

**Environmental Assessment
LLNV-W03000-2009-0001-EA**

**Buffalo Hills Herd Management Area
Wild Horse Capture Plan**



Lack of forage is placing wild horses at risk in the Buffalo Hills HMA, 8/08.

January 2009

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1.0 INTRODUCTION

The Bureau of Land Management is proposing to gather excess wild horses in the Buffalo Hills Herd Management Area (HMA) in early 2009. Vegetation and population monitoring has determined current wild horse populations are exceeding the rangeland's ability to sustain wild horse use over the long-term. Sufficient winter forage is not available and resource damage is occurring and is likely to continue to occur due to the current overpopulation of wild horses and continuing drought conditions. Without the removal of excess wild horses, starvation of some horses and wildlife is expected to occur this winter as competition for remaining forage is high and palatable forage is of low quality and/or unavailable. Horse condition and health is expected to deteriorate with younger animals, mares, and older animals being most susceptible. Animals will not be able to consume sufficient calories or meet minimal nutritional demands to maintain adequate body condition or health throughout the winter; some animals will likely suffer and/or die.

The lack of forage and other factors present a high potential risk of starvation and/or death to wild horses and wildlife this winter. High elevation winter habitat, expected snow accumulation, overpopulation of wild horses, depletion of existing forage, competition for limited resources with wildlife, and the lack of horse movement all contribute to the high risk this herd currently faces. Therefore, the Winnemucca District is proposing to remove about 462 wild horses beginning in about January 2009 to reduce the potential risk for their suffering or death from starvation.

This Environmental Analysis (EA) contains the site-specific analysis of potential impacts that could result with the implementation of the Action Alternatives or No Action. The EA ensures compliance with the National Environmental Policy Act (NEPA). Based on the following analysis of potential environmental consequences, a determination can be made whether to prepare an Environmental Impact Statement (EIS) or issue a "Finding of No Significant Impact" (FONSI). A FONSI documents why implementation of the selected alternative will not result in environmental impacts that significantly affect the quality of the human environment.

1.1 Background Information

The current AML for wild horses is established as a range of 188-314 wild horses (Buffalo Hills Allotment Final Multiple Use Decision, 2/93 & EA #NV020-00-50, 11/00). Managing wild horse populations within this number is expected to assure a thriving natural ecological balance and multiple-use relationship within the Buffalo Hills area.

The last gather occurred in February 2005 when about 300 horses were to be removed. However, poor weather and ground conditions cut the gather short and only 180 horses were captured and removed. Following the 2005 gather, an estimated 306 wild horses remained in the HMA instead of the intended 188 head (low range of the AML). A helicopter aerial census completed in December 2007 revealed a direct count of 542 head. This data suggests an average annual growth rate of 21% for this herd since the last gather. With the addition of the 2008 foal crop, the current estimated population for the Buffalo Hills HMA is 650 wild horses, about 3.5 times the low range of the AML (188 head).

Site visits were conducted in late August and mid-November. Where forage grasses are accessible to horses, current utilization levels are estimated between 40 to 90 percent with the majority of plants showing utilization levels of 60-80%. There is also evidence of horses traversing extremely rocky slopes in search of grasses. Much of the bitterbrush and other palatable browse species, especially in areas near water, are decadent or dead (some known moth kill) and other shrubs exhibit low production and moderate to heavy hedging, with the majority of plants and leaders browsed. Riparian plants are grazed to less than two inches of stubble height and/or riparian areas are completely denuded where animals have access to water.

Lack of sufficient forage (energy) due to current forage depletion and/or low nutritional value - decadent browse, etc., cold winter temperatures and snow fall accumulation will stress horses over the winter months with no additional forage available until next spring (late March/April). Horses gathered in January 2005 in a similar situation - after two consecutive years of cattle use, but with a population estimate of 486 horses instead of 650 head, were thin and foals appeared moderately undernourished and unthrifty.

Winter deaths have occurred here in the past. In April 1978, approximately 300 horses were found dead or were humanely euthanized in the field; and, in February 1993, due to poor animal health and lack of winter forage, about 40 horses were destroyed and 80 horses were held and fed at the Palomino Valley Corrals (PVC) before being released back into the HMA.

Analysis of the above information indicates the current AML of “188-314” wild horses in the Buffalo Hills Allotment/ Buffalo Hills HMA is appropriate and that excess wild horses are present and require immediate removal.

1.2 Purpose and Need

The purpose of the Proposed Action is to capture about 555-585, release about 91-123, and remove about 462 from the Buffalo Hills HMA to achieve a remaining population within the AML range, to protect rangeland resources from the deterioration associated with the current overpopulation of wild horses as authorized under Section 3(b) (2) of the *Wild Free-Roaming Horses and Burros Act of 1971* (1971 WFRHBA) and Section 302(b) of the Federal Land Management and Policy Act of 1976; and, to decrease the annual population growth by implementing fertility control. The gather would also benefit the health of animals remaining in the HMA and reduce the risk for starvation of at least some animals (wild horses and wildlife) this winter due to scarcity of forage.

Implementation of the Proposed Action is needed at this time to prevent death from starvation and exposure of this coming winter and reduce impacts to rangeland and wildlife resources from overgrazing by wild horses. This gather would reduce the current wild horse population to the established appropriate management levels to protect horse health and sustainability, support significant progress toward achievement of the Sierra Front-Northwest Great Basin Standards for Rangeland Health; and, move toward a thriving natural ecological balance between wild horse populations, wildlife, vegetation, riparian-wetland resources, water resources, and domestic livestock.

1.3 Land Use Plan Conformance

The Proposed Action is in conformance with the Sonoma-Gerlach Resource Area Management Framework Plan (MFP) Record of Decision (ROD), approved on July 9th, 1982. Applicable decisions and goals are: to manage sustainable populations of wild horses, maintain a thriving ecological balance, and to maintain free-roaming behavior.

1.4 Relationship to Laws, Regulations, and Other Plans

Under the Proposed Action alternative in this EA, no federal, state, or local law, or requirement imposed for the protection of the environment will be threatened or violated. The Proposed Action is in conformance with all applicable regulations at 43 CFR (Code of Federal Regulations) 4700 and policies, as well with the 1971 WFRHBA. More specifically, this action is designed to remove excess wild horses consistent with the following regulation:

- ❑ 43 CFR 4720.1: *“Upon examination of current information and a determination that an excess of wild horses or burros exists, the authorized officer shall remove the excess animals immediately...”*

Environmental analyses conducted in previous years which analyzed the impacts of various gather methods on wild horses and other critical elements of the human environment in this area include the following documents available for public review at the Winnemucca District Office:

- *Buffalo Hills Complex Wild Horse Capture Plan, EA No. NV-020-05-05, 11/04.*
- *Buffalo Hills-South Granite Range Complex Capture Plan & EA. EA No. NV-020-02-10, 1/02.*
- *Buffalo Hills Complex Capture Plan & EA. EA No. NV-020-00-50, 11/00.*
- *Programmatic EA, Wild Horse Fertility Control Research, EA No. NV-020-00-02, 11/99.*
- *Buffalo Hills/Granite Range Horse Gather EA. EA No. NV-020-03-15, January 1993.*
- *Winnemucca District Wild Horse/Burro Removal Programmatic Environmental Assessment, EA No. NV-020-7-24, August 1987.*
- *Buffalo Hills, Granite Range, and Calico Mtns HMA's Wild Horse Gathering Plan EA. EA No. NV-020-5-15, March 1985.*

1.5 Conformance with Rangeland Health Standards

The Buffalo Hills HMA has not been assessed for conformance with Standards for Rangeland Health as developed in consultation with the Sierra Front-Northwestern Great Basin Resource Advisory Council (RAC). However, some riparian assessments have been conducted prior to 2003. Utilization monitoring and trend data indicates excess wild horse use is contributing to the Riparian/Wetland and Plant and Animal Habitat Standards not being met. The Proposed Action is consistent with making significant progress towards or meeting Rangeland Health Standards and conforms to the recommendations presented in the March 2007 *Standards and Guidelines for Management of Wild Horses and Burros of the Sierra Front-Northwest Great Basin Area*.

1.6 Identification of Issues

The following issues were identified as a result of internal scoping and consultation with affected livestock operators and will be used in the preliminary EA to analyze the alternatives:

1. Impacts to individual wild horses and the herd from proposed capture, removal and handling procedures. Measurement indicators for this issue include:
 - Projected population size and annual growth rate (WinEquus population modeling)
 - Expected impacts to individual wild horses from handling stress
 - Expected impacts to herd social structure
 - Potential effects to genetic diversity
 - Potential impacts to animal health and condition
2. Impacts to affected critical and other elements of the human environment from the proposed wild horse capture and removal. Measurement indicators for this issue include:
 - Potential for temporary displacement, trampling or disturbance
 - Potential competition for forage and water over time (expected change in actual forage utilization by wild horses)
 - Expected impacts to range conditions including wildlife habitat and populations

2.0 PROPOSED ACTION AND ALTERNATIVES

This section of the EA describes the Proposed Action and alternatives, including any that were considered but eliminated from detailed analysis. Alternatives analyzed in detail include the following:

- Alternative A. The Proposed Action: Remove Excess Wild Horses with Fertility Control
- Alternative B. Remove Excess Wild Horses without Fertility Control
- Alternative C. Remove Excess Wild Horses and Adjust Sex Ratios in Favor of Males
- Alternative D. No Action: Defer Gather & Removal

The Proposed Action together with the other action alternatives were developed to meet the purpose and need and in response to the issues identified during internal scoping and consultation. Although the No Action alternative does not comply with the 1971 WFRHBA (as amended), nor does it meet the purpose and need for action, it is included as a basis for comparison with the action alternatives.

2.1 Description of Alternatives Considered in Detail

2.1.1 Management Actions Common to Alternatives A-C

- The capture would be scheduled to occur sometime in January or February 2009 and would take about two weeks to complete. All gathering and handling activities would be conducted in accordance with the Standard Operating Procedures (SOP's) described in Appendix A. Several factors such as animal condition, herd health, weather conditions, or other considerations may result in adjustments to the gather schedule.
- The helicopter drive method would be used and would include multiple trap sites. BLM would be responsible for contractor compliance to national contract specifications, including SOPs.
- Trap sites and holding facilities would be located in previously used trap sites and other disturbed areas. Undisturbed areas would be inventoried for cultural resources. If cultural resources are encountered, these locations would not be utilized unless they could be modified to avoid impacts to cultural resources. Trap sites and holding facilities would not be placed in known areas of Native American concern.
- Information such as: age, sex, color, body condition, or other characteristics would be recorded on captured animals.
- Hair samples for genetic testing would be taken on about 50 wild horses.
- Excess animals would be sent to Bureau facilities for adoption, sale, or long-term holding.
- Noxious weed monitoring at trap sites and temporary holding facilities would be conducted in the spring and summer of 2009 by BLM. Treatment would be provided, if necessary, following guidance from the Noxious Weed Control EA# NV-020-02-19.

2.1.2 Alternative A. Proposed Action: Remove Excess Wild Horses w/ Fertility Control

The Proposed Action would involve the capture of about 555-585, release of 91-123, and removal of about 462 wild horses from the Buffalo Hills HMA. Assuming a minimum of 85-90% of the total population is captured (555-585 wild horses); porcine zona pellucidae (PZP) vaccine would be applied to about 45-61 mares prior to their release back to the range. PZP would be applied in accordance with the management and monitoring requirements in Appendix B. PZP vaccine would not be applied to release mares if less than 555 horses are captured (85% of the total population). The estimated number of wild horses remaining within HMA following the gather would be a minimum of about 188 animals.

2.1.3 Alternative B. Remove Excess Wild Horses without Fertility Control

Under Alternative B, about 462-490 excess wild horses would be captured and about 462 horses removed from the Buffalo Hills HMA. This allows for about fourteen older horses to be released back into the HMA. The estimated number of animals remaining within the HMA following the gather would be a minimum of about 188 animals.

2.1.4 Alternative C. Remove Excess Wild Horses, Adjust Sex Ratios in Favor of Males

This alternative would involve the capture of about 80% of the total population or about 520 animals. Under this alternative, about 462 animals would be removed and about 58 horses would be released post-gather. A higher number of males (studs) would be released to achieve a 60/40 male/female sex ratio in the post-gather population of about 188 animals.

2.1.5 Alternative D. No Action Alternative. Defer Gather and Removal.

Under the No Action Alternative, the capture and removal of approximately 462 excess wild horses would not occur within the next year. There would be no active management to control the size of the wild horse populations at this time and populations would continue to grow at a historic rate of about 20%.

2.1.6 Alternatives Considered but Dismissed from Detailed Analysis

One alternative considered but dismissed from detailed analysis was to water trap excess wild horses. This option could not be implemented during a winter gather due to limited access, snow, and the presence of a designated Wilderness Study Area which limits vehicle access.

2.1.7 Comparison of Alternatives Considered in Detail

Item	Proposed Action	Alternative B	Alternative C	No Action Alternative
Impacts to Wild Horses				
No. Captured in HMA	555-585	462-490	520	0
No. Removed from HMA	About 462 wild horses.			0
No. Released back to HMA	91-123	0-14	58	0
PZP Applied	Yes	No	No	No
Post-Gather Sex Ratio (approx)	50/50 males/females	50/50 males/females	60/40 males/females	50/50 males/females
Post-Gather Pop.	An estimated post-gather population of 188 wild horses would remain under the action alternatives (i.e. low range of AML).			The current population of 650 animals would be expected to grow to 780 animals following the 2009 foaling season.
Impacts to Vegetation	Managing the wild horse population within the AML would be expected to decrease utilization of available forage (especially to preferred native upland grass species and riparian species), reduce trampling and trailing damage, and lead to improvement in range conditions over the long-term.			Overpopulation of wild horses would be expected to continue to result in range deterioration and contribute to nonattainment of rangeland health standards.
Impacts to Wildlife, Migratory Birds and Special Status Species	Short-term disturbance to wildlife species would be expected during the gather operation (about two weeks). Managing the wild horse population within the AML would be expected to decrease competition with wildlife for limited forage and water resources, and lead to			Overpopulation of wild horses would be expected to continue to result in competition

	improved habitat quality over the long-term.	with wildlife for limited forage and water resources and deteriorated habitat quality.
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3.0 THE AFFECTED ENVIRONMENT

This section of the EA briefly discusses the relevant components of the human environment which would be either affected or potentially affected by the Action Alternatives or No Action (refer to Tables 1 and 2 below). Direct impacts are those that result from the management actions while indirect impacts are those that exist once the management action has occurred.

3.1 General Description of the Affected Environment

The Buffalo Hills HMA is located 80 miles north of Reno and 100 miles west of Winnemucca, within Washoe County, Nevada. This HMA is approximately 132,000 acres in size and lies north and west of the small town of Gerlach, NV (Map 1). Eighty percent of this HMA is characterized as a three thousand foot basaltic plateau dominated by large, rugged, rocky canyons, and juniper trees (photos 1-2). Elevations range from 3,823 feet along the Smoke Creek Desert to 6,832 feet at Poodle Mountain; however the majority of the HMA lies between 5,000 and 6,000 feet, and wild horses utilize this area year-round. The east and south sides of the HMA are unfenced and horses can move between the Granite Range and Fox-Lake Range HMAs. However, little horse movement from the area or between adjacent HMAs is known to occur.



Photo 1. S view across HMA to horizon, 4/04.



Photo 2. Poodle Mtn area looking west, 8/08.

Climate within the HMA is characterized by warm dry days, cool nights and low yearly precipitation that range from 4 at lower elevations to approximately 16 inches at higher elevations. Most precipitation occurs as winter snow. The current *Palmer Drought Severity Index (PDI)* classifies northern Nevada in a “severe drought” and that an additional 6-9 inches of precipitation is needed to bring the PDI up to -0.5 (NOAA, Nov 1, 2008). The *Long-Term Drought Indicator Blend* report (NOAA, Nov 4, 2008) categorizes northwest Nevada as “D3 - extreme drought with major crop/pasture losses and widespread water shortages or restrictions” expected for the next 6-60 months.

Vegetation varies from salt desert shrub communities at lower elevations to big sagebrush/bunch grass communities at higher elevations. Typical species at lower elevations include shadscale, bud sage, winterfat, black greasewood, squirreltail, and Sandberg’s bluegrass. Species typical in

higher elevations include low sage, Wyoming big sagebrush, mountain big sagebrush, bitterbrush, rabbitbrush, Utah juniper, needlegrass, blue bunch wheatgrass, basin wildrye, squirreltail, Indian paintbrush, and phlox.

Numerous dirt catchments (relying on annual runoff events) provide drinking water and natural springs and seeps are an important source of water to wild horses within the HMA.

3.2 Critical Environmental Elements

To comply with the National Environmental Policy Act, the following elements of the human environment are subject to requirements specified in statute, regulation or executive order and must be considered.

3.2.1 Critical Elements Checklist

CRITICAL ELEMENTS	Present	Affected	Rationale
Air Quality	YES	NO	The proposed gather area is not within an area of non-attainment or areas where total suspended particulates exceed Nevada air quality standards. Areas of disturbance would be small and temporary.
Areas of Critical Environmental Concern (ACEC's)	NO	NO	Resource not present.
Cultural Resources	YES	YES	Trap sites and/or holding corrals would be placed in disturbed areas or inventoried prior to use. Locations would avoid cultural resource sites. However, other potential impacts are discussed below.
Environmental Justice	NO	NO	Not present.
Floodplains	NO	NO	Resource not present.
Invasive, Nonnative Species	YES	NO	Any noxious weeds or non-native invasive weeds would be avoided when establishing trap and/or holding facilities, and would not be driven through. Noxious weed monitoring at trap/holding sites would be conducted and applicable treatment of weeds would occur per Noxious Weed Control EA#NV-020-02-19 as needed.
Migratory Birds	YES	YES	Discussed below.
Native American Religious Concerns	YES	YES	Discussed below.
Prime or Unique Farmlands	NO	NO	Resource not present.

Threatened & Endangered Species	NO	NO	The U.S. Fish and Wildlife Service (2007) lists the yellow-billed cuckoo as a candidate species for this HMA. Yellow-billed cuckoos require extensive multi-story galleries of cottonwoods. No such habitat occurs in the project area and no local occupation by this species is known. For this reason, the proposed action is judged to have no impact on this species or its habitat and will be dismissed from further analysis.
Wastes, Hazardous or Solid	NO	NO	Not present.
Water Quality (Surface/Ground)	YES	YES	Discussed below with Wetlands and Riparian Zones.
Wetlands and Riparian Zones	YES	YES	Discussed below.
Wild and Scenic Rivers	NO	NO	Resource not present.
Wilderness	NO	NO	Resource not present.

Critical elements identified as present and potentially affected by the Action Alternatives (Alternatives A-C) and/or No Action Alternative include: Cultural Resources, Migratory Birds, Native American Religious Concerns, Water Quality, and Wetlands and Riparian Zones. These critical elements are discussed further in the following sections.

3.2.2 Cultural Resources

A complete inventory of archeological sites in the Buffalo Hills HMA has not been completed. Previous inventories have identified pre-historic sites (rock art sites, lithic scatters, isolated projectile points, etc.) in the area. The highest concentration of prehistoric sites is in association with permanent and intermittent water sources. Historic sites associated with ranching and mining are known to occur in this area as well. The 1852 Nobles Route, a cutoff from the Applegate-Lassen Trail, went from Great Boiling Springs (near present day Gerlach) to Deep Hole Springs and along the northwest edge of the Smoke Creek Desert to Honey Lake Valley, California. Deep Hole Springs (where there was a trading post), Wall Springs and Buffalo Springs were stops along the route. Travelers to California and Oregon utilized this route. In 1859 through 1860 the Nobles Route was improved by F.W. Landers utilizing Congressionally approved funding and it became a part of the Fort Kearny-South Pass-Honey Lake Wagon Road. A mining boom in Silver City Idaho starting in 1862, also led to heavy use by Idaho bound travelers and freight.

3.2.3 Migratory Birds

Neo-tropical migrant bird species are those species that breed in the temperate portions of North America and winter in the tropics in either North or South America. They are protected by international treaty and additional emphasis on maintaining or improving their habitats is provided by Executive Order #13186. Within the Great Basin and the project area, quality riparian habitats and healthy sagebrush communities with inclusions of trees and shrubs are required for healthy neo-tropical migrants' populations.

A migratory bird inventory has not been completed for the Buffalo Hills HMA. However, a point count transect has been set up on the west side of the Selenite range in close proximity to the Buffalo Hills HMA and in similar habitat. Most of the vegetation communities in the Buffalo Hills HMA are characterized by sagebrush community species. Migratory birds observed on the nearby point count transect include: black-throated sparrow, rock wren, rage sparrow, Western meadowlark, horned lark, Say's phoebe, lark sparrow, violet-green swallow, tree swallow, Bullock's oriole, and black-billed magpie. Other possible inhabitants of this habitat include Brewer's blackbird, Brewer's sparrow, burrowing owl, canyon wren, gray flycatcher, green-tailed towhee, loggerhead shrike, sage thrasher, and vesper sparrow (Great Basin Bird Observatory, 2003). The burrowing owl, loggerhead shrike, and vesper sparrow are BLM designated sensitive species and are discussed in section 3.3.3.

3.2.4 Native American Religious Concerns

The horse gathers are within the traditional territory of the Kamodokado ("jack-rabbit eaters") of Gerlach, Nevada. Antelope and jack rabbits were the most abundant resources in this area (Stewart: 137). According to Riddel (1960:40, 50) and Bengston (2006: I.12-13) there were also sources of salt and obsidian near Gerlach. Fowler (1989:7) identifies Squaw Creek Valley as the "valley where Deep Hole is located." Deep Hole Springs is located on private land in the south east portion of the capture area. No trap sites or holding corrals would be set up in this area. There are no known traditional cultural properties or sacred sites in the capture areas. However, water sources are considered sacred by Native American tribes and riparian zones, in particular, are rich sources of plants for medicinal and other uses.

The Susanville Indian Rancheria and the Pyramid Lake Paiute Tribe were contacted by letter and follow-up phone calls regarding the proposed horse gather. Both Tribes stated that they had no comments about the proposed gather.

3.2.5 Water Quality, Wetlands and Riparian Zones

Riparian areas are limited within the Buffalo Hills HMA and are generally associated with springs and seeps. Riparian sites within the Buffalo Hills HMA have been recently assessed for riparian functionality. The majority of sites are classified as "functioning at risk." Riparian sites are heavily utilized especially when the water flow is low and water availability is limited during droughts (photo 3). Observations of meadows associated with springs within the HMA show severe utilization of meadows, residual stubble heights of less than two inches and active erosion of meadow soils due to trampling (photos 4-5). Numerous dirt catchments exist, but water availability is dependent on seasonal water or storm events and water quality degrades with heavy use (photo 6).



Photo 3. Low spring flows, 4/08.



Photo 4. Meadow utilization, 8/08.



Photo 5. Residual meadow vegetation, 8/08.



Photo 6. Poor water quality in dirt catchment, 8/08.

3.3 Additional Affected Resources

In addition to the critical elements above, the following resources may be affected by the Action Alternatives (Alternatives A-C) and/or No Action Alternative: livestock management, sensitive and/or special status species, soils, vegetation, wild horses, wildlife, and wilderness study areas.

3.3.1 Other Resources Checklist

OTHER RESOURCES	Present	Affected	Rationale
Livestock Management	YES	YES	Discussed below.
Sensitive Species/Special Status Species	YES	YES	Discussed below.
Soils	YES	YES	Soil disturbances would be less than 1 acre in size and trap sites would be located in previously disturbed areas. Discussed further under vegetation.
Vegetation	YES	YES	Discussed below.
Wild Horses	YES	YES	Discussed below.
Wildlife	YES	YES	Discussed below.
Wilderness Study Area	YES	YES	Discussed below.

3.3.2 Livestock Management

Cattle use within the Buffalo Hills HMA is rotated between two consecutive years of grazing and two consecutive years of rest. On the years where grazing is permitted, 639 cattle can be authorized from 4/1 to 10/15. In 2007 and 2008, actual use was at permitted levels; it will be rested in 2009 and 2010. Sheep trailing is permitted on a yearly basis and the schedule can vary.

3.3.3 Sensitive Species, Special Status Species and Wildlife

Both Threatened and Endangered Species (addressed in 3.2.1) and Sensitive Species (addressed below) are considered Special Status Species. No on-the-ground field investigation was conducted for sensitive/protected plant, or animal species including birds. However, the Nevada Natural Heritage Program (NNHP) database (March, 2008) and the Nevada Department of Wildlife (NDOW) Diversity database (August, 2007) were consulted for the possible presence of endangered, threatened, candidate and/or sensitive plants or animal species. NDOW data show observances of golden eagle, prairie falcon, northern goshawk, and burrowing owl within the Buffalo Hills HMA. The NNHP database showed no observances of Special Status Species within the HMA.

Sensitive Species

The following designated Bureau of Land Management (BLM) sensitive animal species are described as they have either been seen in the HMA or the HMA contains habitat characteristics conducive to these species.

Bats

Several species of bats may occur in this HMA. Most bats in Nevada are year-round residents. In general terms, bats eat insects and arthropods during the warmer seasons and hibernate in underground structures during the cooler seasons. Bats commonly roost in caves, mines, outcrops, buildings, trees and under bridges. Bats may eat flies, moths, beetles, ants, scorpions, centipedes, grasshoppers, and crickets. Bats thrive where the plant communities are healthy enough to support a large population of prey (Bradley et al 2006).

Burrowing Owl

Burrowing owls are known to occur within this HMA. Burrowing owls prefer open, arid, treeless landscapes with low vegetation. They are dependent upon burrowing mammal populations for maintenance of nest habitat and choose nesting areas based on burrow availability (Floyd et al 2007). These birds are highly adaptable and readily nest in open disturbed areas such as golf courses, runways, and industrial areas that border suitable habitat (Neel, 1999). Dense stands of grasses and forbs within owl home ranges support populations of rodent and insect prey. Urbanization is the biggest threat to this species as suitable habitat is converted to non-habitat for human use (Floyd et al 2007).

Greater Sage-grouse

Greater sage-grouse is a BLM sensitive species. The HMA contains 103,145 acres of key sage-grouse habitat. Key habitat is designated for those areas that support all the habitat requirements to support sage-grouse populations. Four active leks have been identified within the HMA with two additional leks with historic use. Leks are communal breeding ground for sage-grouse and are commonly considered to be the center of nesting activity. Sage-grouse require large expanses of sagebrush with good under stories of forbs and grasses. Sagebrush provides nesting and hiding cover and forage for much of the year. Forbs provide spring nutrition and grasses provide visual screening for nests. Additionally wet meadows are needed to provide green forbs when other sites dry out, water and insects for the chicks during the hot summer months.

Pygmy Rabbit

In the Great Basin, the pygmy rabbit is typically restricted to the stands of tall sagebrush on deep loamy soils. There has been no inventory for pygmy rabbits in this HMA so their presence is unknown. Surveys have been completed to the north and west of the HMA during 2005 and 2006. No rabbits or signs of their occupation were observed (Larrucea, 2007).

Raptors

Golden eagle, prairie falcon, and northern goshawk have been observed in the HMA. Golden eagles are primarily cliff nesters and would utilize the area to forage for prey species such as jackrabbits and other small mammals. Golden eagles are protected under the Bald and Golden

Eagle Protection Act. Nevada's Golden eagle population is thought to be stable to increasing. They are widespread and frequently encountered (Floyd et al 2007).

The prairie falcon may be found foraging in sagebrush habitats that have cliffs in close proximity for nesting. They prey on small mammals and birds, especially horned lark. Populations experienced declines in the 60's and 70's but appear to be stable now in the West (Paige and Ritter 1999).

The Northern goshawk is a forest hawk inhabiting coniferous and aspen forests. One sighting was reported in this HMA in the month of October. This individual would have been migrating to a winter area and not occupying the area for any length of time. No nesting, breeding, or foraging habitat exists within the HMA.

Vesper Sparrow

The vesper sparrow may be found in this HMA since it typically inhabits sagebrush-grass vegetative communities at the higher elevations. The vesper sparrow forages on the ground and eats mostly seeds from grasses and forbs and will also eat insects when they are available. The vesper sparrow responds negatively to heavy grazing in sagebrush/grasslands. In these habitats, it benefits from open areas with scattered shrubs and a cover of good bunchgrasses for nest concealment, since it is a ground nester (Paige and Ritter 1999).

Wildlife

Terrestrial wildlife resources in the Buffalo Hills HMA are typical of the Northern Great Basin. A wide variety of wildlife species common to the Great Basin ecosystem can be found within the HMA. The vegetation in the HMA could be categorized into the two broad vegetative types – juniper and sagebrush/salt desert scrub. Common wildlife species occurring in the HMA include coyote, black-tail jackrabbit, desert cottontail, bobcat, and numerous raptors, reptiles, and other small mammal species. Mule deer and pronghorn antelope are common big game species in the HMA.

Mule Deer

The HMA contains 110,826 acres (83% of the HMA) of mule deer habitat. Most of the habitat is classified as yearlong habitat, with a little over 1,000 acres considered crucial winter habitat. Deer are generally classified as browsers, with shrubs and forbs making up the bulk of their annual diet. The diet of mule deer is quite varied; however, the importance of various classes of forage plants varies by season. In winter, especially when grasses and forbs are covered with snow, their entire diet may consist of shrubby species.

Pronghorn Antelope

The HMA contains 118,555 acres of pronghorn antelope habitat (89% of the HMA). About 39% of this area is considered as crucial winter range, where antelope concentrate on winters with heavy snow accumulations. Pronghorn use open country with few trees and short shrubs. This is the same habitat that wild horses prefer. Antelope diets consist of forbs and grasses during the spring and early summer and shrub browse the remainder of the year.

3.3.4 Vegetation and Soils

Vegetation varies from salt desert shrub communities at lower elevations to big sagebrush/bunch grass communities at higher elevations. Typical species at lower elevations include shadscale, bud sage, winterfat, black greasewood, squirreltail, and Sandberg's bluegrass. Species typical in higher elevations include low sage, Lahontan sagebrush, Wyoming big sagebrush, mountain big sagebrush, bitterbrush, rabbitbrush, Utah juniper, needlegrass, blue bunch wheatgrass, basin wildrye, squirreltail, Indian paintbrush, and phlox.

Site visits were conducted in late August and mid-November. Where grasses are accessible, utilization is estimated between 40 to 90 percent throughout the HMA with the majority of plants

showing utilization of 60-80% (photo 7). There is evidence of horses traversing extremely rocky slopes in search of grasses. Much of the bitterbrush and other palatable browse species throughout the HMA, but especially in areas near waters, are decadent (photo 8) or dead (some known moth kill) and other plants show low production and moderate to heavy hedging, with the majority of plants and leaders browsed.



Photo 7. Heavy utilization, basin wildrye, 8/08.



Photo 8. Decadent browse species, 8/08.

Utilization of new plant growth on the area burned (about 1,000 acres) by the Tin Canyon Fire in 2002 is heavy to severe (photos 9-10). The occurrence of bare soil is high with deep soil churning, heavy trailing and active erosion due to the lack of vegetation and hoof actions.



Photo 9. Burned/unburned vegetation and bare soil contrast, 8/08.



Photo 10. Wild rose growing through deep churned soils in burn area, 8/08.

3.3.5 Wild Horses

The Buffalo Hills Herd Use Area (HUA) or Herd Area (HA) was designated following the passage of the 1971 WFRHBA (i.e. wild horses were present there at the time the Act passed). One hundred percent of the HUA was designated as a herd management area (HMA) suitable for the long-term management of wild horses through land use planning completed in the early 1980's.

Since then, the AML has been adjusted based on in-depth analysis of habitat suitability and monitoring data through Decision Records/Finding of No Significant Impacts (FONSI) and

accompanying EAs. The HMA is managed for an AML range from 188 to 314. The current population is estimated at 650 head (over three times the low range AML).

Horses are descendants of ranch horses and cavalry remounts. Based on 2005 capture data, horses exhibit bay (61%), sorrel (18%), brown (8%), or black (8%) coat colors. It is uncommon to find buckskins, palominos, roans, pintos, duns, or excessive white markings. Observed phenotypes are fairly consistent and are of Morgan-type. Genetic sampling in 2002 suggests close genetic similarity to domestic horse breeds including, Tennessee Walker, American Saddlebred, Morgan, and Standardbred. Genetic diversity indicators are good. The last capture sex ratio was 54% mares and 46% studs which falls in the normal range. Approximately 60% of the herd was 0-5 years old, 23% were 6-9 years old, and 17% were 10 years and older which is typical of a normal age structure.

Following the February 2005 gather, the estimated population remaining on the range was 306 animals. The population has grown to an estimated 650 animals, indicating the annual growth rate averaged 21% over the past three years.

Numerous studies identify dietary overlap of preferred forage species and habitat preference between horses, cattle, and wildlife species in the Great Basin ecosystems for all seasons (Ganskopp 1983; Ganskopp et al 1986, 1987; McInnis 1984; McInnis et al 1987; Smith 1986a, 1986b; Smith et al 1982; Vavra et al 1978). A strong potential exists for exploitative competition between horses and cattle under conditions of limited forage (water, and space) availability (McInnis et al 1987). Wild horses compete with other wild horses and with wildlife species for various habitat components, especially when populations exceed AML and/or habitat resources become limited (i.e., reduced water flows, low forage production, dry conditions, etc.).

3.3.6 Wilderness Study Areas

The Poodle Mountain (NV-020-12) Wilderness Study Area (WSA) is located within the HMA as displayed on Map 1. Section 603 (c) of FLPMA directs how the BLM is to manage “lands under wilderness review,” which includes WSAs. These lands are to be managed in a manner so as not to impair the suitability of such areas for preservation as wilderness. Consequently, actions proposed within WSAs are to be evaluated on the basis of their possible direct and indirect impacts on the untrammeled character of the area and wilderness values of naturalness, solitude and primitive or unconfined recreation, and special features. Bureau policy (H-8550-1.III.E) directs that wild horse and burro populations must be managed at appropriate management levels within wilderness study areas. All temporary trap sites and/or holding corrals fall outside these WSA boundaries. Any additional trap sites would be located outside WSA boundaries or on identified roads (ways) within WSAs.

4.0 ENVIRONMENTAL CONSEQUENCES

4.1 Alternative A-C (Action Alternatives) and Alternative D (No Action)

Direct impacts and indirect impacts regarding Alternatives A-C (Action Alternatives) and Alternative D (No Action) are discussed in each resource section below.

4.1.1 Cultural Resources

Impacts Common to the Action Alternatives (A-C)

Direct impacts to cultural resources are not anticipated to occur because gather sites and temporary holding facilities would be placed in previously disturbed areas or inventoried for cultural resources prior to construction. If cultural resources are encountered, these locations would not be utilized unless they could be modified to avoid impacts to cultural resources.

Areas in the vicinity of permanent and intermittent water sources (i.e., riparian areas) have the highest potential for cultural resource sites. Since wild horses and burros concentrate in these areas, these areas are most likely to be impacted by trampling and erosion. Indirect impacts to

cultural resources would be reduced in riparian zones where concentrations of horses can lead to modification and displacement of artifacts and features as well as erosion of organic middens containing valuable information.

Alternative D. No Action. Defer Gather and Removal.

There would be no direct impacts under this alternative. However indirect impacts described above may increase as wild horse populations continue to increase and concentrate.

4.1.2 Migratory Birds

Impacts Common to Action Alternatives (A-C)

The project area contains riparian and sagebrush habitats, therefore potential impacts to neotropical migrants may be expected. The action alternatives would not directly impact migratory bird populations. The gather would occur when migratory species are not within the HMA. Small areas of migratory bird habitat would be impacted by trampling at trap sites and holding facilities. This impact would be minimal (generally less than 0.5 acre/trap site), temporary, and short-term (two weeks or less) in nature. Indirect impacts would be related to wild horse densities and patterns of use. Reduction of current wild horse populations would provide opportunity for vegetative communities to progress toward achieving a thriving natural ecological balance. The action alternatives would result in an impact to migratory bird habitat by supporting a more diverse vegetative composition and structure through improvement and maintenance of healthy populations of native perennial plants. These improvements would benefit migratory bird species including loggerhead shrikes, vesper sparrows, burrowing owls and migratory and resident raptor species. According to Paige and Ritter (1999), “Long-term heavy grazing may ultimately reduce prey habitat and degrade the vegetation structure for nesting and roosting. Light to moderate grazing may provide open foraging habitat.”

Alternative D. No Action: Defer Gather & Removal

No direct impacts. Indirect impacts would be the increasing inability of rangelands to support healthy populations of native perennial plants. Indirect impacts to vegetative communities would increase each year that a gather is postponed which would impact migratory bird species and their habitats.

4.1.3 Native American Religious Concerns

Impacts Common to Action Alternatives (A-C)

No direct impacts to areas of Native American concern would occur because trap sites and holding areas would be placed in previously disturbed areas and/or in areas where there are no known Native American concerns. Indirect impacts to plants in riparian zones used by Native Americans for medicinal and other purposes would be reduced.

Alternative D. No Action: Defer Gather & Removal

There would be no direct impacts under this alternative. There would be indirect impacts to areas of Native American concern in riparian zones where concentrations of horses could impact plants utilized by Native Americans for medicinal and other purposes.

4.1.4 Water Quality, Wetlands and Riparian Zones

Impacts Common to Action Alternatives (A-C)

Direct impacts to water quality, wetlands or riparian zones occur when wild horses cross streams or springs as they are herded to temporary gather sites. This impact would be temporary and relatively short-term in nature. Indirect impacts would be related to wild horse population size. Reduction of wild horse populations from current levels would decrease competition for available water sources which should lead to a reduction in hoof action around unimproved springs, improvement in stream bank stability, and improved riparian habitat condition due to decreased utilization.

Alternative D. No Action: Defer Gather & Removal

No direct impacts. Indirect impacts would be increasing degradation to riparian habitats and water quality as horse populations increase each year that a gather is postponed.

4.1.5 Livestock Management

Impacts Common to Action Alternatives (A-C)

No direct impacts to livestock within the Buffalo Hills Allotment/HMA would be expected as the gather would be completed outside the authorized period for livestock use. The indirect impacts would be an increase in the forage availability and quality, reduced competition for water and forage, and improved vegetative resources that would lead to a thriving ecological condition.

Alternative D. No Action: Defer Gather & Removal

There would be no direct impacts of this alternative to the livestock operators or livestock operation. The indirect impacts would be continued resource deterioration resulting from competition between wild horses and livestock for water and forage, reduced quantity and quality forage, and undue hardship on the livestock operators through a lack of livestock forage on public lands.

4.1.6 Sensitive Species, Special Status Species and Wildlife

Impacts Common to Action Alternatives (A-C)

In addition to impacts discussed for migratory bird species in section 4.1.2, direct impacts would consist primarily of disturbance and displacement to wildlife by the low-flying helicopter and construction of temporary trap/holding facilities. Typically, the natural survival instinct to this type of disturbance is to flee from the perceived danger. These impacts would be minimal, temporary, and of short duration. There is a slight possibility that non-mobile or site-specific animals would be trampled. Indirect impacts would be related to wild horse densities. A reduction in the number of wild horses from current levels would decrease competition for available cover, space, forage, inter-specific stress and competition, and water. Wild horses often display dominant behavior over wildlife species and livestock at water sites forcing animals to wait or go elsewhere for water. A reduction in forage utilization levels and hoof action would improve stream bank stability and riparian habitat condition which would increase insect production required by foraging bats and summering sage-grouse. Reduced utilization levels should produce increased plant vigor, seed production, seedling establishment, and ecological health of the habitat. Resident populations of mule deer and pronghorn antelope would benefit from an increase in forage availability, vegetation density and structure.

The Proposed Action and other action alternatives would result in reduced competition with wildlife which would increase the quantity and quality of available forage. There would be fewer disturbances associated with wild horses along stream and riparian habitats and adjacent upland habitats.

Alternative D. No Action: Defer Gather & Removal

Maintaining the status quo of the wild horse population would negatively impact sensitive species, and other wildlife species and their habitats and would be of greater impact than the Proposed Action. Repeated utilization of key grass, forb, and shrub species; during the peak growing season, may not allow proper plant health. Over time, this may result in diminished habitat quality.

No direct impacts are expected under this alternative. Indirect impacts include increased competition between wild horse and wildlife species and also diminished habitat conditions. Wild horse populations would increase (about 20%) each year that the gather is postponed, which would impact ecological conditions, wildlife populations, and other resource values.

4.1.7 Vegetation and Soils

Impacts Common to Action Alternatives (A-C)

Direct impacts associated with the action alternatives would consist of disturbance to vegetation and soil surfaces immediately in and around the temporary gather site(s) and holding facilities. Impacts would be created by vehicle traffic; hoof action as a result of concentrating horses, and could be locally high in the immediate vicinity of the gather site(s) and holding facilities. Generally, these sites would be small (less than one half acre) in size. Any impacts would remain site specific and isolated in nature. These impacts would include trampling of vegetation. Impacts would be minimal as herding would have a short-term duration.

In addition, most gather sites and holding facilities would be selected to enable easy access by transportation vehicles and logistical support equipment. Normally, they are located near or on roads, pullouts, water haul sites or other flat areas, which have been previously disturbed. These common practices would minimize the long-term effects of these impacts.

Implementation of the action alternatives would reduce the current wild horse population and provide the opportunity for the vegetative communities to progress toward achieving a thriving natural ecological balance. Reduced concentrations of wild horses would contribute to the recovery of the vegetative resource and reduce soil erosion. Utilization levels by wild horses would be reduced, which would result in improved forage availability, vegetation density, increased vegetation cover, increased plant vigor, seed production, seedling establishment, and forage production over current conditions. Higher quality forage species (grasses) would be available. Individual wild horse condition and health would improve due to less competition for available resources.

Alternative D. No Action: Defer Gather & Removal

No direct impacts are expected under this alternative. Indirect impacts include increased competition for forage among multiple-uses as wild horse populations continue to increase. Forage utilization would exceed the capacity of the range resulting in a loss of desired forage species from plant communities as plant health and watershed conditions deteriorate. Soil loss from wind and water erosion, and invasion of undesired plant species would occur. Abundance and long-term production potential of desired plant communities may be compromised.

Indirect impacts would be increasing degradation to riparian habitats as horse populations increase each year that a gather is postponed.

4.1.8 Wild Horses

Impacts Common to All Alternatives

Win Equus population modeling was completed to determine the potential for the wild horse population to crash under the three action alternatives (A-C) or No Action. Modeling results (Appendix C) indicate that none of the action alternatives would crash the population, but that additional management actions (e.g., gather every 3-4 years) would be necessary to maintain the population within the AML range of 188-314. A summary of expected annual growth rates and average population size for the four alternatives over a ten year period (2008-2018) follows:

Alternative	Annual Growth Rate (Ave)	Next Projected Gather	Number of Gathers (most typical)	Pop. Size (Ave)
Proposed Action	13 %	4 years	2	302
Alternative B	19 %	3 years	3	328
Alternative C	17 %	3-4 years	3	315
No Action	20 %	NA	0	4,000 +

Impacts Common to Action Alternatives (A-C)

Under the action alternatives (Alternatives A-C), excess wild horses would be captured and removed from the Buffalo Hills HMA. Direct individual impacts include handling stress associated with the gather, capture, sorting, animal handling and preparation, and transportation of the animals. Traumatic injuries that may occur typically involve biting and/or kicking that may result in bruises and minor swelling which normally does not break the skin. These impacts are known to occur intermittently during wild horse gather operations. The intensity of these impacts varies by individual, and is indicated by behaviors ranging from nervous agitation to physical distress. Mortality of individuals from these impacts is infrequent but may occur in one half to one percent of horses gathered in a given removal operation (national BLM statistics). Implementation of SOPs would help minimize direct impacts to animals.

Removing about 462 head of excess wild horses before range conditions deteriorate further would decrease competition for water and forage for the remaining animals. Decreased competition would result in improved wild horse health and condition, especially mares and immature animals, and in healthier forage plants and other habitat resources. It would also minimize the risk for at least some animals (wild horses and wildlife) to starve during winter 2008-2009 due to lack of forage.

Alternative A. The Proposed Action: Remove Excess Wild Horses with Fertility Control

The direct impacts of the Proposed Action would involve the capture of about 555-585 and removal of about 462 excess wild horses from the Buffalo Hills HMA. The release of a total of about 91-123 horses would help to maintain a herd with historical characteristics, genetic diversity, appropriate sex ratios, and a diverse age structure. Of these, about 45-60 mares would be treated with PZP vaccine prior to their release (assuming a minimum of 85-90% of the total population is captured). A post gather wild horse population of approximately 188 head would remain in the HMA. With application of fertility control, the average annual recruitment rate would be expected to be about 13% based on modeling results. The next gather to maintain the population within the established AML would occur in about four years.

Alternative B. Remove Excess Wild Horses without Fertility Control

The direct impacts of Alternative B would involve the capture of 462-490 wild horses and removal of about 462 excess horses from the project area. This allows for about fourteen older horses to be released back into the HMA. The post-gather population of about 188 wild horses would be expected to maintain a herd with historical characteristics, genetic diversity, appropriate sex ratios, and a diverse age structure. In the absence of fertility control application, the average annual recruitment rate would be expected to be about 19%. The next gather to maintain the population within the established AML would occur in about three years.

Alternative C. Remove Excess Wild Horses and Adjust Sex Ratio to Favor Males

The direct impacts of this alternative would be the capture of about 80% of the total population or about 520 animals. Under this alternative, about 462 animals would be removed. The release of about 58 horses would result in a post gather population of about 188 wild horses. The herd would be expected to maintain historical characteristics, genetic diversity, and a diverse age structure, as well as sex ratios within expected norms (40-60% in favor of either males or females). By adjusting the sex ratios of the post-gather population to achieve a 60/40 males/females sex ratio, modeling results indicate the average annual recruitment rate would be about 17%. The next gather to maintain the population within the established AML would occur in about three to four years.

Alternative D. No Action: Defer Gather & Removal

The direct impacts of not removing about 462 excess wild horses would affect current and future herd population numbers. The current population estimate is 650 head. Populations would continue to grow annually by about 20% and would exceed 1,000 head by 2011 (Appendix C).

Wild horses often graze the same area repeatedly throughout the year. Forage plants in those areas receive little rest from grazing pressure. Continuous grazing does not allow plants sufficient time to recover from grazing impacts, resulting in reduced plant health, vigor, reproduction, and ultimately to a loss of native perennial forage species from natural plant communities. Few resources would be available for wildlife and livestock. Horses may move outside the established HMA in search of habitat as demands on resources within the HMA increases.

Indirect impacts may include high horse mortality rates, thin body conditions, and poor health as habitat resources are diminished by increasing horse populations. Older and younger age classes and lactating mares would be most affected by nutritional deficiencies and stress. Skewed sex ratios, undesirable age distributions, and social disruption may result as herd members compete for available resources. Nutritional deficiencies would negatively affect growing animals and may limit their potential growth. Parasites and disease would increase as population densities continue to increase.

4.1.9 Wilderness Study Areas

Impacts Common to Action Alternatives (A-C)

In the short-term, the sight and noise of helicopters would be noticeable throughout the Poodle Mountain WSA during the gather and would reduce opportunities for solitude. However, conducting the gather during the winter months when visitation is least would minimize these effects to the extent possible. Over the long-term, the gather would indirectly decrease trampling, trailing, hedging, and forage utilization of native grasses thereby maintaining vegetative cover and natural conditions. The untrammelled condition of the wilderness study area would continue to be diminished by repeated manipulation of wild horse populations through gathering and removal. We do not anticipate any of the actions proposed under Alternatives A, B, or C would impair the suitability of the Poodle Mountain WSA for preservation as wilderness, should Congress decide to designate the area as such in the future.

Alternative D. No Action: Defer Gather & Removal

The deferred gather under the No Action Alternative would result in the impacts described under sections 4.1.2, 4.1.4, 4.1.6, 4.1.7. These impacts represent continued and increasing degradation of natural conditions within the Poodle Mountain WSA and are inconsistent with current policy for the management of wild horse and burro populations within wilderness study areas. Because this alternative would defer the gather until a later date, the long-term impacts to the areas untrammelled character would continue to occur as described under Alternatives A, B, and C. We do not anticipate any of the actions proposed under Alternative D would impair the suitability of the Poodle Mountain WSA for preservation as wilderness, should Congress decide to designate the area as such in the future.

5.0 CUMULATIVE IMPACTS

The National Environmental Policy Act (NEPA) regulations define cumulative impacts as impacts on the environment that result from the incremental impact of the Proposed Action when added to other past, present, and reasonably foreseeable future actions, regardless of what agency or person undertakes such actions (40 CFR 1508.7). Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time. The analysis area for the purposes of evaluating cumulative impacts is the 132,000 acre Buffalo Hills HMA (Map 1).

Of the affected resources analyzed in Chapter 4, **Wild Horses** and **Vegetation** will be the focus of the cumulative analysis. Other affected resources are not specifically analyzed in this Chapter because the potential cumulative impacts are directly related to wild horse populations and their cumulative impacts on vegetation (habitat) quantity and quality.

5.1 Wild Horses

5.1.1 Past

The Buffalo Hills Herd Use Area was designated in 1982 by the Sonoma-Gerlach Resource Area Management Framework Plan (MFP) Record of Decision (ROD), approved on July 9th, 1982 as a herd management area (HMA) suitable for the long-term management of wild horses.

Seven gathers have occurred with a total of 2,367 wild horses removed and 209 released back into the HMA. The earliest BLM gather in this HMA took place in 1979, while the last gather occurred in 2005. Two notable removals, 1979 and 1993, correspond with a loss of wild horses in the field due to overpopulation, lack of forage and winter conditions. Past gathers and movement of wild horses from nearby HMAs have led to the representation of age and sex classes and the degree of genetic diversity evident in the herd today.

5.1.2 Present

Currently, management of the Buffalo Hills HMA and wild horse population is guided by the July 1982 Sonoma-Gerlach Resource Area Management Framework Plan (MFP) Record of Decision (ROD) and the 1993 Buffalo Hills Allotment Final Multiple Use Decision (FMUD). AML was adjusted in 2000 based on a 15% annual herd increase. This decision changed the AML range from 235-314 to a range of 188-314 wild horses to allow for a four year gather cycle instead of a three year cycle.

Due to weather and other factors, the February 2005 gather left an estimated 306 wild horses in Buffalo Hills instead of the low AML range of 188; this population has grown at an estimated 21% over the past three years to a current population estimate of 650 wild horses, about 3.5 times the low range AML. The current sex ratio of males/females is within the expected range (40-60% in favor of either males or females) with young, middle and older age class animals well represented.

5.1.3 Reasonable Foreseeable Future Actions

Future wild horse gathers would be conducted about every 3-4 years over the next 10-15 year period in order to continue to manage the HMA within the established AML. As displayed in the population graphs in Appendix C, the population would reach the high limit of AML in about 2012 or 2013 under Alternative A the Proposed Action, three years under Alternative B, three to four years under Alternative C, and in about two years under the No Action alternative. Additional gathers would be needed to remove excess wild horses on a three to four year gather cycle in order to maintain populations within the AML range. Fertility control may also be applied in future gathers in an effort to slow population growth. Cumulatively over the next 5-15 years, these actions should result in fewer gathers and less frequent disturbance to individual wild horses and the herd's social structure. Individual and herd health would be maintained. However, return of wild horses back into the HMA may lead to the decreased ability to gather horses in the future as released horses learn to evade the helicopter.

Under the No Action alternative, the wild horse population would quickly exceed 1,000 head. A number of emergency removals could be expected in order to prevent individual animals from suffering or death due to lack of forage and water. Increased stress and disturbance to the herd's social structure would be expected, habitat resources would be over-utilized, and progress toward rangeland health standards would not be met.

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

5.2 Vegetation

5.2.1 Past

Forage utilization during the 1900's was high when thousands of cattle, sheep, and horses grazed lands in northern Nevada. In the 1930s when overgrazing threatened to reduce Western rangelands to a dust bowl, Congress approved the Taylor Grazing Act (TGA) of 1934, which for the first time regulated grazing on public lands. The TGA required ranchers who grazed horses or livestock on public lands to have a permit and to pay a grazing fee, but by that time, thousands of horses roamed the Nevada desert unbranded and unclaimed.

Prior to the Taylor Grazing Act grazing practices contributed to significantly impacting the soil resource. The soil tolerance was exceeded and the soil medium for plant growth was not maintained. Prior to the Taylor Grazing Act livestock grazing activities had significant impacts to the vegetation resources within the impact assessment area by eliminating or greatly reducing the primary understory plants. Cheat grass was introduced into the area in the early 1900s.

Prior to the Taylor Grazing Act grazing practices significantly impacted wetland and riparian zones. Wetland and riparian zones declined, riparian vegetation was insufficient to dissipate energy and filter sediment increasing erosion and destabilizing stream banks and meadows. Destabilization of streams and meadows resulted in incised channels and gullies resulting in lowered water table. In order to support and distribute livestock, a variety of range improvement projects have been implemented through the years dating back to the 1930s.

Past livestock grazing decisions have resulted in adjustments of livestock numbers and seasons of use for the livestock grazing allotment in the Buffalo Hills HMA.

5.2.2 Present

While the present livestock grazing system and efforts to manage the wild horse population within the AML has reduced past historic soil impacts and improved current soil resource conditions, the current overpopulation of wild horses is continuing to contribute to heavy utilization of the available forage, resulting in trailing and trampling damage, and is slowing potential vegetation recovery. Managing wild horse populations within the established AML would allow the primary successional understory plants species to return more rapidly even though vegetation conditions may never be able to return to their potential.

5.2.3 Reasonable Foreseeable Future Actions

Livestock grazing is expected to continue at similar stocking rates. Cumulatively over the next 5-15 year period, continuing to manage wild horses within the established AML range would result in improved vegetation condition (i.e. forage availability and quantity), which in turn would positively impact vegetation and other habitat resources.

Under the No Action alternative, the wild horse population would exceed 1,000 head in about two years. Heavy utilization of available forage and insufficient water would be expected. Allowing the wild horse population to continue to grow beyond this number would be likely to result in a population crash at some point during the next decade. At this point, wild horses, wildlife and livestock would not have available forage or water. All animals would experience suffering and possible death. Ecological communities and habitat resources would not be sustainable. Rangeland health would degrade, possibly below biological thresholds, making recovery unlikely if not impossible as cheat grass, medusa head, and other annuals could dominate the understory degrading ecological conditions.

5.3 Cumulative Impacts

Impacts Common to Action Alternatives (A-C)

This combination of the past, present and reasonably foreseeable future actions, along with implementation of any of the action alternatives, should result in more stable wild horse populations, healthier rangelands, healthier wild horses, and fewer multiple use conflicts within the HMA over the short and long-term.

Cumulative effects from the action alternatives would include continued improvement of upland and riparian vegetation conditions, which would in turn positively impact permitted livestock, native wildlife, and wild horses populations as forage (habitat) quantity and quality is improved over the current level. Benefits from reduced wild horse populations would include fewer animals competing for limited water quantity and at limited sites.

Alternative D. No Action: Defer Gather & Removal

Cumulative impacts of the No Action alternative coupled with impacts from past, present, and reasonably foreseeable future actions would result in foregoing an opportunity to improve rangeland health and to properly manage wild horses in balance with the available water and forage. Over-utilization of vegetation and other habitat resources would occur as wild horse populations continued to increase. Wild horse populations would be expected to crash at some ecological threshold, however wild horse, livestock, and wildlife would all experience suffering and possible death as rangeland resources continued to degrade. Attainment of RMP/FMUD objectives and Standards for Rangeland Health and Wild Horse and Burro Populations would not be achieved.

6.0 MONITORING and MITIGATION MEASURES

Monitoring

The BLM Contracting Officer Representative (COR) and Project Inspectors (PIs) assigned to the gather would be responsible for insuring contract personnel abide by contract specifications and SOPs. Ongoing rangeland, riparian, and wild horse monitoring within the Buffalo Hills HMA would continue, including periodic aerial population census counts.

Should the Proposed Action be selected for implementation, fertility control monitoring would be conducted in accordance with the SOP's outlined in Appendix B.

Should Alternative C be selected for implementation, monitoring the herd's social behavior would be incorporated into routine HMA monitoring. The objective of this additional monitoring would be to determine if additional studs form bachelor bands, or are more aggressive in competing with breeding bands for forage and water than at present.

7.0 CONSULTATION AND COORDINATION

Public hearings are held annually on a state-wide basis regarding the use of helicopters and motorized vehicles to capture wild horses (or burros). During these meetings, the public is given the opportunity to present new information and to voice any concerns regarding the use of these methods to capture wild horses (or burros). The Nevada BLM State Office held a meeting on May 15, 2008; a total of 116 individuals commented. Of these, 1 was an oral comment, 4 were written comments, and the balance were emails. Specific concerns included: (1) the use of helicopters and motorized vehicles is inhumane and results in injury or death to significant numbers of wild horses and burros; (2) bait and/or water trapping or removal by horseback are more humane methods of removal; (3) misconduct by gather contractors or others must be immediately corrected; and (4) fertility control, including sterilization of stallions should be considered rather than removing excess animals. Some expressed the desire that nature be allowed to take its course and that animals be left to die of thirst or starvation in lieu of gathers.

Based on the number of concerns expressed with respect to the use of helicopters and motorized vehicles, BLM thoroughly reviewed the Standard Operating Procedures to assure that all necessary measures are in place to humanely capture, handle and transport Nevada's wild horses and burros during the upcoming gather season. No changes to the SOPs were indicated based on

this review. This decision is based on the facts: over the past four years, BLM Nevada has gathered nearly 23,000 excess animals. Of these, mortality has averaged only one-half of one percent which is very low when handling wild animals. Another 7/10 of one percent of the animals captured were humanely euthanized due to pre-existing conditions and in accordance with BLM policy. This data affirms that the use of helicopters and motorized vehicles has proven to be a safe, effective and practical means for the gather and removal of excess wild horses and burros from the range. BLM also avoids gathering wild horses prior to or during the peak foaling season and does not conduct helicopter removals of wild horses during March 1 through June 30.

The BLM received comment letters from a number of individuals, organizations and agencies on the preliminary EA during a 20-day public comment period that ended on December 24, 2008. All comments received were either outside the scope of this environmental analysis or a matter of opinion which did not affect the analysis. Therefore, no changes were made to the Final EA.

A list of individuals, groups, and agencies notified by certified mail of the Proposed Action and the availability of this EA is attached (Appendix D).

8.0 LIST OF PREPARERS

Glenna Eckel	Wild Horse and Burro Specialist (Lead)
Susie Stokke	Wild Horse & Burro Program Lead (Nevada)
Peggy McGuckian	Archaeologist
Roger Farschon	Ecologist
Lynn Ricci	Environmental Coordinator
Jill Nannenga	Rangeland Management Specialist (Range)
Derek Messmer	Rangeland Management Specialist (Weeds)
Mike Zielinski	Soil Scientist
Aaron Collins	Wilderness Specialist

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U.S.D.A. Natural Resources Conservation Service
2006 Hydrologic Unit Coverage 5, draft GIS layer

U.S.D.I. Bureau of Land Management, Winnemucca Field Office
1982 Sonoma-Gerlach Management Framework Plan (MFP)
1997 Technical Reference 1737-14: Grazing Management for Riparian Wetland Areas
2003 BLM Nevada Migratory bird best management practices for the sagebrush biome
2005 Winnemucca Resource Management Plan Socioeconomic Report
2006a Herd Management Areas GIS layer
2006b Gather Operations GIS layer
2006c Grazing Allotments GIS layer
2006d Wilderness Study Area GIS layer
2006e Winnemucca District Boundary GIS layer

U.S.D.I. Fish and Wildlife Service. 2007. Species list by Winnemucca Field Office Allotments.

U.S.D.I. Geologic Survey
Digital Raster Graphic (DRG) 1:250,000 topographic maps

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Appendix A. Standard Gather Operation Operating Procedures (SOPs)

Gathers would be conducted by utilizing contractors from the Wild Horse and Burro Gathers-Western States Contract, or BLM personnel. The following procedures for gathering and handling wild horses and burros would apply whether a contractor or BLM personnel conduct a gather. For helicopter gathers conducted by BLM personnel, gather operations will be conducted in conformance with the *Wild Horse and Burro Aviation Management Handbook* (March 2000).

Prior to any gathering operation, the BLM will provide for a pre-capture evaluation of existing conditions in the gather area(s). The evaluation will include animal conditions, prevailing temperatures, drought conditions, soil conditions, road conditions, and a topographic map with wilderness boundaries, the location of fences, other physical barriers, and acceptable trap locations in relation to animal distribution. The evaluation will determine whether the proposed activities will necessitate the presence of a veterinarian during operations. If it is determined that capture operations necessitate the services of a veterinarian, one would be obtained 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.

Trap sites and temporary holding sites will be located to reduce the likelihood of undue 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 Drive Trapping. This capture method involves utilizing a helicopter to herd wild horses and burros into a temporary trap.
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 (water or feed) to lure wild horses and burros into a temporary trap.

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 CFR 4700.

A. Capture Methods used in the Performance of Gather Contract Operations

1. The primary concern of the contractor is the safe and humane handling of all animals captured. All capture attempts shall incorporate the following:

All trap and holding facilities locations must be approved by the Contracting Officer's Representative (COR) and/or the Project Inspector (PI) prior to construction. The Contractor may also be required to change or move trap locations as determined by the COR/PI. All traps and holding facilities not located on public land must have prior written approval of the landowner.

2. The rate of movement and distance the animals travel shall not exceed limitations set by the COR/PI who will consider terrain, physical barriers, weather, condition of the animals and other factors.
3. All traps, 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. Traps 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 burros, and the bottom rail of which shall not be more than 12 inches from ground level. All traps 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.
 - 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 burros, 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 burros and 1 foot to 6 feet for horses. The location of the government furnished portable fly chute to restrain, age, or provide additional care for the animals shall be placed in the runway in a manner as instructed by or in concurrence with the COR/PI.
 - d. All crowding pens including the gates leading to the runways shall be covered with a material which prevents the animals from seeing out (plywood, burlap, plastic snow fence, etc.) and shall be covered a minimum of 1 foot to 5 feet above ground level for burros and 2 feet to 6 feet for horses
 - e. All pens and runways used for the movement and handling of animals shall be connected with hinged self-locking gates.
4. No modification of existing fences will be made without authorization from the COR/PI. The Contractor shall be responsible for restoration of any fence modification which he has made.
 5. When dust conditions occur within or adjacent to the trap or holding facility, the Contractor shall be required to wet down the ground with water.
 6. Alternate pens, within the holding facility shall be furnished by the Contractor to separate mares or jennies with small foals, sick and injured animals, and estrays 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 traps, and where a centralized holding facility is utilized, the contractor may be required to provide additional holding pens to segregate animals transported from remote locations so they may be returned to their traditional ranges. Either segregation or temporary marking and later segregation will be at the discretion of the COR.
 7. The Contractor shall provide animals held in the traps 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 traps 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 after 5:00 p.m. and on through the night, is defined as a horse/burro feed day. An animal that is held for only a portion of a day and is shipped or released does not constitute a feed day.
 8. It is the responsibility of the Contractor to provide security to prevent loss, injury or death of captured animals until delivery to final destination.
 9. The Contractor shall restrain sick or injured animals if treatment is necessary. The COR/PI will determine if injured animals must be destroyed and provide for destruction of such animals. The Contractor may be required to humanely euthanize animals in the field and to dispose of the carcasses as directed by the COR/PI.

10. Animals shall be transported to final destination from temporary holding facilities within 24 hours after capture unless prior approval is granted by the COR/PI for unusual circumstances. Animals to be released back into the HMA following gather operations may be held up to 21 days or as directed by the COR/PI. Animals shall not be held in traps and/or temporary holding facilities on days when there is no work being conducted except as specified by the COR/PI. The Contractor shall schedule shipments of animals to arrive at final destination between 7:00 a.m. and 4:00 p.m. No shipments shall be scheduled to arrive at final destination on Sunday and Federal holidays, unless prior approval has been obtained by the COR. Animals shall not be allowed to remain standing on trucks while not in transport for a combined period of greater than three (3) hours. Animals that are to be released back into the capture area may need to be transported back to the original trap site. This determination will be at the discretion of the COR.

B. Capture Methods that may be used in the Performance of a Gather

1. Capture attempts may be accomplished by utilizing bait (feed or water) to lure animals into a temporary trap. If the contractor selects this method the following applies:
 - a. Finger gates shall not be constructed of materials such as "T" posts, sharpened willows, etc., that may be injurious to animals.
 - b. All trigger and/or trip gate devices must be approved by the COR/PI prior to capture of animals.
 - c. Traps shall be checked a minimum of once every 10 hours.
2. Capture attempts may be accomplished by utilizing a helicopter to drive animals into a temporary trap. If the contractor selects this method the following applies:
 - a. A minimum of two saddle-horses shall be immediately available at the trap site to accomplish roping if necessary. Roping shall be done as determined by the COR/PI. Under no circumstances shall animals be tied down for more than one hour.
 - b. The contractor shall assure that foals shall not be left behind, and orphaned.
3. Capture attempts may be accomplished by utilizing a helicopter to drive animals to ropers. If the contractor with the approval of the COR/PI selects this method the following applies:
 - a. Under no circumstances shall animals be tied down for more than one hour.
 - b. The contractor shall assure that foals shall not be left behind, or orphaned.
 - c. The rate of movement and distance the animals travel shall not exceed limitations set by the COR/PI who will consider terrain, physical barriers, weather, condition of the animals and other factors.

C. Use of Motorized Equipment

1. All motorized equipment employed in the transportation of captured animals shall be in compliance with appropriate State and Federal laws and regulations applicable to the humane transportation of animals. The Contractor shall provide the COR/PI with a current safety inspection (less than one year old) for all motorized equipment and tractor-trailers used to transport animals to final destination.
2. All motorized equipment, tractor-trailers, and stock trailers shall be in good repair, of adequate

rated capacity, and operated so as to ensure that captured animals are transported without undue risk or injury.

3. Only tractor-trailers or stock trailers with a covered top shall be allowed for transporting animals from trap site(s) to temporary holding facilities, and from temporary holding facilities to final destination(s). Sides or stock racks of all trailers used for transporting animals shall be a minimum height of 6 feet 6 inches from the floor. Single deck tractor-trailers 40 feet or longer shall have two (2) partition gates providing three (3) compartments within the trailer to separate animals. Tractor-trailers less than 40 feet shall have at least one partition gate providing two (2) compartments within the trailer to separate the animals. Compartments in all tractor-trailers shall be of equal size plus or minus 10 percent. Each partition shall be a minimum of 6 feet high and shall have a minimum 5 foot wide swinging gate. The use of double deck tractor-trailers is unacceptable and shall not be allowed.
4. All tractor-trailers used to transport animals to final destination(s) shall be equipped with at least one (1) door at the rear end of the trailer which is capable of sliding either horizontally or vertically. The rear door(s) of tractor-trailers and stock trailers must be capable of opening the full width of the trailer. Panels facing the inside of all trailers must be free of sharp edges or holes that could cause injury to the animals. The material facing the inside of all trailers must be strong enough so that the animals cannot push their hooves through the side. Final approval of tractor-trailers and stock trailers used to transport animals shall be held by the COR/PI.
5. Floors of tractor-trailers, stock trailers and loading chutes shall be covered and maintained with wood shavings to prevent the animals from slipping.
6. Animals to be loaded and transported in any trailer shall be as directed by the COR/PI and may include limitations on numbers according to age, size, sex, temperament and animal condition. The following minimum square feet per animal shall be allowed in all trailers:
 - 11 square feet per adult horse (1.4 linear foot in an 8 foot wide trailer);
 - 8 square feet per adult burro (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 burro foal (.50 linear feet in an 8 foot wide trailer).
7. The COR/PI shall consider the condition and size of the animals, weather conditions, distance to be transported, or other factors when planning for the movement of captured animals. The COR/PI shall provide for any brand and/or inspection services required for the captured animals.
8. If the COR/PI determines that dust conditions are such that the animals could be endangered during transportation, the Contractor will be instructed to adjust speed.

D. Safety and Communications

1. The Contractor shall have the means to communicate with the COR/PI and all contractor personnel engaged in the capture of wild horses and burros utilizing a VHF/FM Transceiver or VHF/FM portable Two-Way radio. If communications are ineffective the government will take steps necessary to protect the welfare of the animals.
 - a. The proper operation, service and maintenance of all contractor furnished property is the responsibility of the Contractor. The BLM reserves the right to remove from service any contractor personnel or contractor furnished equipment which, in the opinion of the contracting officer or COR/PI violate contract rules, are unsafe or otherwise unsatisfactory. In this event, the Contractor will be notified in writing to furnish replacement personnel or equipment within 48 hours of notification. All such replacements must be approved in advance of operation by the Contracting Officer or

his/her representative.

- b. The Contractor shall obtain the necessary FCC licenses for the radio system
 - c. All accidents occurring during the performance of any task order shall be immediately reported to the COR/PI.
2. Should the contractor choose to utilize a helicopter the following will apply:
- a. The Contractor must operate in compliance with Federal Aviation Regulations, Part 91. Pilots provided by the Contractor shall comply with the Contractor's Federal Aviation Certificates, applicable regulations of the State in which the gather is located.
 - b. Fueling operations shall not take place within 1,000 feet of animals.

E. Public Participation

Opportunities for public viewing (i.e. media, interested public) of gather operations will be made available to the extent possible, however, the primary consideration will be to protect the health and welfare of the animals being gathered. The public must adhere to guidance from the onsite BLM representative. It is BLM policy that the public will not be allowed to come into direct contact with wild horses or burros being held in BLM facilities. Only authorized BLM 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 anytime or for any reason during BLM operations.

F. Responsibility and Lines of Communication

The Contracting Officer's Representatives (CORs) and the project inspectors (PIs) have the direct responsibility to ensure the Contractor's compliance with the contract stipulations. All employees involved in the gathering operations will keep the best interests of the animals at the forefront at all times.

The appropriate Field Manager and the Winnemucca District Manager will take an active role to ensure the appropriate lines of communication are established between the field, District Office, State Office, National Program Office, and Palomino Valley Corral. All publicity, formal public contact and inquiries will be handled through the appropriate Field Manager.

G. Site Clearances

Personnel working at gather sites will be advised of the illegality of collecting artifacts.

Prior to implementation of gather operations, trap sites and temporary holding facilities would be evaluated for cultural resources. Gather sites and temporary holding facilities would not be constructed on wetlands or riparian zones.

Appendix B. Fertility Control Treatment Operating Procedures (SOPs)

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

1. PZP vaccine would be administered by trained BLM personnel.
2. 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 loaded on the end of a trocar (dry syringe with a metal rod) which is loaded into the jab-stick which then pushes the pellets into the breeding mares being returned to the range. The pellets and liquid are designed to release the PZP over time similar to a time release cold capsule.
3. Delivery of the vaccine would be as an intramuscular injection while the mares are restrained in a working chute. 0.5 cubic centimeters (cc) of the PZP vaccine would be emulsified with 0.5 cc of adjuvant (a compound that stimulates antibody production) and loaded into the delivery system. The pellets would be loaded into the jab-stick for the second injection. With each injection, the liquid and pellets would be propelled into the left hindquarters of the mare, just below the imaginary line that connects the point of the hip and the point of the buttocks.
4. All treated mares would be freeze-marked on the hip to enable researchers to positively identify the animals during the research project as part of the data collection phase.
5. At a minimum, monitoring of reproductive rates using helicopter flyovers will be conducted in years 2 through 4 by checking for presence/absence of foals. The flight scheduled for year 4 will also assist in determining the percentage of mares that have returned to fertility. In addition, field monitoring will be routinely conducted as part of other regular ground-based monitoring activities.
6. A field data sheet will be used by the field applicators to record all the pertinent data relating to identification of the mare (including a photograph when possible), date of treatment, type of treatment (1 or 2 year vaccine, adjuvant used) and HMA, etc. The original form with the data sheets will be forwarded to the authorized officer at NPO (Reno, Nevada). A copy of the form and data sheets and any photos taken will be maintained at the district office.
7. A tracking system will be maintained by NPO detailing the quantity of PZP issued, the quantity used, and disposition of any unused PZP, the number of treated mares by HMA, district office, and state along with the freeze-mark applied by HMA.
8. The district office will assure that treated mares do not enter the adoption market for three years following treatment. In the rare instance, due to unforeseen circumstance, treated mare(s) are removed from an HMA before three years has lapsed, they will be maintained in either a BLM facility or a BLM-contracted long term holding facility until expiration of the three year holding period. In the event it is necessary to remove treated mares, their removal and disposition will be coordinated through NPO. After expiration of the three year holding period, the animal may be placed in the adoption program or sent to a long-term holding facility.

Appendix C. Buffalo Hills HMA Population Modeling

Objectives of Population Modeling

Some of the questions this modeling helps to answer:

- What effect does fertility control have on the population **growth rate**?
- What effects do the different alternatives have on the **average population size**?
- Do any of the action alternatives “**crash**” the wild horse population in this HMA?

Population Data, Criteria, and Parameters

Age-sex distribution data was compiled from the 2005 Buffalo Hills HMA capture data records (180 animals) and rescaled to the current population estimate of 650 head. The rescaled age-sex distribution was then used to represent the post-foaling 2008 age-sex structure. Actual survival probabilities and foaling rates for the Buffalo Hills HMA are unknown, thus the Garfield data set supplied with the WinEquus population model were used. These data were collected by M. Ashley and S. Jenkins at Garfield Flat, Nevada between 1993 and 1999. Marked individuals were followed for a total of 708 animal-years to generate these probabilities.

Simulations were run with applicable management options selected for a time period of ten years and parameters set to keep the population size between 188 and 314. The Proposed Action modeled the affects of removal and fertility treatment management actions. Alternative B modeled affects of removal actions only (without fertility treatment). Alternative C modeled affects of removing more females to adjust the post gather sex ratio slightly in favor of males. And, the No Action modeled the growth of horse populations with no management actions.

Population Modeling Results

Out of 100 trials (or samples) in each Alternative simulation, the model tabulated minimum, average, and maximum population sizes over a period of ten years. The data displayed below are results from the most typical and/or median (average) trial for each Alternative.

Alternative	Annual Growth Rate (Ave)	Next Projected Gather	# of Gathers over a 10 year period (typical)	Pop. Size (Ave)
Proposed Action	13 %	4 years	2	302
Alternative B	19 %	3 years	3	328
Alternative C	17 %	3-4 years	3	315
No Action	20 %	Emergency	0	4,000 +

Discussion

The Proposed Action which utilizes a fertility control treatment on release mares decreases the annual growth rate and expands the gather cycle while keeping the population size within the established AML range (188-314) over a ten year period with two gathers/fertility treatments. Alternative C, which removes more mares to slightly adjust the sex ratio in favor of males, provides some additional benefits above a straight gate cut removal as proposed in Alternative B with both alternatives occurring on a 3 year gather cycle over a ten year period. The No Action results are for comparison as the model does not account for limits of habitat capacities. At some point wild horse populations would exceed habitat thresholds (run out of forage, water, and space) and a population crash would likely occur. None of the alternatives indicate that a crash is likely to occur to the populations. Minimum population levels and growth rates are all within reasonable levels, and adverse impacts to the population are not likely.

Appendix D. Coordination & Consultation Notification List

American Humane Association
Animal Protection Institute of America
Center for Biological Diversity; Rob Mrowka, Paul J. Spitler
Committee For High Desert, Katie Fite
HERDS
Int. Soc. Protection of Mustangs & Burros, Karen Sussman
Jackrabbit Properties, LLC, Todd Jaksick
Marion Co. Humane Society, Inc., Barbara Warner
National Mustang Association, Richard Sewing
National Wild Horse Association
Natural Resource Defense Council
Nevada Department of Wildlife; Chris Hampson, Roy Leach
NV Land & Resource Company, David Buhlig
Nevada State Clearinghouse, Krista Coulter
Nevada Wild Horse Commission, Cathy Barcomb
Pyramid Lake Paiute Tribe; Mervin Wright Jr., John Mosley
Resource Concepts, Inc., C. Rex Cleary
Susanville Indian Rancheria; Stacy Dixon, Chairman
U.S. Fish & Wildlife Service, Robert Williams
Washoe County Commissioners
Western Watersheds Project, Barbara Hakala
Wild Horse Organized Assistance, Dawn Lappin
Wild Horse Preservation League, Chuck & Bonnie Matton
Wild Horse Sanctuary, Diane Nelson
Wild Horse Spirit, Betty Kelly

Vicki J. Cohen
Cecil & Lena Courtney
Craig Downer
John Espil
John Estill
Andrea Jackson & Family
James Jurard
Cindy Mac Donald
Mandy Mc Nitt
Bertrand & Jill Paris
Joel Turnbow