CRITICAL ENVIRONMENTAL CONCERN

AFFECTED ENVIRONMENT

An Area of Critical Environmental Concern (ACEC) is defined in FLPMA, Public Law 94-579, Section 103(a) as an area within the public lands where special management attention is required to protect and prevent irreparable damage to important historic, cultural, geologic, paleontological, or scenic values, to fish and wildlife resources or other natural systems or processes, or to protect life and safety from natural hazards. BLM prepared regulations for implementing the ACEC provisions of FLPMA. These regulations are found at 43 CFR 1610.7-2.

The ACEC designation is an administrative designation that is accomplished through the land use planning process. It is unique to the BLM in that no other agency uses this form of designation. Nominations for the establishment of an ACEC can be made internally by the BLM or externally by the public or special interest groups and only public lands are included in ACEC boundaries. During the planning process, the BLM evaluates each nominated area to determine if it meets the relevance and importance criteria listed in BLM Manual 1613. It is important to note that to be designated as an ACEC; an area must require special management attention to protect the important and relevant resource values. To be considered a potential ACEC, a nomination must meet one or more of the relevance criteria and the importance criteria listed below:

Relevance Criteria:

1. A significant historic, cultural, or scenic value (including but not limited to rare or sensitive archeological resources and religious or cultural resources important to Native Americans);
2. A fish or wildlife resource (including but not limited to habitat for endangered, sensitive, or threatened species, or habitat essential for maintaining species diversity);
3. A natural process or system (including but not limited to endangered, sensitive, or threatened plant species; rare, endemic, or relict plants or plant communities that are terrestrial, aquatic, or riparian; or rare geological features); and/or
4. A natural hazard (including but not limited to areas of avalanche, dangerous flooding, landslides, unstable soils, seismic activity, or dangerous cliffs). A hazard caused by human action may meet the relevance criteria if it is determined through the RMP process that it has become part of a natural process.

Importance Criteria:

1. Does it have more than locally significant qualities that give it special worth, consequence, meaning, distinctiveness, or cause for concern, especially compared to any similar resource?
2. Does it have qualities or circumstances that make it fragile, sensitive, rare, irreplaceable, exemplary, unique, endangered, threatened, or vulnerable to adverse change?
3. Has it been recognized as warranting protection in order to satisfy national priority concerns or to carry out the mandates of FLPMA?
4. Does it have qualities that warrant highlighting in order to satisfy public or management concerns about safety and public welfare?
5. Does it pose a significant threat to human life and safety or property?

Designation of an ACEC does not automatically prohibit or restrict other uses in the area. The one exception is that a mining plan of operation is required for any proposed mining activity within a designated ACEC.

There are six ACECs totaling 21,712 acres on BLM-administered lands in the CCD. Five ACECs are located within the SFFO; Incandescent Rocks Natural Scenic (Scenic), Steamboat Hot Springs Geyser Basin (unique Geological Feature), Pah Rah High Basin Petroglyph (Cultural), Carson Wandering Skipper (Biological) and Virginia Range Williams Combleaf Habitat Area (Biological) totaling 5,712 acres. The Stewart Valley Fossil Site is a 16,000 acres paleontological site totaling 16,000 acres in the SWFO.

ENVIRONMENTAL CONSEQUENCES

1. Environmental Consequences of the Proposed Action on Special Designations

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

Changes in 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 a beneficial impact on WSAs and ACECs. These actions would allow the rangeland and riparian resources to temporarily recover from the negative impacts of livestock grazing in the special areas. These impacts could include, but are not limited to, vegetation trampling, soil compaction, erosion, and water contamination. These impacts could impair the wilderness characteristics within WSAs and the values and resources in ACECs.

Wild horse and burro removal under the Proposed Action would have a beneficial impact on the rangeland and riparian resources within WSAs and ACECs. Wild horses and burros utilize rangeland and riparian resources within the special areas for forage and water. If unmanaged under drought conditions, this usage could cause negative impacts. Negative impacts could include, but are not limited to, vegetation trampling, soil compaction, erosion, and water contamination. These impacts could impair the wilderness characteristics within WSAs and the values and resources in ACECs.

2. Environmental Consequences of the Grazing Closure Alternative on Special Designations

The grazing closure alternative would positively impact WSAs and ACECs within the CCD. Rangeland and riparian resources within WSAs and ACECs would be allowed to temporarily recover from livestock grazing. This recovery would last for the duration of the drought and one additional growing season following the cessation of the drought. During this period, rangeland and riparian resources within WSAs and ACECs would not be receiving the negative impacts of livestock grazing (e.g., vegetation trampling, soil compaction, erosion, and water contamination).

3. Environmental Consequences of the No Action Alternative on Special Designations

The No Action Alternative would negatively impact the wilderness characteristics of the WSAs and could the values and resources of the ACECs within the CCD. WSAs must meet certain criteria in order

to be studied further for a determination of suitability as wilderness. 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). ACECs were designated due to their significant values, resources, features or natural hazards through relevance criteria. Special management attention is required to protect and prevent irreparable damage. FLPMA requires the BLM to give priority to the protection of ACECs.

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 and the values and resources for which ACECs were designated. During drought conditions, livestock, wild horses, and burros would congregate in areas that receive a higher abundance of moisture, especially riparian areas. Riparian areas that are within WSAs and ACECs could be degraded. This degradation could include, but is not limited to, vegetation trampling, soil compaction, erosion, and water contamination.

4.0 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 (RFFAs) 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 CCD and administered allotments.

4.1 PAST, PRESENT AND REASONABLY FORESEEABLE FUTURE ACTIONS

The Past, Present and Reasonably Foreseeable Future Actions applicable to the assessment area are identified as the following:

Table 12 - 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 and burro 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
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

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.

4.2 EFFECT OF PAST, PRESENT AND REASONABLY FORESEEABLE FUTURE ACTIONS

4.2.1 AIR QUALITY

Cumulative Effects of the Proposed Action on Air Quality

Past, present and RFFAs cumulatively affecting air quality on the CCD have been identified as smoke, ash and debris from wildland fires/prescribed burns, fugitive dust from mining activities and OHV 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 CCD 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 on Air Quality

The cumulative effects of the Grazing Closure Alternative are similar to those of the Proposed Action. However, under this alternative there would be less fugitive dust created on dirt roads as permittees would not be driving to their allotments. Impacts of particulate matter from water haul sites would be limited to those for wild horses and burros.

Cumulative Effects of the No Action Alternative on Air Quality

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 and burro 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.

4.2.2 WILDLIFE (INCLUDING SPECIAL STATUS SPECIES AND MIGRATORY BIRDS)

Cumulative Effects of the Proposed Action on Wildlife

In the short-term, the Proposed Action could positively impact a wide variety of wildlife species mainly as a result of increased water and forage availability. In the long-term, wildlife would also benefit from improved rangeland health conditions.

The Proposed Action 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 on wildlife would be beneficial.

Cumulative Effects of the Grazing Closure Alternative on Wildlife

In the short-term, the Grazing Closure Alternative could positively impact a wide variety of wildlife species mainly as a result of increased water and forage availability. In the long-term, wildlife would also benefit from improved rangeland health conditions.

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.

Cumulative Effects of the No Action Alternative on Wildlife

Under the No Action Alternative, current livestock and wild horses and burros management would continue during drought and would likely lead to the degradation of upland and riparian health. Over the short-term, negative impacts to wildlife include 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. Impacts would likely be considerable for species that depend on surface water and/or riparian areas for portions of their life history.

4.2.3 CULTURAL/HISTORICAL RESOURCES

Cumulative Effects of the Proposed Action on Cultural/Historical Resources

Past, present and RFFAs cumulatively affecting cultural resources on the CCD have been identified as wildland and prescribed fires, recreation/OHV use, general ground disturbing activities and the illegal desecration of evaluated and unevaluated sites. When compared with the previously identified cumulative impacts, the Proposed Action is not expected to contribute to cumulative loss of cultural resources. This is because the DRAs identified in the proposed action are intended to maintain vegetation health and limiting soil erosion. Furthermore, any of the DRAs that have the potential to be ground disturbing (e.g., temporary water hauls and electric fences) would be surveyed for cultural resources prior to implementation. It is expected that the cumulative and incremental effects of the Proposed Action would be beneficial and not significant in respect to cultural and historical resources.

Cumulative Effects of the Grazing Closure Alternative on Cultural/Historical Resources

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

Cumulative Effects of the No Action Alternative on Cultural/Historical Resources

The No Action Alternative would require the preparation of a more extensive and site-specific environmental analysis, which would delay drought response times and result in a continuation of current management practices, which are often poorly suited to drought. 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 and burro use. This may 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. Therefore, the No Action Alternative coupled with past, present and RFFAs known to affect cultural resources would have adverse cumulative impacts on cultural and historical resources.

4.2.4 NATIVE AMERICAN RELIGIOUS CONCERNS

Cumulative Effects of the Proposed Action on Native American Religious Concerns

Past, present and RFFAs cumulatively affecting cultural resources on the CCD have been identified as wildland and prescribed fires, recreation/OHV use, general ground disturbing activities and the illegal desecration of evaluated and unevaluated sites. When compared with the previously identified

cumulative impacts, the Proposed Action is not expected to contribute to cumulative loss of cultural resources. This because the DRAs identified in the proposed action are intended to maintain vegetation health and limiting soil erosion. Furthermore, any of the DRAs that have the potential to be ground disturbing (e.g., temporary water hauls and electric fences) would be surveyed for cultural resources prior to implementation. The placements of such temporary projects are flexible and would avoid any known cultural resources. Any temporary electric fences constructed would be designed in a manner that allows access at all current access points (e.g., trails, roads, etc.). The cumulative loss of cultural resources would be minimized since the BLM would take into account any potential effects prior to the installation of temporary range improvements.

It is expected that the cumulative and incremental effects of the Proposed Action would be beneficial and not significant in respect to Native American Religious Concerns.

Cumulative Effects of the Grazing Closure Alternative on Native American Religious Concerns

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

Cumulative Effects of the No Action Alternative on Native American Religious Concerns

The No Action Alternative would require the preparation of separate environmental analysis, which would delay drought response times and result in a continuation of current management practices, which are often poorly suited to drought. 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 and burro use. This may 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. Edible and medicinal plants may be reduced or eliminated from traditional cultural sites if overgrazing occurs during drought. Riparian areas may experience heavy use by livestock and/or wild horses and burros as upland vegetation dries out and becomes less palatable and water resources become scarce. The delayed implementation of DRAs under the No Action Alternative coupled with past, present and RFFAs known to affect cultural resources would have adverse cumulative impacts on Native American religious concerns.

4.2.5 NOXIOUS WEEDS/INVASIVE NON-NATIVE SPECIES

Cumulative Effects of the Proposed Action on Noxious Weeds/Invasive Non-native Species

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 and not significant in regards to noxious weeds and invasive non-native species.

Cumulative Effects of the Grazing Closure Alternative on Noxious Weeds/Invasive Non-native Species

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 on Noxious Weeds/Invasive Non-native Species

Under the No Action Alternative, current livestock and wild horse and burro 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.

4.2.6 RIPARIAN AREAS AND WETLAND ZONES

Cumulative Effects of the Proposed Action on Riparian Areas and Wetland Zones

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.

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 CCD might continue into the foreseeable future resulting in the potential loss of some riparian habitat.

Cumulative Effects of the Grazing Closure Alternative on Riparian Areas and Wetland Zones

The direct impact of the proposed Action would close drought affected areas to grazing during the period of the drought and provide for one additional growing season 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 an 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.

Cumulative Effects of the No Action Alternative on Riparian Areas and Wetland Zones

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 could 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 North America is expected to increase (Seager *et al.* 2010). Predicted climate change may result in the acceleration of the degradation of the riparian ecosystem.

4.2.7 WATER QUALITY

Cumulative Effects of the Proposed Action on Water Quality

The direct impact of the Proposed Action would be to reduce the impact of grazing on riparian vegetation. This would reduce the rate of loss of riparian vegetation and minimize increases in water temperature, erosion and sedimentation.

Agriculture and mining are not altered by the proposed action. During drought periods, pumping for agriculture and mining could further reduce ground water resources and lower the water table. Agriculture could supplement a reduction in surface water with groundwater. The use of additional amounts of groundwater high in total dissolved solids would increase the deposition of salts in the upper soil zone.

Cumulative Effects of the Grazing Closure Alternative on Water Quality

The Grazing Closure Alternative would allow for the restoration of riparian vegetation reducing erosion, sedimentation and water temperature. Reestablishment of riparian vegetation would help mitigate the adverse impacts of agriculture and mining related run-off. Riparian vegetation acts as a filter and reduces sediment and contaminate loading to streams.

Cumulative Effects of the No Action Alternative on Water Quality

The No Action Alternative would result in a significant decrease in water quality. Sedimentation and water temperatures would increase. The reduction or removal of riparian vegetation would exacerbate the impacts to water quality from agriculture and mining run-off.

4.2.8 GRAZING MANAGEMENT

Cumulative Effects of the Proposed Action on Grazing Management

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 allotments of the CCD. Depending on the DRAs selected, grazing management would be modified. This would lead to increased inputs of time, energy, and monetary expenditures from permittees. The cumulative effects of these inputs have been analyzed within the Socio-Economic Values section of this document.

The degree to which drought impairs the range's potential for future forage production depends on the severity of the drought. The impacts of drought can be exacerbated by 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 on Grazing Management

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 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 on Grazing Management

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 and burro 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.

4.2.9 LAND USE AUTHORIZATIONS

Cumulative Effects of the Proposed Action on Land Use Authorizations

The Proposed Action would provide for the maintenance of rangeland health and reduce soil erosion and the potential for noxious weed invasion. This would beneficially impact land use authorizations by reducing the maintenance cost of right-of-ways as well as protect access to sites or the sites themselves. It is expected that the cumulative and incremental effects of the Proposed Action would be beneficial and not significant in regards to Land Use Authorization.

Cumulative Effects of the Grazing Closure Alternative on Land Use Authorizations

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

Cumulative Effects of the No Action Alternative on Land Use Authorizations

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 and burro 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. Noxious weeds and non-native invasive species are more likely to invade areas that are in poor condition. Noxious weeds increase the costs for maintenance and soil erosion could damage access to sites or the sites themselves. Increased erosion and density of noxious weeds associated with the prolonged degradation of rangeland health that would occur with the No Action Alternative would have a negative effect on Land Use Authorizations.

4.2.10 RECREATION

Cumulative Effects of the Proposed Action on Recreation

In the past, recreation within the CCD has been dispersed and primitive in nature, and presently remains that way. Under the Proposed Action, reasonably foreseeable future actions include a positive impact 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 CCD. Under the proposed action, gathers would be implemented in order to minimize the negative impacts that drought conditions would have on wild horses that are on the range. Wild horse viewers would observe horses that are in better physical condition than if no action is taken, due to fewer horses utilizing scarce resources under drought conditions.

While limited, the CCD does contain riparian resources that are frequently used for recreational purposes. Impacts under the Proposed Action include minimizing the degradation of riparian resources used for recreational purposes. If livestock management actions and wild horse and burro gathers are implemented, riparian resources wouldn't be impacted as heavily as if no action was taken. If drought conditions persisted, this would cause livestock, wild horses, and burros to seek out any remaining water sources in order to survive. This could result in large congregations of animals in riparian areas that are utilized for recreation, causing degradation to the riparian resources. Degradation could include, but is not limited to, vegetation trampling, soil compaction, erosion, and water contamination by wild horses, burros, and/or livestock. These negative impacts would be minimized under the proposed action. Visitors would continue to utilize riparian resources within the CCD for recreational purposes. This would have a positive economic impact on communities within the CCD that rely partly on recreational visitors as a source of income.

Cumulative Effects of the Grazing Closure Alternative on Recreation

Past and current actions within the CCD 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. Livestock would not cause negative impacts that could include, but are not limited to, vegetation trampling, soil compaction, erosion, and water contamination. These impacts would continue for the duration of the drought plus one growing season following the cessation of the drought. These measures would protect rangeland and riparian resources within the CCD, and allow them to remain suitable areas for recreation.

Cumulative Effects of the No Action Alternative on Recreation

In the past, recreation within the CCD has been dispersed and primitive in nature, and presently remains that way. Impacts under the No Action Alternative include reduced wild horse viewing, and a degradation of riparian areas used by recreationists. In recent years, there has been an increased interest in wild horses and wild horse viewing within the CCD. If no action is taken and rangeland and riparian resources deteriorate under drought conditions, this would affect the health of wild horses that are on the range. Wild horse viewers could see horses in malnourished conditions, and could observe horses that are near death or have died due to these conditions. This would have a negative impact on wild horse viewing within the CCD; visitors would become disturbed, and their recreation experience tainted by the conditions. This impact could cause wild horse viewers to search for other wild horse viewing opportunities outside of the CCD.

While limited, the CCD does contain riparian resources that are frequently used for recreational purposes. Reasonably foreseeable future actions under the No Action Alternative would include a degradation of the riparian resources within the CCD. Under the No Action Alternative, changes in livestock management wouldn't be implemented and wild horse and burro gathers wouldn't take place. If drought conditions persisted, this would cause livestock, wild horses, and burros to seek out any remaining water sources in order to survive. This could result in large congregations of animals in

riparian areas that are utilized for recreation, causing degradation to the riparian resource. Degradation could include, but are not limited to, vegetation trampling, soil compaction, erosion, and water contamination. These impacts could cause recreation users to search for other recreation areas outside of the CCD. This would result in a negative economic impact on communities within the CCD that rely partly on recreational visitors as a source of income.

4.2.11 SOCIO-ECONOMIC VALUES

Cumulative Effects of the Proposed Action on Socio-Economic Values

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, wild horses and burros 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 on Socio-Economic Values

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, wild horses and burros 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 on Socio-Economic Values

Under the No Action Alternative, current livestock and wild horses and burros 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 burros 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.

4.2.12 SOILS

Cumulative Effects of the Proposed Action on Soils

Past, present and RFFAs such as historic grazing management, range improvement construction, mining exploration/extraction, wild horse use and burro 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 significant 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 functions. The erosion hazard during drought is increased when prolonged grazing pressure further reduces plant cover (Thurow and Taylor 1999).

The livestock and wild horse and burro 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 with respect to soils.

Cumulative Effects of the Grazing Closure Alternative on Soils

The cumulative effects of the Grazing Closure Alternative would be similar to those of the Proposed Action. During drought conditions, perennial plants may remain dormant and not allow new grass shoots to grow. By not producing new grass shoots the plant cannot produce food in order to maintain the size of its root system. The plant will then reduce the size of its root system, using the energy stored within the roots to sustain it until the next growing season. The reduced root system is not as effective as a soil stabilizer as a healthy, perennial root system. With fewer roots the soil is more venerable to erosion during high wind and water flow events.

Depending on the severity of the drought, annual plants may or may not germinate and grow. Annuals tend to have shallow, thin root systems that may provide some soil protection from low to moderate wind or water flow events. If the drought has not provided enough precipitation for the annual plants, the seeds will not germinate. This will leave only the residual growth and litter from the previous years as soil stabilizers.

Cumulative Effects of the No Action Alternative on Soils

Increases in wind and water erosion are directly/inversely related 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 and burro 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 CCD.

4.2.13 *VEGETATION (INCLUDING SPECIAL STATUS SPECIES)*

Cumulative Effects of the Proposed Action on Vegetation

Past, present and RFFAs brought forward in Table 12 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 and burro 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 on Vegetation

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 on Vegetation

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 environmental analysis, 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.

4.2.14 *WILD HORSES AND BURROS*

Cumulative Effects of the Proposed Action on Wild Horses and Burros

Since 1975, the CCD has been conducting periodic gathers to remove excess wild horses and burros. 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 and burros within primarily, include livestock grazing through the impacts on vegetation condition and availability, as well as water quality and quantity, and drought. Wild horse and burro 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 burros 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.

Currently, the population of the seventeen HMAs supporting wild horses or burros within the CCD is estimated to be approximately 2,151. Several HMAs maintain populations in excess of AML, and maintenance gathers are being proposed for 2013 to remove excess animals. 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. Vegetation and fuels treatments are currently being analyzed and implemented.

Rangeland Health Evaluations (RHE) are 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 horses or burro 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 AML and development of Herd Management Area Plans. 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 or burros 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 and burros would continue to be a component of the public lands, managed within a multiple use concept.

The CCD is in the process of updating and revising Carson City RMP. Actions in these updated plans could include changes to HMA designation or allocation, implementation of SOPs for management of these populations, and identification of tools to use for population control. The RMP Revision process includes involvement with the interested public. Information about this process can be found on the Carson City District's RMP website at: http://www.blm.gov/nv/st/en/fo/carson_city_field.html.

While there is no anticipation that amendments to the Wild Free-Roaming Horses and Burros Act 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.

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 past, present, and reasonably foreseeable future actions, along with the Proposed Action, should provide the best opportunity to maintain stable wild horse and burro 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 horse, burros and wildlife. The actions identified for Livestock and Wild Horses and Burros, 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.

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 HMAs with reduced biological costs due to repeated pregnancies and lactation. Once normal fertility resumes, mares would be healthier which would result in stronger foals more apt to reach their genetic potential and survive adverse conditions.

With implementation of the Proposed Action, excessive use by wild horses or burros 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 or burro 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.

Cumulative Effects of the Grazing Closure Alternative on Wild Horses and Burros

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 quantity 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 or burros, 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 or burros anticipated from this alternative.

Cumulative Effects of the No Action Alternative on Wild Horses and Burros

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 or burros 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 support inadequate resources in relation to the population of animals, emergency conditions for wild horses and burros 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, burro 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 or burros 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.

4.2.15 SPECIAL DESIGNATIONS

Cumulative Effects of the Proposed Action on Special Designations

Past and present actions have allowed for livestock grazing within WSAs and ACECs. Grazing within WSAs must continue in a manner that doesn't cause unnecessary or undue degradation of the lands. ACECs require attention to protect and prevent irreparable damage to the resources and values. Reasonably foreseeable future actions under the Proposed Action include maintaining this standard for livestock grazing within WSAs and ACECs, and preventing the degradation of rangeland and riparian resources within the special areas.

Past and present actions have allowed for wild horses and burros to utilize WSAs as long as that use doesn't degrade wilderness values, and vegetative cover. Reasonably foreseeable future actions under the Proposed Action include maintaining this standard regarding wild horses and burros within WSAs and ACECs, and preventing degradation of wilderness values and vegetative cover within the WSAs and the values and resources in the ACECs. During drought conditions, gathers could be implemented. This would prevent the degradation of wilderness values within WSAs and values and resources in ACECs, and ensure the well-being of wild horses and burros on the range. The removal of wild horses and burros that utilize these special areas would allow for the temporary recovery of rangeland and riparian resources within WSAs and ACECs.

Cumulative Effects of the Grazing Closure Alternative on Special Designations

Past and present actions have allowed for livestock grazing within WSAs and ACECs. Grazing within WSAs must continue in a manner that doesn't cause unnecessary or undue degradation of the lands. ACECs require attention to protect and prevent irreparable damage to the resources and values. Under the Grazing Closure Alternative, grazing wouldn't take place within WSAs and ACECs for the duration of the drought and one additional growing season following the cessation of the drought. Reasonably foreseeable future actions include a temporary recovery of the rangeland and riparian resources within WSAs and ACECs. This recovery would last for the duration of the drought, and one additional growing season following the cessation of the drought.

Cumulative Effects of the No Action Alternative on Special Designations

Past and present actions have allowed for livestock grazing within WSAs and ACECs. Grazing within WSAs must continue in a manner that doesn't cause unnecessary or undue degradation of the lands. ACECs require attention to protect and prevent irreparable damage to the resources and values. Reasonably foreseeable future actions under the No Action Alternative include the unnecessary and undue degradation of lands within WSAs. Under drought conditions, livestock would seek out remaining rangeland and riparian resources, including those within WSAs and ACECs, in order to survive. This utilization could degrade the rangeland and riparian resources. Degradation could include, but is not limited to, vegetation trampling, soil compaction, erosion, and water contamination. This degradation could negatively affect the wilderness values contained within WSAs and the resources and values in ACECs.

Past and present actions have allowed for wild horses and burros to utilize WSAs as long as that use doesn't degrade wilderness values, and vegetative cover. ACECs require attention to protect and prevent irreparable damage to the resources and values. Reasonably foreseeable future actions under the No Action Alternative include a degradation of wilderness values, and vegetative cover within WSAs. Under drought conditions, wild horses and burros would seek out remaining rangeland and riparian resources, including those within WSAs and ACECs, in order to survive. This utilization could degrade the rangeland and riparian resources. Degradation could include, but is not limited to, vegetation trampling, soil compaction, erosion, and water contamination. This degradation could negatively affect the wilderness values contained within WSAs and the resources and values within ACECs.

5.0 PERSONS, GROUPS, AND AGENCIES CONSULTED

5.1 LIST OF PREPARERS

Following is the List of Preparers for the Carson City District Programmatic Drought Management Environmental Assessment.

Bureau of Land Management, Carson City District:

NAME	TITLE	PROJECT EXPERTISE
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Angelica Rose	Planning and Environmental Coordinator	Project Manager, NEPA Compliance, Socio-Economics
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Kathryn Dyer	Rangeland Management Specialist	Grazing Management, Soils, Vegetation
John Axtell	Wild Horse and Burro Specialist	Wild Horses and Burros
Pilar Ziegler	Wildlife Biologist	Wildlife, Migratory Birds, Threatened and Endangered Species, Special Status Species
Jason Wright	Archaeologist	Cultural/Historical Resources, Native American Religious Concerns
Perry Wickham	Realty Specialist	Land Use Authorizations and Access
Brian Buttazoni	Planning and Environmental Coordinator	NEPA Compliance, SFFO
Kelley Sterle	Student Trainee (Hydrology)	Soils, Water Quality, Air Quality & Wetlands/Riparian Zones
Dean Tonenna	Botanist	Noxious Weeds, Invasive non-native species, Vegetation, Special Status Plant Species
Molly Wainwright	Outdoor Recreation Planner	Recreation, Wilderness
Keith Barker	Fire Planner	Fire Management, Vegetation

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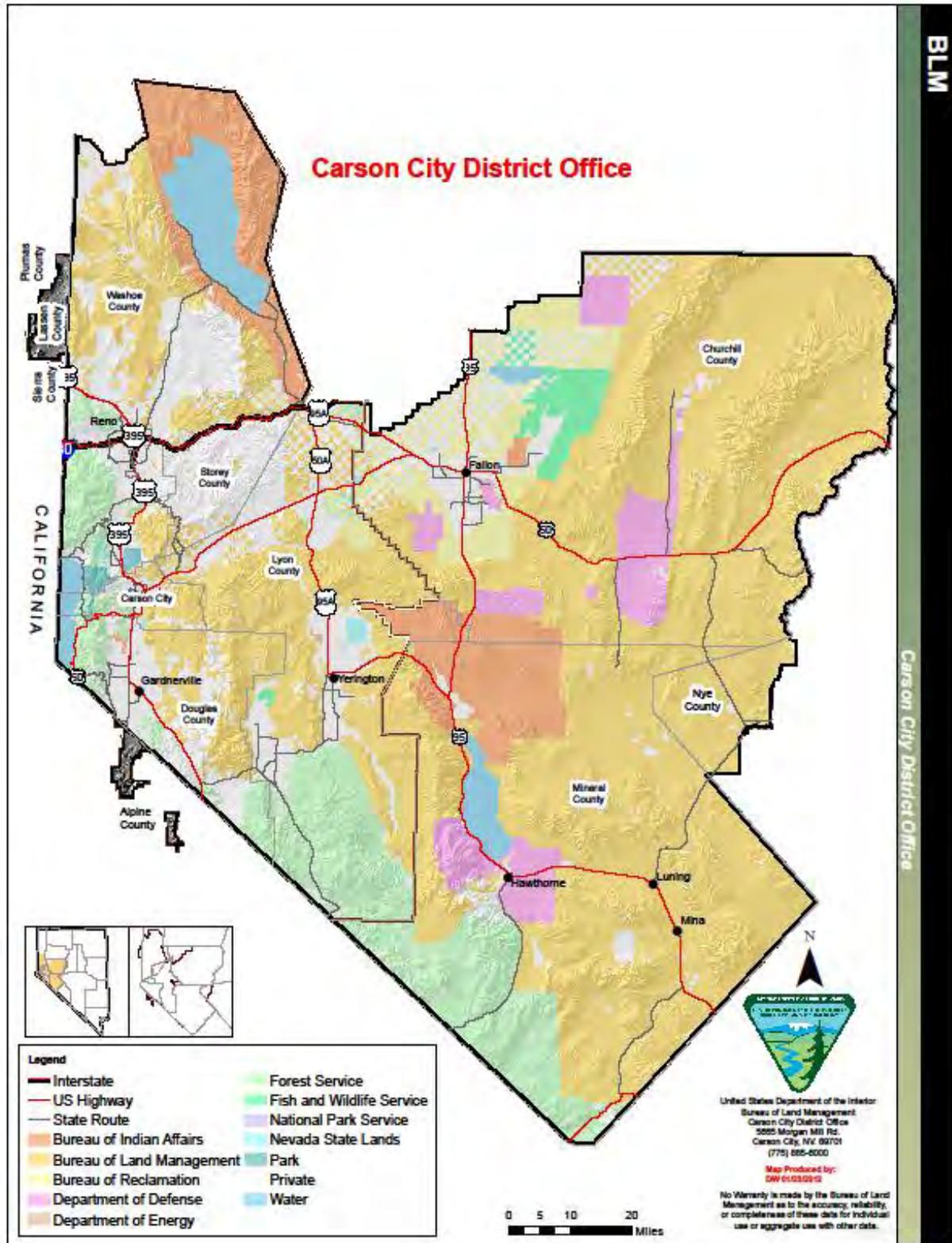
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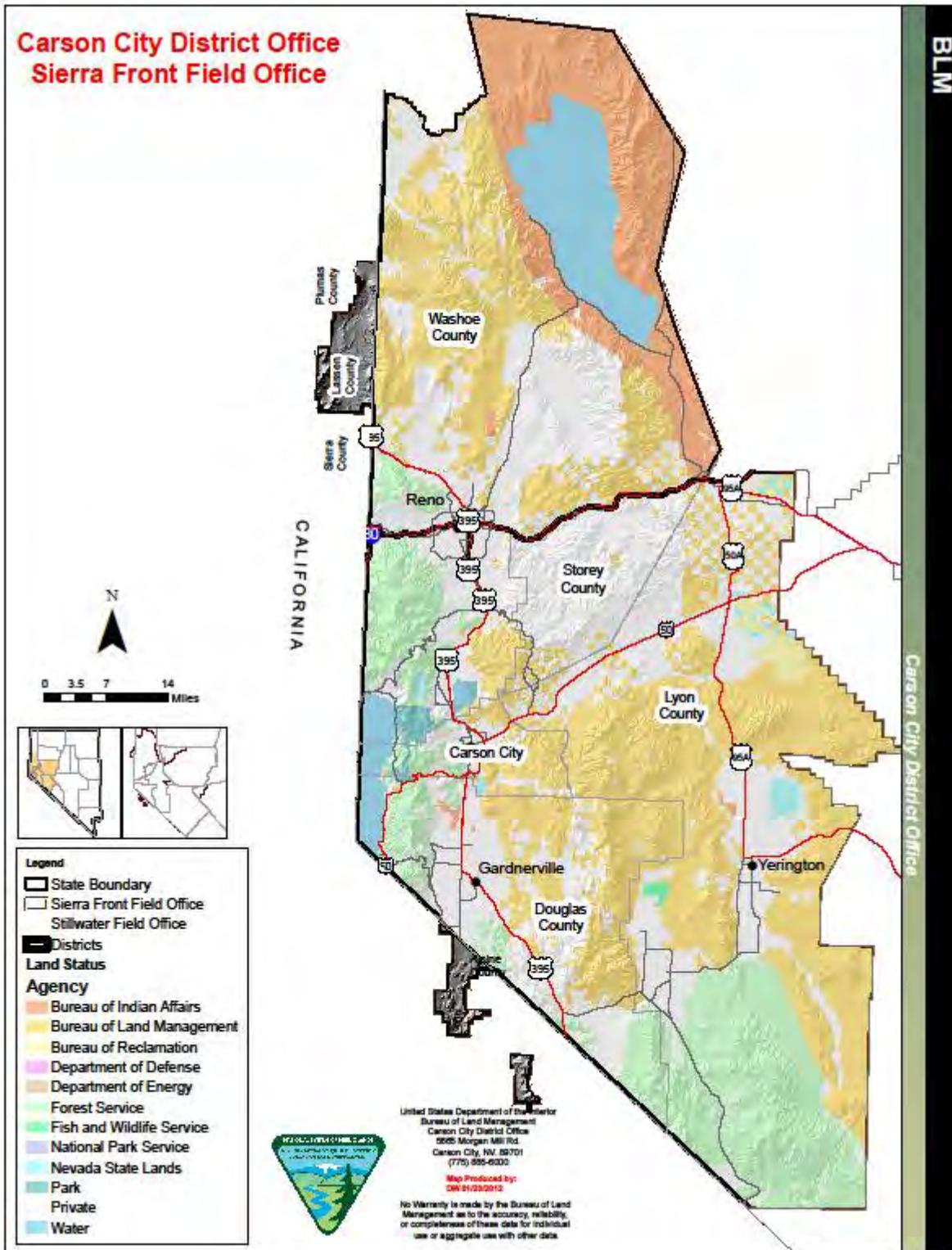
7.0 APPENDICES

CARSON CITY DISTRICT DROUGHT MANAGEMENT
 ENVIRONMENTAL ASSESSMENT DOI-BLM-NV-C000-2013-0001-EA
APPENDIX 1 – MAPS

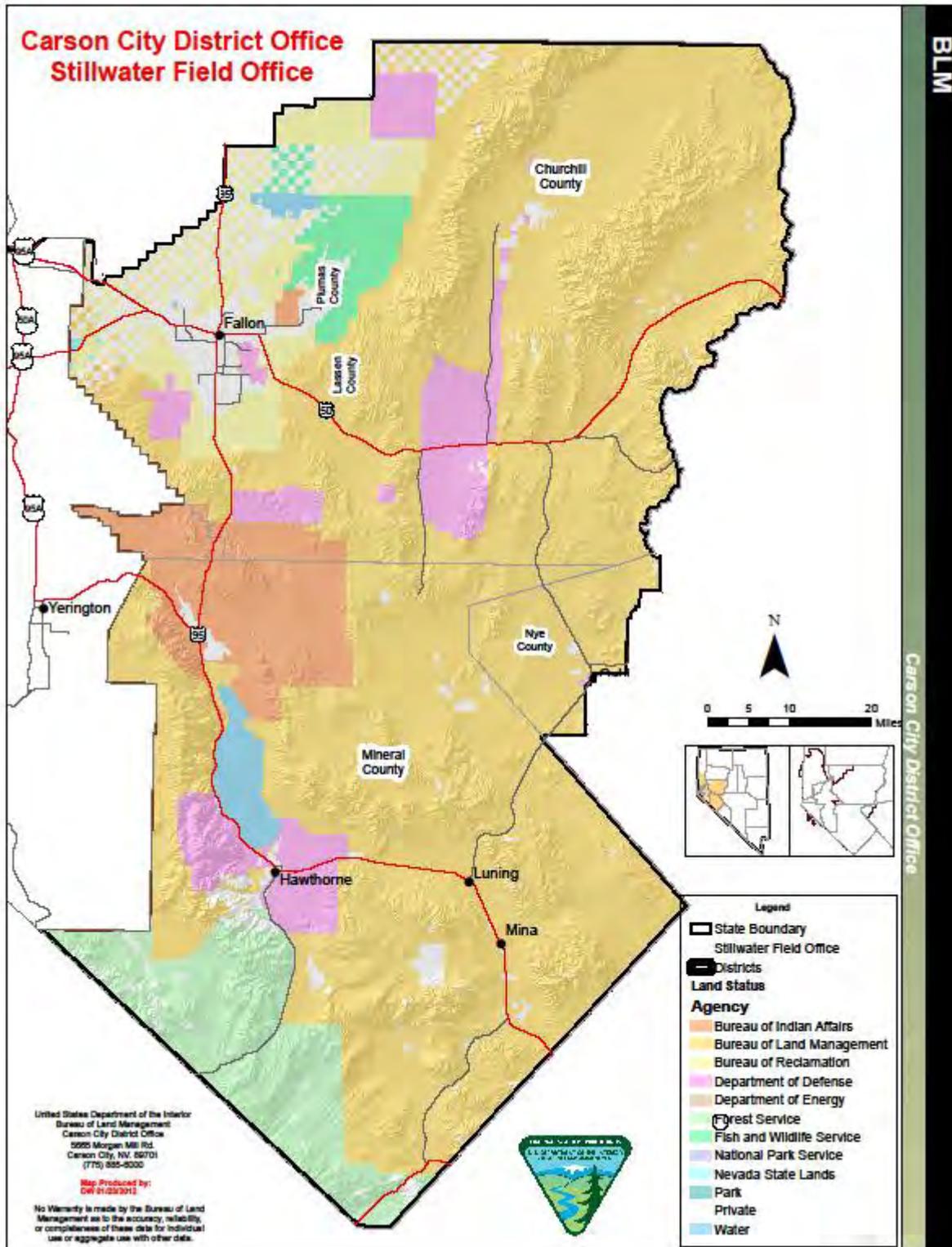
MAP 1 – CARSON CITY DISTRICT



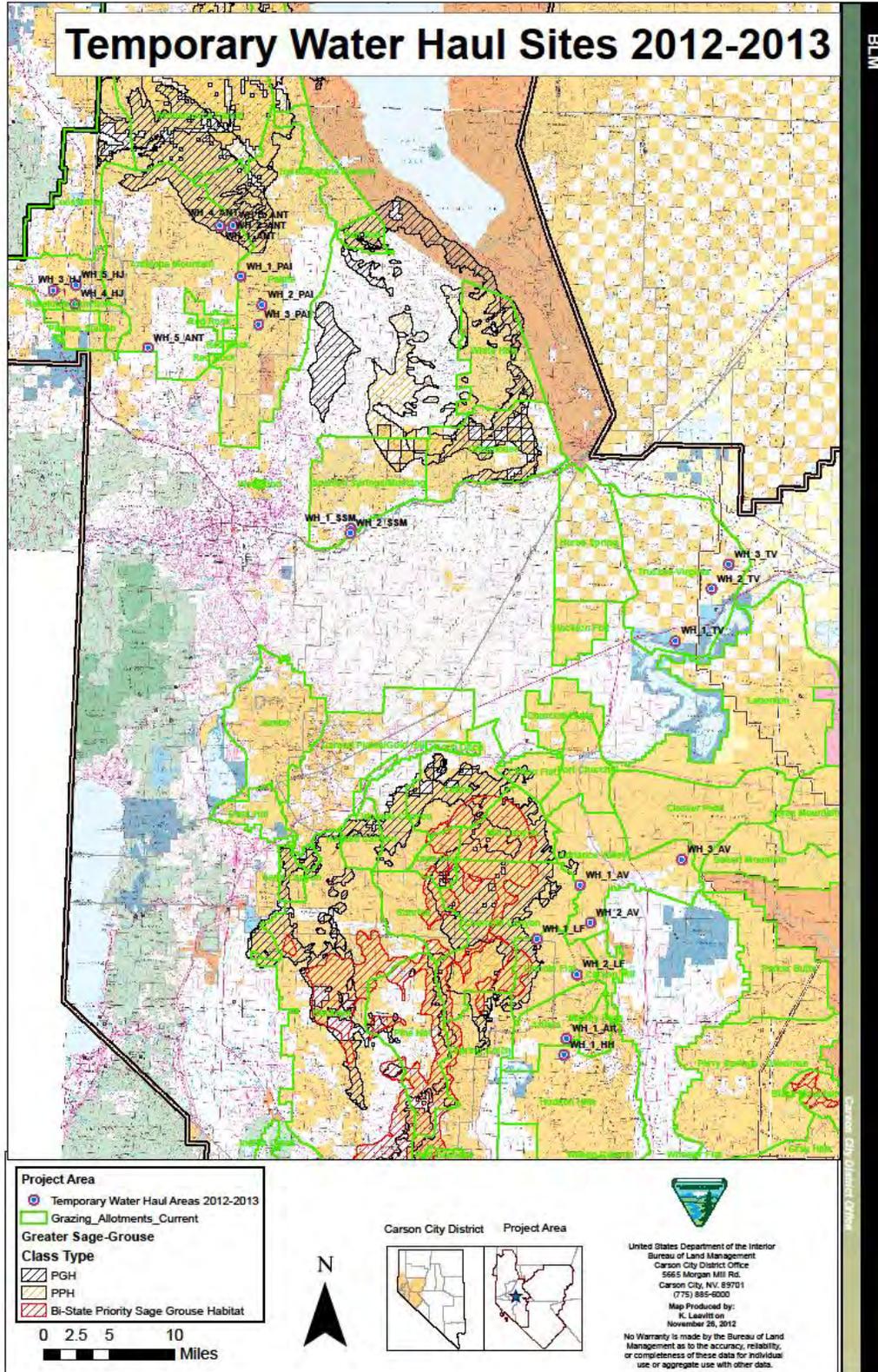
MAP 2 – CARSON CITY DISTRICT SIERRA FRONT FIELD OFFICE



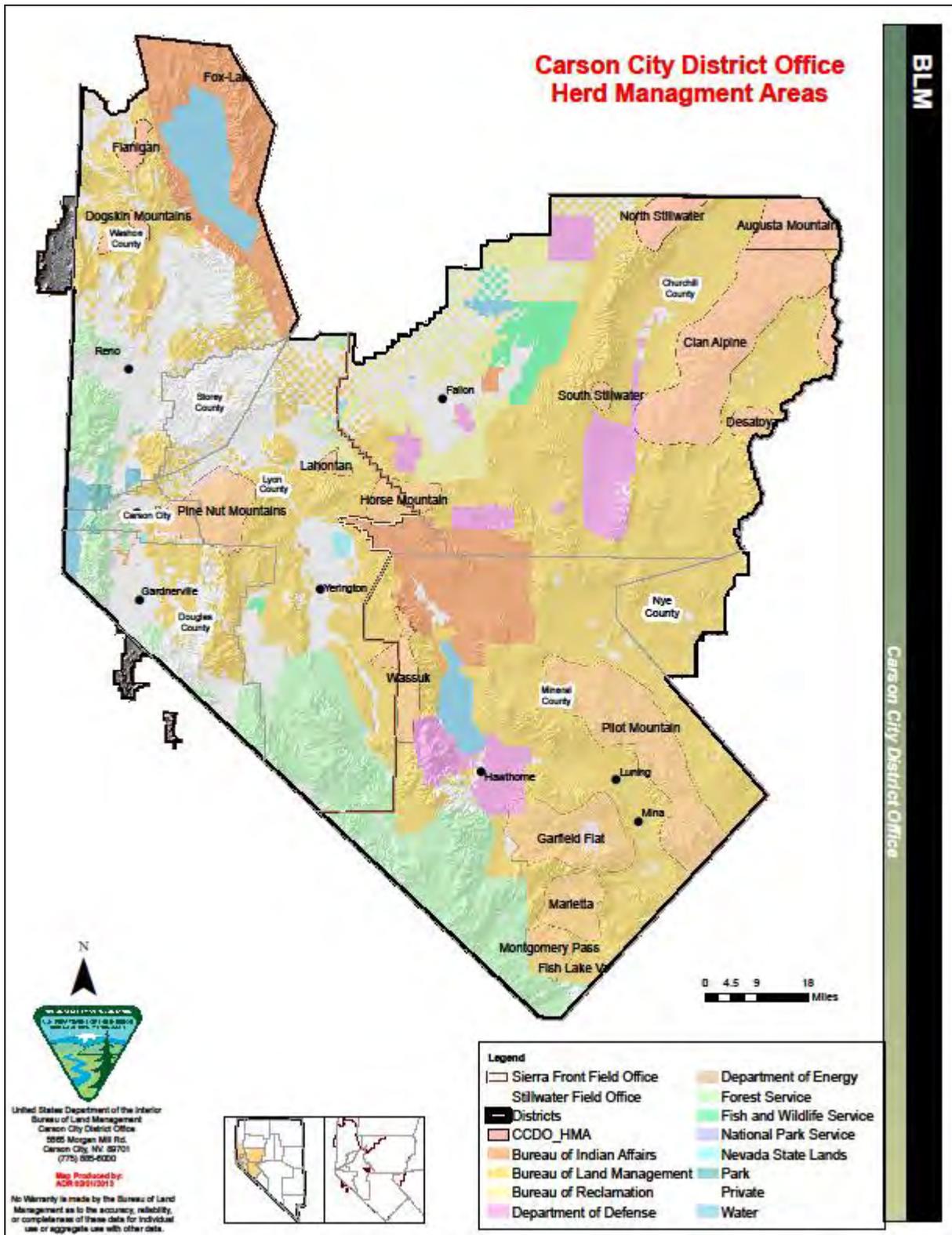
MAP 3 – CARSON CITY DISTRICT STILLWATER FIELD OFFICE



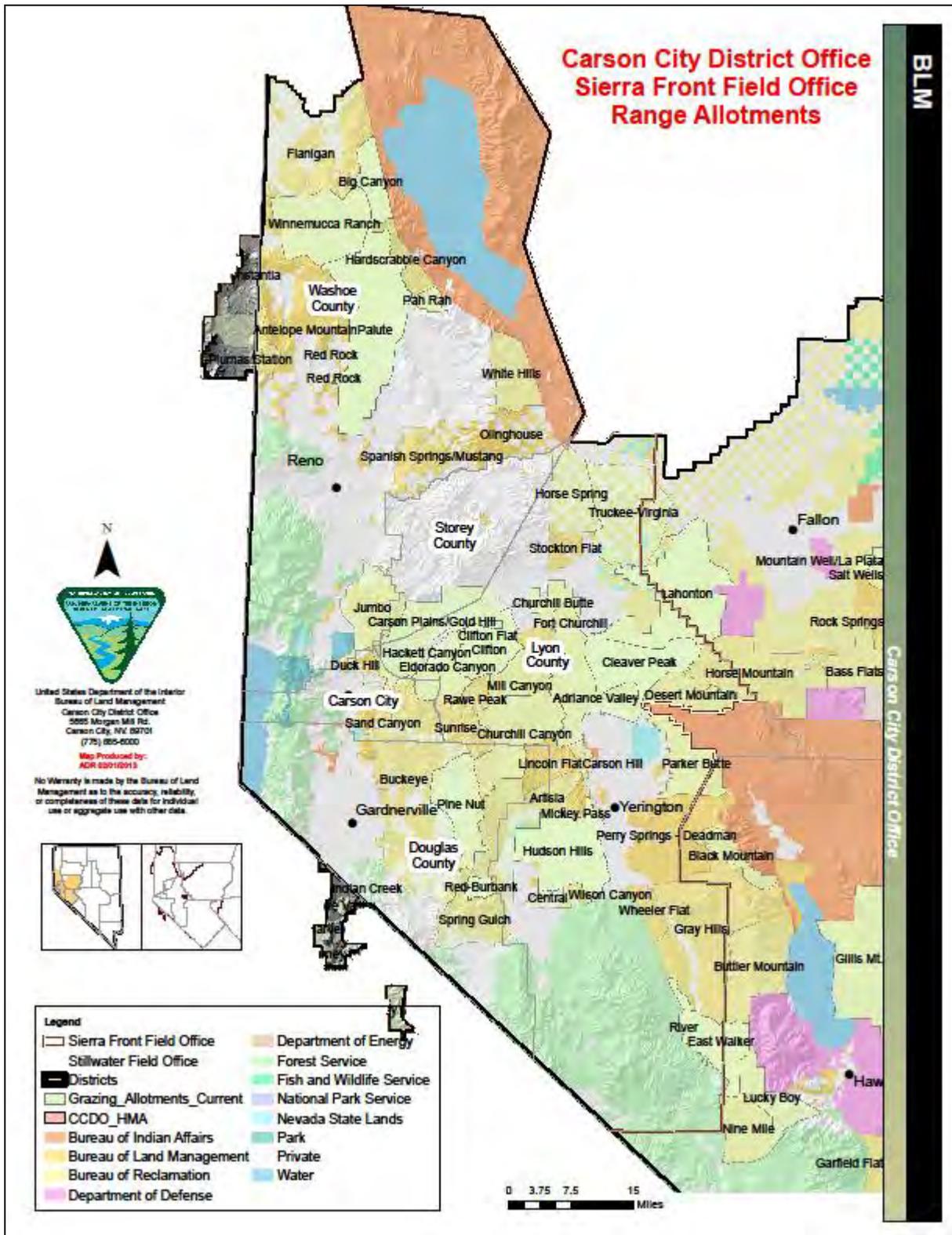
MAP 4 – SIERRA FRONT FIELD OFFICE 2012/2013 TEMPORARY WATER HAUL LOCATIONS



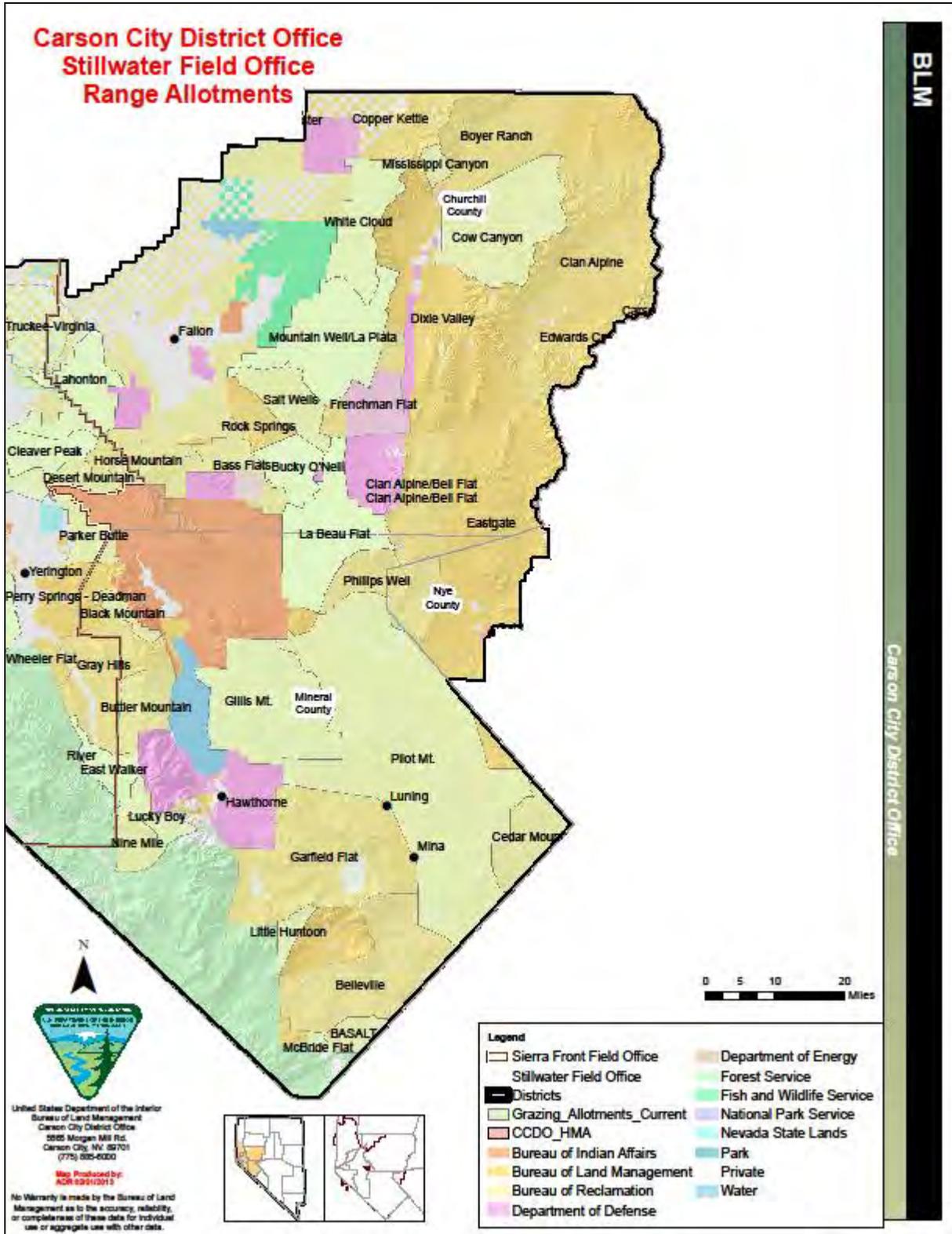
MAP 5 – CARSON CITY DISTRICT HERD MANAGEMENT AREAS



MAP 6 – CARSON CITY DISTRICT SIERRA FRONT FIELD OFFICE RANGE ALLOTMENTS



MAP 7—CARSON CITY DISTRICT SIERRA FRONT FIELD OFFICE RANGE ALLOTMENTS



APPENDIX 2– CARSON CITY DISTRICT DROUGHT DETECTION AND MONITORING PLAN

Carson City District

Drought Detection and Monitoring Plan

1/30/2013

This monitoring plan contains a description of drought indicators and response triggers that would be used to facilitate the early detection and monitoring of drought conditions. This document also provides a description of the monitoring methods that would be used to determine if the drought response triggers have been met.

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Carson City District Drought Detection and Monitoring Plan

1.0 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). The Carson City District is located within the physiographic area known as the Basin and Range (or Great Basin) Province, which is characterized by discrete, north- or northeast-trending fault bounded mountain ranges, typically about 20 miles wide and less than 80 miles long, separated by narrow, deep, alluvium filled valleys. The varied topography, geology, soils, flora and fauna in the Carson City District are typical of the high (cold) desert. Drought is considered a recurring event within the Carson City District.

The early detection and prompt response to drought is needed to prevent further degradation to drought affected resources within the Carson City District. The purpose of this monitoring plan is to describe the drought indicators and response triggers that will be used facilitate the early detection and monitoring of drought conditions, and determine if the activation of drought response actions (refer to the Carson City District Drought Management Environmental Assessment) is needed. This document also provides a description of the monitoring methods that will be used to determine if the drought response triggers have been met.

2.0 Goals

The early detection of drought is necessary for effective management during drought. The following list outlines the goals of the Carson City District Drought Detection and Monitoring Plan:

Goal 1: Provide for the early detection of drought conditions.

Goal 2: Promptly identify and prevent further degradation to affected resources on lands affected by drought within the Carson City District.

Goal 3: Clearly define Drought Response Triggers that will be used to distinguish site specific drought level and activate drought response actions (refer to the Drought Management Plan).

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

Goal 5: Monitor weather conditions and identify when drought conditions have ceased.

3.0 Drought Indicators

Drought indicators are any single observation or a combination of observations signaling the start or continuation of a drought. The following discussion identifies the indicators that the Carson City District would use to determine the onset and/or continuation of a 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; and (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 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/>), updated weekly, would be consulted to determine if weather conditions indicate drought and to identify affected areas. Site visits to allotments and herd management areas within drought-afflicted allotments 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 (<http://veg dri.unl.edu/>) would be consulted to determine drought afflicted allotments and vegetation condition as it pertains to drought stress. Site visits to allotments and herd management areas within drought-afflicted allotments would be used to evaluate the current condition and production of key forage species as described in the associated Ecological Site Descriptions for the area. In instances where key forage species referenced in the Ecological Site Descriptions are absent, key forage 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://veg dri.unl.edu/Home.aspx>.

4.0 Drought Monitoring

4.1. Drought Response Triggers

Drought monitoring will be completed for both upland and riparian areas within the Carson City District. Monitoring will be conducted within areas of allotments and herd management areas that are determined to be afflicted by drought. When it is determined that drought conditions exist, site visits to allotments and or herd management areas 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:

4.1.1 Water

This Trigger is based on the presence or absence of available water. Field visits would be conducted by the Interdisciplinary Team 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, 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.

4.1.2 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 and rangeland health. 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 following drought response triggers associated with forage are aimed at ensuring proper utilization levels of upland and riparian key species, as described in the Ecological Site Description associated with the site. Appropriate utilization levels provide adequate residual matter for the maintenance of plant and rangeland 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.

4.1.2.1 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 Bureau of Land Management has chosen to limit utilization of key species to the lower utilization level (21-40%). 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 Drought Response Actions.

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

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 (USDA/USDI 1999). Key forage species, and as appropriate, BLM Special Status Species would be identified using the Ecological Site Description for a specific area.

4.1.2.2 Livestock\ Wild Horse and Burro 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.

4.1.2.3 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.).

4.2 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 Summary form (Attachment A).

4.2.1 Water

A Bureau of Land Management 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 4.1.1 of this document.

4.2.2 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. 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/USDI 1999). 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/USDI 1999). 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 *revised 1999*.

4.2.3 Livestock\Wild Horse and Burro Distribution

The Landscape Appearance Method will be used to determine the distribution of livestock, and wild horse and burros across allotments and/or herd management areas 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/USDI 1999). 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 *revised 1999*.

4.2.4. 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 Savannah Ecosystems by Herrick et al. (2005).

Drought stress will be monitored using the Vegetation Drought Response Index with site visits occurring to ground truth the Vegetation Drought Response Index reports. The Vegetation Drought Response Index 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. The Vegetation Drought Response Index 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.

5.0 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 herd management areas. Global Positioning System points of monitoring locations will be uploaded into the Geographic Information System. All Geographic Information System information will be kept to Carson City District and Nevada State Office standards and will be incorporated into the Carson City District's Geographic Information System data base.

6.0 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 Carson City District Drought Management Environmental Assessment and the Carson City District Drought Management Plan. All actions will be implemented through the issuance of full force and affect decisions Pursuant to 43 Code of Federal Regulations §4110.3-3(b) or 43 Code of Federal Regulations § 4770.3(c) (as appropriate), after consultation with, or a reasonable attempt to consult with, affected permittees or lessees, the interested public, and the state having lands or responsibility for managing resources within the area.

7.0 Literature Cited

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Vegetation Drought Response Index (VegDRI). 2012. National Drought Mitigation Center. <http://veg dri.unl.edu> (accessed October 10, 2012). Last updated September 17, 2012.

Wilhite, D. 1997. Improving Drought Management in the West: The Role of Mitigation and Preparedness: Report to the Western Water Policy Review Advisory Commission. Springfield, Virginia” National Technical Information Service.

Attachment A – Drought Monitoring Summary Form

DROUGHT MONITORING SUMMARY

Allotment Name/HMA:

Use Area/ Pasture/ Rangeland Area:

UTMS: _____ **N:** _____ **E:** _____

Season of Use: _____ **Elevation:** _____

Turn Out Dates: _____

Observers:	
Name:	Resource Responsibility:

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: _____

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:

Water Source Availability/Information:

Describe the current conditions of the available waters (or note if there is none available), as well as PFC and whether there have been inventories of the springs in the area.

Wildlife Species Observed/Information:

Noxious/Invasive Weeds Present: Yes (if yes, please note which types) No

Other Information:

Drought Response Action Recommendations:

Revisit Needed? _____

Growing Condition Indicator Checklist

Name of the Allotment/Ranch:	
Use Area/Pasture/Rangeland Area:	
Name of Observer(s):	Date:
<u>INDICATOR</u>	<u>OBSERVATION</u>
Forage vigor (Does plant height, leaf length/width, and color indicate strong vigor?)	Below avg. ___ average ___ above avg. ___
Does leader growth of shrubs indicate strong vigor?	Below avg. ___ average ___ above avg. ___
What is the average height of current year's growth on a key species?	Species _____ Inches _____
Are leaves of deciduous shrubs lost or dead?	Below avg. ___ average ___ above avg. ___
Phenological stage of key species in plant community? (refer to plant phenology stages table)	Trees and shrubs _____ Grasses _____ Forbs _____
Utilization of previous year's growth (if observable)	
Soil moisture depth	_____ Inches
Rainfall for current year	Below normal normal above norm
Water source availability	Below normal normal above norm
Native Vegetation Species Observed:	
Other Comments:	
Management action recommendations:	

Plant Phenology Stages		
Trees and Shrubs	Grasses	Forbs
Dormant	Dormant	Dormant
Leaf growth starts	Growth starts	Growth starts
Twig growth	3+ leaves per tiller	Flower stalks appear
Flower buds first visible	Flower stalks appear	First bloom
Leaves full grown	Heads out fully	Full bloom (3/4 blossom)
First bloom	Anthesis	Bloom over (3/4 blossoms dry)
Full bloom (3/4 blossom)	Dough seed set	Seeds ripe (3/4 dry)
Bloom over	Hard seeds	Dissemination
Seed ripe	Dissemination	Plants begin to dry
Dissemination	Plants begin to dry	Plants dry – Summer, Fall
Leaves turn yellow or brown	Plants dry, Summer, Fall	
Leaves dry & begin to drop		

*This form was taken and modified from BLM Nevada Handbook H-1730-1 Resource Management During Drought (February 2011)

APPENDIX 3 – CARSON CITY DISTRICT DROUGHT MANAGEMENT PLAN

Carson City District

Drought Management Plan

1/30/2013

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 Carson City District Drought Management EA. A more in depth discussion of these criteria can be found in the Drought Monitoring and Detection Plan

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Carson City District Drought Management Plan

1.0. 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). The Carson City District is located within the physiographic area known as the Basin and Range (or Great Basin) Province, which is characterized by discrete, north- or northeast-trending fault bounded mountain ranges, typically about 20 miles wide and less than 80 miles long, separated by narrow, deep, alluvium filled valleys. The varied topography, geology, soils, flora and fauna in the Carson City District are typical of the high (cold) desert. Drought is considered a recurring event within the Carson City District.

The early detection and prompt response to drought is needed to prevent further degradation to affected resources within the Carson City District. The purpose of this management 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 Carson City District Drought Management Environmental Assessment and further defined in the Carson City District Drought Detection and Monitoring Plan. Drought Response Actions 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. They have been placed into different categories, due to the differing nature and capabilities for management of those resources and uses

2.0. 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 (Thurrow and Taylor 1999). The following list outlines the goals of the Carson City District Drought Management Plan:

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 Carson City District.

Goal 3: Clearly define Drought Response Actions that will 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: Prevent the suffering and death of Wild Horses and Burros as a result of reduced forage and water resources due to drought conditions.

3.0 Drought Response Actions

The following Drought Response Actions would be implemented either separately or in combination upon reaching the criteria described under the Drought Response Triggers section on a site-specific basis. A more in depth discussion of each action can be found in the Drought

Management Plan (Appendix 1 of the Environmental Assessment). Drought Response Actions have been placed into different categories due to the differing nature and capabilities for management of those resources and uses. Drought Response Actions would be selected based on site-specific information. In areas where livestock and wild horse and burro use overlaps, both livestock and wild horse and burro Drought Response Actions could be implemented concurrently as determined necessary by Bureau of Land Management specialists and management. Follow-up monitoring by the Bureau of Land Management would evaluate whether the implemented Drought Response Actions were effective at mitigating resource degradation, if other actions should be implemented, or if permitted use could be increased to previously permitted levels of use.

3.1 Livestock

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

A. Temporary Partial or Complete Closure of an Allotment(s)

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 as identified by the Interdisciplinary Team, based on monitoring data, or are identified as critical areas to provide forage and/or water for wildlife and/or wild horses and burros could be closed to livestock grazing for the duration of the drought (43 Code of Federal Regulations §4710.5). Partial closures would be accomplished by employing a combination of the other Drought Response Actions such as temporary fencing, temporary water hauls, active livestock herding, strategic supplementation etc. If it is determined that aforementioned conditions exist over the entire allotment(s), complete closure would occur. 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 in addition to site specific monitoring by the Interdisciplinary Team 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.

B. Temporary Partial Reduction in Animal Unit Months

During drought, a reduction in livestock numbers could be necessary to ensure that adequate forage is available to meet wild horses and burros 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.

C. 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, or delaying the turnout, to a time period following the critical growth period (actual dates would vary with vegetation community type) of key forage species (Ecological Site Descriptions

correlated to specific locations would be consulted to determine key forage species) and Bureau of Land Management Sensitive Species. In instances where key forage species referenced in the Ecological Site Description are absent, key forage 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. Methods to accomplish this could include delaying turn-out until after the hot season or modification of pasture rotation in order to allow riparian pastures or pastures with a vulnerable riparian component rest during the hot season.

D. 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 allow the plants to start the next growing season with energy reserves.

E. 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 was un-grazed or lightly grazed (21-40% utilization rate) in previous years.
- Increased herding of livestock to previously un-grazed or lightly grazed areas (21-40% utilization).
- 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 burros and livestock while maintaining riparian functionality. Use would not exceed utilization and stubble heights identified in the Drought Response Triggers section of the Environmental Assessment.
- Approving applications for voluntary non-use or temporarily suspending use.

F. 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 fencing would not be used within 1.25 miles of active sage-grouse leks (Instruction Memorandum 2012-043). Temporary electric fences may also be used to confine livestock to areas dominated by invasive annual species. Temporary electric fences would be constructed using $\frac{3}{4}$ inch to 1 inch diameter fiberglass fence posts and two strands of electric fence polywire. Posts would be spaced at 16 feet apart. The height of the fence would be 30 inches with the bottom wire being 20 inches above the ground. Signs warning of electric fence would be firmly attached to the fence at common crossing points and at $\frac{1}{4}$ mile intervals along the fence.

G. 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). Intensive grazing would be focused during the early spring and/or fall months to take advantage of early green up of these invasives before the growing season of desirable perennials and also in the fall when desirable species are dormant. Livestock would be removed upon reaching moderate utilization levels (41-60%) in order to provide some protection from wind and water erosion. Appropriate utilization levels provide adequate residual matter for the maintenance of plant health especially during a drought. 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 may be used. Invasive annual dominated communities would be identified through site-specific monitoring.

H. 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. 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. They also tend to eat a more varied diet of grasses, forbs, and shrubs vs. cattle and horses that prefer to mainly eat grasses. Temporary changes from cattle to sheep would not be authorized in areas of known bighorn sheep habitat or areas within nine miles of known bighorn sheep habitat. Currently there are no goat permits on the Carson City District; however this could be an option for some permittees.

I. 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;
- 2) To improve livestock distribution in areas located long distances from existing water sources, which have received slight use (1-20% utilization) by livestock in previous years; or
- 3) To reduce or eliminate impacts to riparian and wetland areas.

Additionally, the Bureau of Land Management 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 escape ramps would be installed in water troughs to protect wildlife. 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.

During the 2012/2013 grazing season the Bureau of Land Management Carson City District's Sierra Front Field Office authorized temporary water haul sites within the District for up to 30 days at each location. These areas received archaeological clearances prior to implementation and, to the extent possible, would be utilized for future water haul sites as they have already been cleared for use as a water haul site and would not need additional environmental analysis.

J. Temporary Use of Rested, Unused or Vacant Allotments

During drought, temporary use of unused, rested or vacant allotments where water and forage are available could be utilized to alleviate grazing pressure on allotments or pastures where forage production or water is lacking on an annual basis (43 Code of Federal Regulations 4130.6-2(a)). These temporary use authorizations would be limited to active permittees within the Carson City District; however temporary use would not be constricted to the allotment in which they are permitted to graze. Available forage would be identified through site specific monitoring by the Bureau of Land Management.

Under a temporary use permit, as appropriate, a temporary range improvement permit would also be granted to the permittee. Permittees would be responsible for ensuring that all range improvements in these allotments are in functioning order before turnout (43 Code of Federal Regulations 4120.3-1(c)). Temporary use may limit the use of that allotment the following year (i.e. that pasture may not be used the following year).

3.2 Wild Horses and Burros

The following is a list of Drought Response Actions that would be used either separately or in combination to ensure the welfare of wild horses and burros on public lands administered by the Bureau of Land Management. Wild horses and burros could be at risk of dehydration or starvation due to drought conditions; special considerations are needed for the management of wild horses and burros during drought. These Drought Response Actions would help reduce the impacts of wild horses and burros on rangeland resources adversely affected by drought while ensuring their welfare. Drought Response Actions would be selected on a case-by-case basis using site-specific monitoring data collected as outlined in the Drought Detection and Monitoring Plan.

A. 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 Bureau of Land Management 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 using water trucks or trailers. Water haul locations would be determined based on animal population density and distribution, and placed in previously disturbed areas such as existing water sources that are dry or have inadequate flow, gravel pits or roadsides, to the extent possible. 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 birds.

B. Wild horse and burro removal

When it is determined that drought conditions have resulted in insufficient amounts of forage and/or water to support the existing population of wild horses and/or burros within a herd management area a drought gather would be conducted as a last resort method. Wild horses and burros would be removed from the range in order to prevent suffering and death due to drought conditions on the range and prevent further degradation of

resources affected by drought. 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 and/or burros within a Herd Management Area.
- 2) All other feasible Drought Response Actions have been exhausted and removal is needed for immediate protection of wild horses and burros and rangeland resources.

Pursuant to 43 Code of Federal Regulations §4710.5, areas of allotment(s) that overlap with the Herd Management Area(s) could be temporarily closed to livestock grazing if necessary to protect the health of wild horses and burros 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 and burros 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 Appendix 2 for a more detailed discussion). Gathers would be completed by removing varying numbers and using the following methods, either separate or in combination:

1. 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 and/or burros from within and/or outside the herd management area boundaries.

2. Bait or Water Trapping

Where feasible and appropriate, the Bureau of Land Management could employ bait and/or water trapping in order 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. Typically, small groups of animals enter the traps at a time. This requires many days to 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 Herd Management Area would ensure success, or in combination with helicopter gathers

3. 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, burros, and rangeland would be the overarching goal of a drought gather. The removal numbers would be determined on a case by case basis. A summary of the data, and rationale for the removal numbers would be documented in the Decision and gather plan issued prior to a gather commencing.

a. Removal of Sufficient Numbers of Animals to Achieve the Low Range of Appropriate Management Level

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 Appropriate Management Level. This would occur where the current population exceeds the low Appropriate Management Level, 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.

b. Removal of Sufficient Animals to Achieve the High Appropriate Management Level

This situation would apply when the population is in excess of the high Appropriate Management Level, and assessment of existing forage and water resources warrants limited removal of wild horses and/or burros to the high Appropriate Management Level. 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.

c. Removal of Animals to a Point Below the low Appropriate Management Level

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 Appropriate Management Level 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.

d. Complete Removal of All Animals in a Herd Management Area

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 re-release of horses and/or burros would be subject to Nevada and Washington Bureau of Land Management office approval and could occur several months after the gather, dependent upon when drought conditions have improved. If complete removal and subsequent release is chosen, population control methods, such as the fertility control vaccine PZP, could be implemented prior to wild horses being released back to the herd management area. 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.

In extreme cases, where it is determined that fewer mares should be released to provide for animal welfare and the health of mares, fewer mares could be released resulting in sex ratios of 70:30. This would occur when large numbers of animals need to be removed from the range due to resource conditions and releasing additional studs would result in fewer horses needing to be removed from the range.

4. Type of removals

Depending on animal and rangeland conditions various removal strategies maybe implemented ranging from a complete removal to a selective removal targeting

foals and lactating mares which are most vulnerable to deteriorating range conditions. On a larger herd management area animals may only need to be removed from certain areas or a certain segment of the population from certain areas. As an example certain situations may warrant that only animals with or expected to reach a body condition class of three be removed, however, if the range conditions are so severe even remaining horses with a higher score may need to be removed as they could be expected to deteriorate in the near future.

5. General gather info

The Bureau of Land Management would make every effort to place gather sites in previously disturbed areas, but if a new site needs to be used, a cultural resource inventory would be completed prior to using the new gather site. Gather sites would not be set up near greater sage-grouse leks, known populations of Sensitive Species; or in riparian areas, cultural resource sites, Wilderness Study Areas or congressionally designated Wilderness Areas. All gather sites, holding facilities, and camping areas on public lands would be recorded with Global Positioning System equipment, given to the Carson City District Invasive, Non-native Weed Coordinators, and then assigned for monitoring during the next several years following gather for invasive, non-native weeds. All gather and handling activities (including gather site selections) would be conducted in accordance with Standard Operating Procedures in Appendix A.

Gathered wild horses or burros would be sorted by age and sex and be transported to Bureau of Land Management holding facilities where they would be prepared for adoption and/or sale to qualified individuals who can provide them with a good home or for transfer to long-term grassland pastures. During gathers conducted during summer months, foals are often too young to wean. This is especially true during periods of stress when, due to the poor resources on the range, the mare's milk production is limited and foals are small or weak. In any case, the foals would be re-united with the mares (or jennies) as soon as sorted at the holding corrals. Efforts would be taken to identify foals and mares for pairing and carefully observe their behavior. Should foals be orphaned, foster homes would be found immediately that could provide supportive care.

Herd health and characteristics data would be collected as part of continued monitoring of the wild horse herds. Other data, including sex and age distribution, condition class information (using the Henneke rating system), color, size and other information may also be recorded for all gathered wild horses. Genetic baseline data could be collected to monitor the genetic health of the wild horses within the combined project area.

An Animal and Plant Inspection Service or other veterinarian may be on-site during the gather, as needed, to examine animals and make recommendations to the Bureau of Land Management for care and treatment of wild horses. All excess wild horses removed from within and outside the herd management areas would be available for adoption or sale to qualified individuals.

Any old, sick or lame horses or burros unable to maintain an acceptable body condition (greater than or equal to a Henneke body condition score of 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 Bureau of Land Management policy (Washington Office Instruction Memorandum 2009-041). Refer to: http://www.blm.gov/wo/st/en/info/regulations/Instruction_Memos_and_Bulletins/national_instruction/2009/IM_2009-041.html.

3.3 Other Resources

The following is a list of Drought Response Actions that would be used either separately or in combination to ensure that vegetation and soils are not further impacted by different land uses and authorizations. These Drought Response Actions would help reduce the impacts to vegetative resources and soils during drought. Drought Response Actions would be selected on a case-by-case basis using site-specific monitoring data collected as outlined in the DDMP.

A. Off Highway Vehicle Management

Temporary closures to off highway vehicles, as provided for in 43 Code of Federal Regulations 8364.1 would be implemented to mitigate off highway vehicle use impacts on resources that are stressed by drought (including near surface water sources, in important wildlife habitat, etc...). A ¼ mile setback from all wildlife guzzlers would be implemented.

B. Recreation

In drought years, Special Recreation Permits should include stipulations that limit uses of the land near water sources and important habitats in order to mitigate drought effects on these resources. Staging areas, parking areas and any vehicle repair would be limited.

C. Wildlife Habitat Management

- 1) Temporary Water Hauls – where practicable, water would be hauled to critical wildlife habitat areas or areas where critical wildlife (Threatened and Endangered Species and candidate species) are congregating.
- 2) Temporary Water-Holding Facilities – where practicable, establish temporary water-holding facilities for critical wildlife habitat areas or areas where critical wildlife (Threatened and Endangered Species and candidate species) are congregating. .
- 3) Work with other users (such as private water right holders) and State Agencies (Nevada Division of Water Resources and/or Nevada Department of Wildlife) to maintain in stream flow in critical fish habitat.
- 4) Work with private land owners and water right holders to reduce pumping near critical riparian (e.g. fish) habitat.
- 5) Work with the Nevada Department of Wildlife to ensure guzzlers and water tanks are in good working order.
- 6) Work with producers/permittees that have water containment facilities to have tank overflows directed away from tank to create wet spots for wildlife.

D. Forestry

- 1) Seed Collection would be prohibited or restricted during times of drought on forest and vegetative resources that are stressed by drought conditions.
- 2) Temporary closures of areas with low elevation aspen stands that are stressed by drought. These areas would be closed to grazing, off highway vehicle use and other activities that damage vegetative and forestry resources until drought conditions ease.
- 3) Remove large pockets of dead trees and potential fire hazard by completing a site-specific “plan” targeting areas with Severe, Extreme or Exceptional drought intensities.

E. Lands and Realty

Consider and analyze water utilization and mitigation for all proposed projects. These mitigation measures would include, but not be limited to the following:

- 1) If the project requires the extraction of local surface water for dust abatement, pipeline testing, or similar activities, seasonal timing restrictions for construction periods to higher water seasons could be implemented.
- 2) Require water be hauled from offsite location(s) to the project area so as to not impact drought stricken areas.
- 3) Require the use of dust (control) palliatives, as appropriate in place of water during times of drought.
- 4) Require temporary protection measures to retain moisture for transplanted vegetation areas and/or seeded areas.

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APPENDIX A

Wild Horse Gather Plan and Standard Operating Procedures

I. Gather Plan

The purpose of the gather plan 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 Carson City District. 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 17 wild horse or burro herd management areas administered by the Carson City District, including areas outside of herd management area boundaries and Herd Areas. Refer to Map 3, which displays the herd management areas administered by the Carson City District.

B. Administration of the Contract /Gather Operations

The National Wild Horse and Burro Gather Contract would be used to conduct drought gathers. Bureau of Land Management personnel would be responsible for overseeing the contract for the capture, care, aging, and temporary holding of wild horses from the capture area. Bureau of Land Management Wild Horse and Burro Specialists would be present during all aspects of the gather activities. Bureau of Land Management personnel may conduct small scale helicopter or bait/water trapping gathers.

Standard Operating Procedures described within this document would be utilized for the capture and handling of wild horses and burros. Standard Operating Procedures 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 inventory would be conducted prior to the construction of gather corrals and temporary holding facilities. Refer to the Standard Operating Procedures, Section H for more detailed information.

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 Bureau of Land Management policy and regulation.

An Animal and Plant Inspection Service or private veterinarian would be on-call or on-site for the duration of the gather to provide recommendations to Wild Horse and Burro 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, the Northern Nevada Correctional Center, or volunteers 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 and Burro 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 Bureau of Land Management 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 herd management area, 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 or burros 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 used in helicopter gathers are well established, and the contract pilots very skilled. Wild horses and burros settle down once gathered and do not appear more than slightly agitated as the helicopter brings in additional groups of animals.

The pilot locates groups of wild horses and burros within the gather area and guides them towards the gather corrals. In most cases, animals are allowed to travel at their own pace, and are not “pushed”. Distances are typically between 1 – 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 Bureau of Land Management 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 and burros 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 Contracting Officers Representative/Wild Horse and Burro Specialist.

A “Prada” horse is held and released at the mouth of the wings when the wild horses approach. A Prada horse is a domestic horse which has been trained to run from near the mouth of the wings to the trap. Wild horses upon seeing a Prada horse often follow the Prada horse into the trap. Once the animals are within the corrals the gates are closed and small foals or very weak adult animals separated. Animals are then moved to the temporary holding corral where unweaned foals and nursing mares are separated into one pen, male horses into another pen and dry mares into another pen.. Wild burros are less likely to enter the trap corrals and oftentimes riders on horseback come in behind them to push them the rest of the way. Burros are known to stop in the wings and refuse to enter the trap. They are also more difficult to work through the alleyway and pens.

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, or to awaiting stock trailers, or immobilized on the ground until they can be loaded into stock trailers.

Once horses or burros are loaded and transported to the Holding Corrals, they are sorted by the contractor’s staff and Bureau of Land Management employees. The contractor looks at the animals’ teeth to estimate age while held in the chute, and the Bureau of Land Management staff documents age, color, body condition and lactation status of the horse or burro. Aging wild horses, and especially burros is a process of estimation due to the type of wear that can occur to the teeth of a wild horse or burro 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 Bureau of Land Management may consult with a veterinarian to treat sick or injured animals, or make recommendations for euthanasia.

When there are enough horses or burros to transport to a Bureau of Land Management preparation, or adoption facility, they are loaded into the straight deck trailers that hold 35-45 wild horses depending upon their size. The trailers have three or four compartments so that mares/jennies, stallions/jacks and foals can be transported separately. It may require 3-8+ hours for the wild horses or burros to arrive at the adoption preparation facility. The Carson City District 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 Bureau of Land Management staff identifies wild horses to be re-released back to the herd management area according to the objectives for the herd. Typically, wild burros are not released to the range. 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 herd management area 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 herd management area. Sometimes the horses are released directly from the holding corrals if they are centrally located within the herd management area.

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 will be incorporated into a Herd Management Area Plan in the future.

D. Data Collection

Wild Horse and Burro 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 herd management area.

1) Hair Samples/Genetics Analysis

Hair samples could be collected and analyzed to establish genetic baseline data of wild horses and burros (genetic diversity, historical origins, unique markers, and norms for the population).

Wild Horse and Burro 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

Wild Horse and Burro 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

Wild Horse and Burro 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.

E. Euthanasia

The Authorized Office (or designee) will make decisions regarding euthanasia, in accordance with Bureau of Land Management policy as expressed in Washington Office Instructional Memorandum No. 2009-041. A veterinarian may be called to make a diagnosis and final determination. Current Bureau of Land Management Standard Operating Procedures is to have a Veterinarian from Animal and Plant Inspection Service on site throughout the gather to observe

animal health and condition and provide input to Bureau of Land Management 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 Code of Federal Regulations 4730.1, Bureau of Land Management Manual 4730 - Euthanasia of Wild horses and Burros and Disposal of Remains. The following are excerpted from Instruction Memorandum 2009-41:

A Bureau of Land Management 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.

I. 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 Bureau of Land Management. Wherever possible, gather corrals would be constructed in such a manner as to not block vehicular access on existing roads.
- 2) Traps and 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) Archeological clearance by a Bureau of Land Management 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 Wild Horse and Burro personnel to inventory proposed locations as they are identified, and complete required documentation.
- 4) Wilderness Study Areas: When gathering wild horses from within Wilderness Study Areas, 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 Wilderness Study Areas.
- 5) 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 15.
 - ii. Avoid riparian areas, springs, and wet meadows during brood-rearing. April 1 – August 15.
 - iii. Minimize and mitigate disturbance to the vegetation in all known sage grouse habitat.

- b. Raptors
 - i. The helicopter would avoid eagles and other raptors, and would not be flown repeatedly over any identified active raptor nests. Avoid active raptor nests by 2 miles. March 15-July 1.
- c. Big Game
 - i. No unnecessary aircraft use would occur over big game on their winter range or active fawning/calving grounds during the period of use.
- d. Site establishment, construction, and operation of traps and gather corrals will avoid adverse impacts to wildlife species, including threatened, endangered, or sensitive species, and their habitat.

II. Standard Operating Procedures for Wild Horse and Burro Gathers

Gathers would be conducted by utilizing contractors from the National Wild Horse and Burro Gather Contract, or Bureau of Land Management personnel. The following procedures for gathering and handling wild horses or burros would apply whether a contractor or Bureau of Land Management personnel conduct a gather. For helicopter gathers conducted by Bureau of Land Management 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 Bureau of Land Management 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:

1. Helicopter Assisted Trapping. This capture method involves utilizing a helicopter to direct wild horses or burros into a temporary corral.
2. Helicopter Assisted Roping. This capture method involves utilizing a helicopter to herd wild horses or burros to ropers.

3. Bait Trapping. This capture method involves utilizing bait (e.g., water or feed) to lure wild horses or burros into a temporary corral.

The following procedures and stipulations will be followed to ensure the welfare, safety, and humane treatment of wild horses and burros in accordance with the provisions of 43 Code of Federal Regulations 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 and/or the Project Inspector prior to construction. The Contractor may also be required to change or move corral locations as determined by the Contracting Officer's Representative/Project Inspector. 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 Contracting Officer's Representative 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 herd management area.
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 Contracting Officers Representative/Project Inspector.

- 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 Contracting Officer's Representative/Project Inspector. 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 Contracting Officer's Representative 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 Contracting Officer's Representative.
 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 Contracting Officer's Representative/Project Inspector 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 Contracting Officer's Representative/Project Inspector.

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 Contracting Officers Representative/Project Inspector for unusual circumstances. Animals to be released back into the herd management area following gather operations may be held up to 21 days or as directed by the Contracting Officer's Representative/Project Inspector. 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 Contracting Officer's Representative/Project Inspector. 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 Contracting Officer's Representative. 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 Contracting Officer's Representative.

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 Contracting Officer's Representative/Project Inspector 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 Contracting Officer's Representative/Project Inspector. 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 Contracting Officer's Representative/Project Inspector 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 Contracting Officer's Representative/Project Inspector 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 Contracting Officer's Representative/Project Inspector 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 Contracting Officer's Representative/Project Inspector.
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 Contracting Officer's Representative/Project Inspector 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 Contracting Officer's Representative/Project Inspector 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 Contracting Officer's Representative/Project Inspector shall provide for any brand and/or inspection services required for the captured animals.
8. If the Contracting Officer's Representative/Project Inspector 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 Contracting Officer's Representative/Project Inspector 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 Bureau of Land Management reserves the right to remove from service any contractor personnel or contractor furnished equipment which, in the opinion of the contracting officer or Contracting Officer's Representative/Project Inspector 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 Contracting Officer's Representative/Project Inspector.
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 holding facility, Bureau of Land Management will conduct all necessary clearances (archaeological, T&E, etc.). All proposed site(s) must be inspected by a government archaeologist (or designee). Once archaeological clearance has been obtained, the trap or temporary holding facility may be set up. Said clearance shall be arranged for by the Contracting Officers Representative, Project Inspector, or other Bureau of Land Management employees.

Gather sites and temporary holding facilities would not be constructed on wetlands, riparian zones or weed infested areas.

G. Public Participation

Opportunities for public viewing (i.e. media, interested public) of gather operations would be made available to the extent possible; however, the primary considerations will be to protect the health, safety, and welfare of the animals being gathered and the personnel involved. The public must adhere to guidance from the on-site Bureau of Land Management representatives. It is Bureau of Land Management policy that the public will not be allowed to come into direct contact with wild horses or burros being held in Bureau of Land Management facilities. Only authorized Bureau of Land Management personnel or contractors may enter the corrals or directly handle the animals. The general public may not enter the corrals or directly handle the animals at any time or for any reason during Bureau of Land Management operations (refer to Appendix C, D, and E).

H. Responsibility and Lines of Communication

The Contracting Officer's Representatives and the Project Inspectors have the direct responsibility to ensure the Contractor's compliance with the contract stipulations. Wild Horse and Burros Specialists would serve as the primary Contracting Officer's Representative. Alternate Contracting Officer's Representative and Project Inspector(s) would be selected prior to the start of the gather. The Supervisory Natural Resources Specialist and Field Manager will take an active role to ensure the appropriate lines of communication are established between the field, Field Office, State Office, National Program Office, and Bureau of Land Management Holding Facility offices. All employees involved in the gather operations will keep the best interests of the animals at the forefront at all times.

All publicity, formal public contact and inquiries will be handled through the Nevada State Office and Carson City District Office Public Affairs Officer. These individuals will be the primary contact and will coordinate with the Contracting Officer's Representative on any inquiries.

The Contracting Officer's Representative will coordinate with the contractor and the Bureau of Land Management corrals to ensure animals are being transported from the capture site in a safe and humane manner and are arriving in good condition.

The contract specifications require humane treatment and care of the animals during removal operations. These specifications are designed to minimize the risk of injury and death during and after capture of the animals. The specifications will be vigorously enforced.

Should the contractor show negligence and/or not perform according to contract stipulations, he will be issued written instructions, stop work orders, or defaulted.

APPENDIX B

Standard Operating Procedures for Fertility Control Treatment

22-month time-release pelleted vaccine:

The following implementation and monitoring requirements are part of the Proposed Action:

1. PZP vaccine would be administered only by trained Bureau of Land Management personnel or collaborating research partners.
2. Mares that have never been treated would receive 0.5 cc of PZP vaccine emulsified with 0.5 cc of Freund's Modified Adjuvant (FMA). Mares identified for re-treatment receive 0.5 cc of the PZP vaccine emulsified with 0.5 cc of Freund's Incomplete Adjuvant (FIA).
3. The fertility control drug is administered with two separate injections: (1) a liquid dose of PZP is administered using an 18-gauge needle primarily by hand injection; (2) the pellets are preloaded into a 14-gauge needle. These are delivered using a modified syringe and jabstick to inject the pellets into the gluteal muscles of the mares being returned to the range. The pellets are designed to release PZP over time similar to a time-release cold capsule.
4. Delivery of the vaccine would be by intramuscular injection into the gluteal muscles while the mare is restrained in a working chute. The primer would consist of 0.5 cc of liquid PZP emulsified with 0.5 cc of Freund's Modified Adjuvant (FMA). The pellets would be loaded into the jabstick for the second injection. With each injection, the liquid or pellets would be injected into the left hind quarters of the mare, above the imaginary line that connects the point of the hip (hook bone) and the point of the buttocks (pin bone).
5. In the future, the vaccine may be administered remotely using an approved long range darting protocol and delivery system if or when that technology is developed.
6. All treated mares will be freeze-marked on the hip or neck herd management area managers to positively identify the animals during the research project and at the time of removal during subsequent gathers.

Monitoring and Tracking of Treatments:

1. At a minimum, estimation of population growth rates using helicopter or fixed-wing surveys will be conducted before any subsequent gather. During these surveys it is not necessary to identify which foals were born to which mares; only an estimate of population growth is needed (i.e. # of foals to # of adults).
2. Population growth rates of herds selected for intensive monitoring will be estimated every year post-treatment using helicopter or fixed-wing surveys. During these surveys it is not necessary to identify which foals were born to which mares, only an estimate of population growth is needed (i.e. # of foals to # of adults). If, during routine herd management area field monitoring (on-the-ground), data describing mare to foal ratios

can be collected, these data should also be shared with the NPO for possible analysis by the USGS.

3. A PZP Application Data sheet will be used by field applicators to record all pertinent data relating to identification of the mare (including photographs if mares are not freeze-marked) and date of treatment. Each applicator will submit a PZP Application Report and accompanying narrative and data sheets will be forwarded to the NPO (Reno, Nevada). A copy of the form and data sheets and any photos taken will be maintained at the field office.
4. A tracking system will be maintained by NPO detailing the quantity of PZP issued, the quantity used, disposition of any unused PZP, the number of treated mares by herd management area, field office, and State along with the freeze-mark(s) applied by herd management area and date.

APPENDIX C

Daily Visitation Protocol and Ground Rules



Daily Visitation Protocol and Ground Rules Gathers



Bureau of Land Management recognizes and respects the right of interested members of the public and the press to observe a wild horse gather. At the same time, Bureau of Land Management must ensure the health and safety of the public, Bureau of Land Management's employees and contractors, and America's wild horses. Accordingly, Bureau of Land Management developed these rules to maximize the opportunity for reasonable public access to the gather while ensuring that Bureau of Land Management'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 the wild horses and burros.

The Bureau of Land Management and the contractor's helicopter pilot must comply with 14 Code of Federal Regulations Part 91 of the Federal Aviation Regulations, which determines the minimum safe altitudes and distance people must be from the aircraft. To 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 the 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 things may affect this) and to confirm the meeting location.
- Visitors must direct their questions/comments to either their designated Bureau of Land Management representative or the Bureau of Land Management spokesperson on site, and not engage other Bureau of Land Management/contractor staff and disrupt their gather duties/responsibilities - professional and respectful behavior is expected of all. Bureau of Land Management may make the Bureau of Land Management 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-wheel 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.

- Bureau of Land Management will establish one or more observation areas, in the immediate 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 Bureau of Land Management 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.
- Bureau of Land Management will delineate observation areas with yellow caution tape (or a similar type of tape or ribbon).
- Visitors will be assigned to a specific Bureau of Land Management 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 Bureau of Land Management representative.
- Observers are prohibited from climbing/trespassing onto or in the trucks, equipment or corrals, which is the private property of the contractor.
- When Bureau of Land Management 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 Bureau of Land Management 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 Bureau of Land Management managers and staff and the contractor/employees. Visitors who do not cooperate and follow the rules will be escorted off the gather site by Bureau of Land Management law enforcement personnel, and will be prohibited from participating in any subsequent observation days.
- Bureau of Land Management 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, lightning, 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, Bureau

of Land Management 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 Bureau of Land Management representatives to and from the gather site.

APPENDIX D

Bureau of Land Management 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 (Wild Horse and Burro) gathers.

Policy/Action: The Bureau of Land Management's (Bureau of Land Managements) 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/Wild Horse and Burro 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 Bureau of Land Management 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 Wild Horse and Burro gather operations. Also see Attachment 1 (Best Practices When Planning for Public Observation at Gathers).

A. Safety Requirements

During Wild Horse and Burro gathers, the safety of the animals, the Bureau of Land Management and contractor personnel, and the public is of paramount importance. Because of the inherent risk involved in working with Wild Horse and Burro, 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 Bureau of Land Management and contractor personnel, and the public.

Unless an emergency situation exists, the Bureau of Land Management'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 Wild Horse and Burro Gathers

During advance planning for public observation at Wild Horse and Burro 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 Bureau of Land Management 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 Bureau of Land Management'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 (PI), and other Bureau of Land Management staff.
- Identify the radio frequencies to be used.
- Communication with the gather contractor is through the Bureau of Land Management COR or PI, and from the gather contractor to the helicopter pilot. Direct communication between Bureau of Land Management personnel (other than the COR) and the helicopter pilot is not permitted, unless agreed upon by the Bureau of Land Management 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 Bureau of Land Management staff can be helpful to the public.
- The pre-gather briefing is an opportunity to explain what individuals will see, why the Bureau of Land Management 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 Wild Horse and Burro 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 Contracting Officers Representative, DM/FM, other appropriate staff, the State Wild Horse and Burro Program Lead, and the State Office of Communications to implement the communications strategy regarding the gather.
3. Law Enforcement
Develop and execute the law enforcement plan in consultation with District/Field Office Managers, the Contracting Officers Representative/Project Inspector, **and the State's** Special Agent-In-Charge or State Staff Ranger.
4. **Contracting Officer's Representative (COR)/Project Inspectors (PI)**
The COR and the PIs 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 Wild Horse and Burro. 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 Wild Horse and Burro 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 Bureau of Land Management 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 Wild Horse and Burro gathers has occurred. Advance planning for public observation of gather operations can minimize the potential for

unanticipated situations to occur during Wild Horse and Burro gathers and assure the safety of the animals, the Bureau of Land Management and contractor personnel, and the public.

Manual/Handbook Sections Affected: No change or affect to the Bureau of Land Management manuals or handbooks is required.

Coordination: This IM was coordinated among WO-200 and WO-260 staff, State Wild Horse and Burro Program Leads, field Wild Horse and Burro 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 Sec. 91.119

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

APPENDIX 4 – CARSON CITY 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 are 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 and/or 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. for the period leading up to the gather and at the time of gather.

3.2. Drought Response Triggers and Monitoring results

As detailed in the Drought Detection and Monitoring Plan, Drought Response Triggers 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 condition and any resource impacts by wild horses or burros, utilization levels, actual use, and animal distribution.

3.3. Animal Health and Characteristics

A 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; and/or
- In the case of a complete removal, plans to return animals and triggers 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; and/or
- Bait/Water Trap Diagram.

APPENDIX 5 – RANGE UTILIZATION MONITORING FORM

Range Utilization - Key Forage Plant Method

Unit Name _____ Pasture Name _____

Transect ID _____ Date _____ Observer _____

Animal Kind/Class _____ Season of use _____ Vegetation Type _____

Midpoint (x)	Key Species		Key Species		Description ¹ of Use Classes
	Frequency (f)	f • x	Frequency (f)	f • x	
					1. No Use (0%): The rangeland shows no evidence of use by grazing animals.
					2. Slight (1-20%): The rangeland has the appearance of very light grazing. The key herbaceous forage plants may be topped or slightly used. Current seed stalks and young plants of key herbaceous species are little disturbed. The available leaders of key browse plants are little disturbed.
					3. Light (21-40%): The rangeland may be topped, skimmed, or grazed in patches. The low value herbaceous plants are ungrazed, and 60-80 percent of the number of current seed stalks of key herbaceous plants remain intact. Most young plants of key species are undamaged. The available leaders appear cropped or browsed in patches, and 21-40 percent of the available leader growth of the key browse plants has been removed.
					4. Moderate (41-60%): The rangeland appears entirely covered as uniformly as natural features and facilities will allow. Fifteen to 25 percent of the number of current seed stalks of key herbaceous species remain intact. No more than 10 percent of the number of low value herbaceous forage plants are utilized. Browse plants appear rather uniformly utilized, and 41-60 percent of available leader growth of key browse plants has been removed.
					5. Heavy (61-80%): The rangeland has the appearance of complete search. Key herbaceous species are almost completely utilized with less than 10 percent of the current seed stalks remaining. More than 10 percent of the number of low value herbaceous forage plants has been utilized. Approximately 61-80 percent of the available leader growth of the key browse plants has been removed.
					6. Severe (81-100%): The rangeland has a mown appearance, and there are indications of repeated coverage. There is no evidence of reproduction of current seed stalks of key herbaceous species. There is no evidence of terminal buds, and 81-100 percent of available leader growth on the key browse plants has been removed. Some, and often much, of the second and third previous years' growth on the browse plants has been utilized.
Totals--+					Remarks: _____
Hx/H					

Note: f =the frequency or number of observations within each class 1nterval (f column), x =the class interval midpoint (x column) and Σ =the summation symbol.

APPENDIX 6 – CARSON CITY DISTRICT 2012 DROUGHT MONITORING PHOTOGRAPHS



Flanigan Allotment 8/27/12



Dixie Valley Allotment – Willow Spring 8/28/12



Lincoln Flat Allotment 8/28/12



Boyer Ranch Allotment 8/28/12



Horse Mountain Allotment 8/30/12



Hallelujah Junction – Indian Springs 8/30/12



Lucky Boy Allotment 9/4/12



Porter Canyon Allotment – Corral Spring 9/5/12



Cleaver Peak Allotment 9/7/12

CARSON CITY DISTRICT DROUGHT MANAGEMENT ENVIRONMENTAL ASSESSMENT DOI-BLM-NV-C000-2013-0001-EA



Pilot Table Mountain Allotment 9/11/12



Mill Canyon Allotment 9/19/12



Wheeler Flat 9/20/12