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Tonopah, NV 89049

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Reveille Herd Management Area

Final Wild Horse Gather Plan and Environmental Assessment

DOI-BLM-NV-B020-2010-0089-EA

Reveille HMA Gather Environmental Assessment
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1. Introduction

The Bureau of Land Management (BLM) Tonopah Field Office (TFO) is proposing to conduct a wild horse gather to remove excess wild horses in the Reveille allotment that are located within and outside the Reveille Herd Management Area (HMA). The proposal includes the capture of approximately 250 wild horses and removal of 198 excess wild horses. Approximately 52 wild horses would be returned to the HMA to result in a post-gather population of 80 wild horses. Fertility control and/or sex ratio adjustment would be applied to released animals in order to slow population growth rates and assist in maintaining wild horse population levels below the established Appropriate Management Level (AML). The proposed gather would occur in September 2010 and would be conducted in accordance with the Gather Plan and Standard Operating Procedures (SOPs) located in Appendix A.

An Environmental Assessment (EA) is a "concise public document" that is designed to "briefly provide sufficient evidence and analysis for determining whether to prepare an Environmental Impact Statement (EIS) or a Finding of No Significant Impact (FONSI)."[1] This EA ensures compliance with the National Environmental Policy Act (NEPA) by providing site-specific analysis of potential direct, indirect, and cumulative effects to the human environment associated with completion of a gather and removal of excess wild horses in the Reveille allotment and HMA. Should a determination be made that implementation of the Proposed Action or alternative actions would not result in "significant environmental impacts" a FONSI will be prepared to document that determination, and a Decision Record issued providing the rationale for approving the chosen alternative.

By law, BLM is required to immediately remove excess animals once a determination has been made that excess animals are present and removal is necessary. In the past two decades, program goals have expanded beyond establishing a "*thriving natural ecological balance*" (i.e. establishing AML for individual herds); to achieving and maintaining wild horse populations within the established AML so as to manage for a healthy, self-sustaining wild horse population. BLM's management of wild horses must also be consistent with Standards and Guidelines for Rangeland Health and for Healthy Wild Horse Populations developed by the Mojave/Southern Great Basin Resource Advisory Council (RAC).

1.1 Background

The Reveille HMA is located approximately 50 miles east of Tonopah in Nye County, Nevada, and includes portions of the Kawich and Reveille Ranges and Reveille Valley. The proposed gather area includes areas within and outside of the Reveille HMA boundaries throughout the Reveille Allotment. These areas fall under the jurisdictional boundaries of the BLM TFO. Refer to the Maps starting on page 59 for HMA boundaries, livestock grazing allotments and the proposed gather area. The Reveille

1. 40 CFR Sec. 1508.9.

HMA is 105,494 acres in size. The gather area is within the Reveille Allotment, which is 650,520 acres.

1.2. Appropriate Management Level (AML)

On October 1, 1987, a Stipulated Settlement to dismiss appeals pending before the Ninth Circuit Court of Appeals, and to resolve civil litigation was entered into by the Fallini family, the State of Nevada and BLM (CV-R-85-535-BRT). The settlement stated that the area (Reveille HMA) will be managed for a population of between 145 and 165 wild horses. It also provides that if/when range monitoring finds substantial improvement or substantial deterioration, the BLM may amend this provision governing the population of wild horses, and that BLM retains discretion to make adjustments in the multiple use balance within the HMA.

Under the Stipulated Settlement, if the wild horse population exceeds 165 horses within the Reveille allotment, BLM shall remove excess horses within 120 days, and that removal of excess horses shall first occur within the non- HMA areas of the Reveille Allotment.

On June 13, 2001, the Final Multiple Use Decision (FMUD) for the Reveille Allotment adjusted the AML to 138 wild horses for the Reveille HMA after BLM analyzed available monitoring data through the Reveille Allotment Evaluation completed in 1999. The evaluation included assessment of utilization of livestock and wild horses, precipitation data, use pattern mapping, ecological site data descriptions, wildlife habitat condition data, lotic (stream) and lentic (springs) riparian functionality assessments, and carrying capacity analysis to allocate use to livestock and wild horses. "*It has been determined that a thriving natural ecological balance can be obtained through an AML of 138 wild horses (maximum), or 1,661 Animal Unit Months (AUMs[2]) for the Reveille Herd Management Area. When the census shows that wild horses exceed the AML of 138 animals, a gather will be initiated within 120 days to reduce wild horses to a level which may allow up to three years of population increases before again reaching the AML*" (FMUD, 2001).

The AML was established consistent with the Allotment Specific Objectives for the Reveille HMA, which is to "*manage wild horse and/or burro populations within the Reveille Herd Management Areas at levels which will preserve and maintain a thriving natural ecological balance[3] consistent with other multiple use objectives".* The BLM currently establishes AML as a range; however, the Reveille AML was established as a single number with provisions to allow for removal to a lower number in order to provide for up to three years of population growth without exceeding the AML between gathers, consistent with BLM's management of wild horses within an AML range. The interested public was involved in the decision-making process leading to the FMUD.

The wild horse decision identified in the FMUD was appealed by Fallini and Fallini Living Trust in August 2001 which resulted in the original decision being remanded to the BLM by the Interior Board

2. 43 CFR 4100.0-5 defines Animal Unit Month (AUM) as the amount of forage necessary for the sustenance of one cow or its equivalent for 1 month (which equates to 5 sheep).

3. The Interior Board of Land Appeals (IBLA) defined the goal for managing wild horse (or burro) populations in a thriving natural ecological balance as follows: "As the court stated in Dahl v. Clark, supra at 594, the 'benchmark test' for determining the suitable number of wild horses on the public range is 'thriving ecological balance.' In the words of the conference committee which adopted this standard: 'The goal of WH&B management ***should be to maintain a thriving ecological balance between WH&B populations, wildlife, livestock and vegetation, and to protect the range from the deterioration associated with overpopulation of wild horses and burros.' " (Animal Protection Institute of America v. Nevada BLM, 109 IBLA 115, 1989).

of Land Appeals (IBLA) in order to update and re-issue the decision to include provisions of the 1987 Stipulated Settlement (IBLA 2001-327). The Amended Wild Horse Management Decision that was issued on October 5, 2001, identified that BLM would conduct an annual census (inventory) of the horses in the Reveille Allotment, and stated that when the inventory shows that horses exceed the AML of 138 animals that a gather would be initiated within 120 days to reduce the wild horses to a level that allows up to three years of population growth before again reaching the AML.

A second appeal was filed by Fallini and Fallini Living Trust following the issuance of the amended decision (IBLA 2002-60). This appeal pertained to the notice of the census (inventory) results being provided to the appellants within 30 days, and the duty of the BLM to remove wild horses from outside of the HMA boundaries first when conducting gathers. In this case, IBLA clarified the decision and noted that "*the BLM is bound by the provisions of the court order [*Stipulated Settlement*] with respect to the management of the wild horses within the allotment*". As such, nothing in this EA should be construed in a manner that would be inconsistent with the 1987 Stipulated Settlement, the Amended Wild Horse Management Decision or the orders issued by IBLA.

The most recent helicopter inventory flight of the Reveille Allotment and HMA was conducted February 14, 2010, which resulted in a direct count of 231 wild horses. The annual rate of increase for the Reveille HMA based on aerial inventory since 2006 is 19-25%. Applying a 20% growth rate, the anticipated post-foaling wild horse population in 2010 will be 278 wild horses, which exceeds the established AML by a total of 140 wild horses. A post-gather population of 80 wild horses in the HMA is necessary to provide a 3-year interval (at a 20% annual wild horse population growth rate) until AML is exceeded and another gather is necessary[4.] Table 1 displays the AML and population estimates for the HMA.

Table 1. Established AML and Population Estimates

HMA	Maximum AML	AML Date	2010 Population Estimate		Last Gather Mo/Yr
			Feb 2010	Post-Foaling	
Reveille	138	2001	231	278	02/2007[5]

Based on a review of monitoring, inventory, and all other information available at this time, the TFO has determined that excess wild horses are present within the Reveille Allotment and HMA and need to be removed in order to comply with the Wild Free-Roaming Horses and Burros Act, to achieve a population of wild horses to a level consistent with the established AML, to restore a thriving natural ecological balance and prevent degradation of rangeland resources resulting from an overpopulation of wild horses. This assessment is based on factors including, but not limited to the following rationale:

- The past aerial inventories (2006-2010) have documented 34-88% of wild horses residing outside of HMA boundaries.
- The existing population exceeds the range of animals (145-165) specified in the 1987 stipulated settlement.

4. Consistent with the 1987 Stipulated Settlement and 2001/2001 orders from IBLA, should an inventory show that the AML of 138 wild horses has been exceeded prior to 3 years, then a gather must occur within 120 days to remove the excess wild horses.
5. During the 2007 gather only 23 horses were removed from outside of the HMA boundaries. No wild horses were removed from within the Reveille HMA boundaries. Refer to Appendix B for more information.

- The existing and estimated post foaling 2010 population exceeds the established AML (138 wild horses) as established through the 2001 FMUD and 2001/2002 IBLA Orders.
- Use by wild horses is exceeding the forage allocated to their use.
- The Reveille Allotment Evaluation (1999) determined that the Standards for Rangeland Health were not being met in accordance with the Mojave/Southern Great Basin Resource Advisory Council (RAC; 1997). The Allotment Evaluation identified wild horse populations as contributing to Rangeland Health Standards not being met within the Reveille Allotment, in addition to Allotment Specific Objectives and Land Use Plan Objectives.
- Vegetation communities within the HMA are not meeting Desired Future Condition and are characterized by a diminished occurrence of desirable perennial grasses, and increased undesirable species.
- Wild horse populations are making concentrated use within and outside of the boundaries of the Reveille HMA.
- The AML of 138 must be maintained for continued progress towards the Standards for Rangeland Health in accordance with the Mojave/Southern Great Basin RAC.

Based on the above factors, the TFO has determined that an estimated 198 excess wild horses are present both within and outside of HMA boundaries.

Current National Wild Horse and Burro Program direction, dictates that the BLM implement population controls during gathers in an effort to reduce population growth rates, and consequently gather frequency and the number of excess wild horses that ultimately must be removed from the range in order to maintain populations at AML. For these reasons, population control methods would be evaluated to bring the population and population growth to a level that would allow 3-5 years before another gather is necessary[6.]

Large portions of the Reveille HMA are in diminished ecological condition and have limited forage availability. Some contributing factors are climate, soils, precipitation levels, historic overpopulations of wild horses, and historic use by livestock. Condition of the rangeland resource is documented in the documents identified in Section 1.7, 3.5 and Appendix C. Progress towards improved rangeland health is a lengthy process in arid western rangelands under the best conditions.

The AML needs to be achieved and maintained to not only prevent further decline of important wild horse habitat, but also to allow for improvement of wildlife habitat and ensure long-term health and well-being of the wild horses. Maintaining wild horse populations consistent with the established AML would also promote progress towards attainment of RAC Standards and for Rangeland Health, RMP and Allotment Specific Objectives.

1.3. Purpose and Need for Action

The purpose of the Proposed Action is to remove excess wild horses from outside of the boundaries of the Reveille HMA first, and remove excess wild horses from inside the boundaries of the HMA if needed. Remaining wild horses within the Reveille HMA would be gathered to administer fertility

6. Consistent with the 1987 Stipulated Settlement and 2001/2001 IBLA Orders, should an inventory show that the AML of 138 wild horses has been exceeded before 3-5 years, then a gather would occur within 120 days to remove the excess wild horses.

control and/or adjustment of sex ratios prior to release back into the HMA. This implementation could allow for a gradual increase in the population to achieve a 3-5 year gather cycle.

This action is needed to remove wild horses from areas not designated for wild horse use, and to remove excess wild horses from within the HMA in accordance with the Stipulated Settlement dated October 1, 1987 and 2001 and 2002 IBLA Orders. Furthermore, the action is needed to achieve a population size consistent with the established AML (FMUD, 2001), protect rangeland resources from deterioration associated with an overpopulation of wild horses, and restore and maintain a thriving natural ecological balance and multiple use relationship on the public lands consistent with the provisions of Section 3(b) (2) of the *Wild Free-Roaming Horses and Burros Act of 1971* (WFRHBA).

1.4. Conformance with Existing Land Use Plans

The Federal Land Policy and Management Act of 1976 (FLPMA) requires that an action under consideration be in conformance with the applicable BLM Land Use Plan. The Proposed Action is in conformance with the Wild Horse and Burro Objectives of the Tonopah Resource Management Plan (RMP) Record of Decision dated 1997. Pertinent excerpts from that document are as follows:

Objective: To manage wild horses and\or burro populations within Herd Management Areas at levels which will preserve and maintain a thriving natural ecological balance consistent with other multiple-use objectives (pg 14).

1. Continue the following management determinations:
   a. Manage wild horses and/or burros in 16 HMAs listed in Table 3 of the RMP.
   b. Manage wild horses and/or burros at AML or interim herd size (IHS) for each HMA outlined in Table 3. Future herd size or AMLs within each HMA will be adjusted as determined through short-term and long-term monitoring data methods as outlined in the *Nevada Rangeland Monitoring Handbook* and BLM Technical References.
2. When the AML is exceeded, remove excess wild horses and/or burros to a point which may allow up to three years of population increase before again reaching the AML.

Within the 1997 RMP the definition of AML is given as "*the maximum number of wild horses and/or burros to be managed within a herd management area and has been set through monitoring and evaluation or court order*" (pg 15). The RMP allocated 1,980 AUMs for 145-165 wild horses (pg A-12) which was later adjusted in a 2001 FMUD to 1,656 AUMs.

1.5. Relationship to Statutes, Regulations, Policy, Plans or Other Environmental Analysis

The Proposed Action is in conformance with the WFRHBA of 1971 (Public Law 92-195, as amended) the Code of Federal Regulations (CFR) at 43 CFR §4700, and BLM policies.

Section 2 (f) of the WFRHBA defines excess animals as follows: *"excess animals" means wild free-roaming horses or burros (1) which have been removed from an area by the Secretary pursuant to application law or, (2) which must be removed from an area in order to preserve and maintain a thriving natural ecological balance and multiple-use relationship in that area.*

Furthermore, 3 (b) (2) of the Act states:

> *"Where the Secretary determines on the basis of (i) the current inventory of lands within his jurisdiction; (ii) information contained in any land use planning completed pursuant to section 202 of the Federal Land Policy and Management Act of 1976; (iii) information contained in court ordered environmental impact statements as defined in section 2 of the Public Rangelands Improvement Act of 1978; and (iv) such additional information as becomes available to him from time to time, including that information developed in the research study mandated by this section, or in the absence of the information contained in (i-iv) above on the basis of all information currently available to him, that an overpopulation exists on a given area of the public lands and that action is necessary to remove excess animals, he shall immediately remove excess animals from the range so as to achieve appropriate management levels. Such action shall be taken . . . until all excess animals have been removed so as to restore a thriving natural ecological balance to the range, and protect the range from the deterioration associated with overpopulation".*

43 CFR § 4700.0-6 Policy.
(a)Wild horses and burros shall be managed as self- sustaining populations of healthy animals in balance with other uses and the productive capacity of their habitat.

43 CFR § 4710.4 Constraints on Management
Management of wild horses shall be undertaken with the objective of limiting the animals' distribution to herd management areas. Management shall be at the minimum level necessary to attain the objectives identified in approved land use plans and herd management area plans.

43 CFR § 4720.1 Removal of excess animals from public lands
Upon examination of current information and a determination by the authorized officer that an excess of wild horses exists, the authorized officer shall remove the excess animals immediately.

43 CFR § 4740.1 Use of motor vehicles or aircraft
(a) Motor vehicles and aircraft may be used by the authorized officer in all phases of the administration of the Act, except that no motor vehicle or aircraft, other than helicopters, shall be used for the purpose of herding or chasing wild horses for capture or destruction. All such use shall be conducted in a humane manner.

(b) Before using helicopters or motor vehicles in the management of wild horses, the authorized officer shall conduct a public hearing in the area where such use is to be made.

1.6. Conformance with Rangeland Health Standards and Guidelines
The Proposed Action and Alternative 1 are in conformance with the Mojave/Southern Great Basin RAC Rangeland Health Standards and Guidelines which require BLM to manage wild horses and burros within AML and in balance with other uses. Applicable excerpts are as follows:

> *The standards for rangeland health will be reached and maintained by managing wild horse and burro numbers so as not to exceed Appropriate Management Levels for each Herd Management Area. Controlling wild horse and burro numbers through gathers and other control programs is essential.*
>
> *Wild horses and burros within Herd Management Areas should be managed for herd viability and sustainability. Herd Management Areas should be managed to maintain a*

healthy ecological balance among wild horse and/or burro populations, wildlife, livestock, and vegetation.

Guideline 4.1: Wild horses and burro population levels in HMAs should not exceed AML.

Guideline 4.2: AMLs should be set to reflect the carrying capacity of the land in dry conditions based upon the most limiting factor: living space, water or forage. Management levels will not conflict with achieving or maintaining standards for soils, ecological components, or diversity of habitat and biota.

Guideline 4.3: Interaction with herds should be minimized. Intrusive gathers should remove sufficient numbers of animals to ensure a period between gathers that reflects national wild horse and burro management strategies.

The Mojave/Southern Great Basin RAC Rangeland Health Standards and Guidelines can be accessed at www.blm.gov/nv/st/en/res/resource_advisory/mojave-southern_grat.html or by contacting the TFO. During the Evaluation of the Reveille Allotment (1999), the Standards for Rangeland Health were assessed. It was determined through the analysis of monitoring data and evaluation of RMP and Allotment Specific Objectives that none of the Rangeland Health Standards were being met, and that progress was being made towards attainment of only one of the Standards. Though livestock grazing was identified as the primary causal factor for the non-attainment, wild horses were specifically identified as contributing to the non-attainment due to moderate, heavy and severe use levels within and outside of the HMA, and because a significant portion of the population had established residency outside of the HMA. As a result, BLM determined that further adjustment of the existing AML was needed, which adjustment was implemented through the 2001 Reveille Allotment FMUD.

1.7. Other NEPA Analysis

This EA analyzes the impacts to the human environment that could result from gathering and removing wild horses within the Reveille Allotment. Multiple Use Evaluations, Rangeland Health Assessments, and EAs have been completed in the process of establishing AML for wild horses. Additionally, the Reveille Allotment was included within the Stone Cabin Complex Gather EA, 2006. This EA tiers to the prior NEPA documents and will incorporate relevant portions of those documents by reference, where applicable. The other relevant NEPA and decision documents are identified below:

- Final Reveille Allotment Evaluation, May 14, 1999
- Reveille Allotment PMUD, September 30, 1999
- Management Action Selection Report of Reveille Allotment, September 30, 1999
- Reveille Allotment FMUD, June 13, 2001
- Addendums to the Reveille Final Allotment Evaluation, 2001
- Tonopah RMP and Record of Decision (ROD), October 6, 1997
- Stone Cabin Complex Wild Horse Gather EA # NV065-EA07-028, December 2006

1.8 Decision to be made

Based on the analysis presented in the EA, the authorized officer will select an alternative that meets the Purpose and Need for the proposed action, which is to manage the Reveille HMA for a thriving natural ecological balance.

The decision would not establish or adjust the AML, which was established through previous planning-level decisions. Monitoring and other available information confirms that an excess population of wild horses exists within the HMA, and need to be removed in order to preserve a thriving natural ecological balance and conform to the 1987 Stipulated Settlement and 2001/2002 IBLA Orders. Future decisions regarding long-term management within the HMA would continue to be accomplished with public involvement through a Herd Management Area Plan or other activity level management plans specific to the HMA. Additionally, the decision would not adjust livestock use, which also has been allocated through prior planning-level processes and decisions.

The No Action Alternative would not achieve the identified Purpose and Need identified in Section 1.3. However, it is analyzed in this EA to provide a basis for comparison with the other action alternatives, and to assess the effects of not conducting a gather at this time. The No Action Alternative would not be consistent with the requirement under the WFRHBA to remove excess wild horses and burros from the public range and is also not in conformance with regulatory provisions for management of wild horses and burros as set forth at 43 CFR § 4700. The No Action Alternative would not result in achievement of the established AML or be consistent with the 1987 Stipulated Settlement or 2001/2002 IBLA Orders which requires the BLM to remove excess wild horses within 120 days of determining that the population exceeds the AML. Additionally, implementation of the No Action Alternative would not result in progress towards attainment of the RAC Standards for Rangeland Health, or Land Use Plan/Allotment Specific Objectives for the Reveille Allotment and HMA.

1.9. Scoping and Issue Identification

As part of the preparation of this EA, a scoping letter dated March 31, 2010 was mailed to 25 individuals, agencies and organizations on the interested public list for the Reveille HMA. Among these was the Nevada State Clearinghouse which made the scoping letter available for review by 36 Nevada State Agencies.

Responses were received from the Nevada Department of Wildlife, Twin Springs Ranch, U.S. Fish and Wildlife Service, the Duckwater Shoshone Tribe, along with an anonymous comment. In general, the comments supported the proposed gather. Refer to Appendix F for a summary of the comments received and responses to the comments. These comments/concerns were considered and incorporated in the preparation of this EA. Through the evaluation process and consultation with the interested public, the following issues were identified:

1. *The population of the Reveille HMA is in excess of the level identified in the 1987 stipulated settlement, IBLA Orders, and the established AML,*
2. *Wild horses are using areas within the Reveille Allotment outside of the established HMA boundaries,*
3. *Long term health and viability of wild horses,*
4. *The effects to population size and growth rates from fertility control application. The potential for inbreeding and population crashes,*
5. *Impacts and stress to wild horses through helicopter removals, especially in drought conditions, or during the winter months,*
6. *Humane treatment of wild horses during gathers,*
7. *Wild horse habitat health to include condition of upland rangeland and riparian/wetland habitat,*

8. *Potential impacts to threatened, endangered and sensitive wildlife species through completion of the proposed gather.*

The Preliminary Reveille Wild Horse Gather EA was made available to the interested public on May 27, 2010, through notification of its availability for a 30 day review and comment period to the interested public mailing list for the Reveille HMA, and was also posted on BLM's website at: www.blm.gov/nv/st/en/fo/battle_mountain_field. Additionally, the Nevada State Office issued a news release notifying the general public of the availability of the document for review on May 27, 2010 that was posted on BLM's external website. The news release appeared in newspapers throughout the western states, and on numerous websites on the internet. Comments on the preliminary EA were received from various individuals and organizations, though the majority of these were form letters. The comments received were reviewed and considered in finalizing this EA and. Minor additions for clarity have been made to the EA; however significant changes to the analysis were not warranted. Refer to Appendix F for a summary of the comments received and the responses to those comments.

Some members of the interested public believe that livestock should be removed from the range before or instead of wild horses. However, management of livestock is an appropriate multiple use of public lands, and decisions pertaining to the use of livestock on public lands have been made through the Tonopah RMP ROD dated 1997, 2001 FMUD, and Stipulation to Revise the Livestock Decision and to Dismiss Appeal for the Reveille Allotment (2006). The allocation of forage to livestock, wild horses and wildlife was made following analysis of monitoring data, carrying capacity analysis, and consultation with the interested public. The purpose of this EA is not to assess or adjust livestock use. areas Any necessary adjustments to livestock use would be determined based on the collection and evaluation of monitoring data and after the coordination with the interested public required under federal regulations.

2. Description of the Proposed Action and Alternatives

The following section details the Proposed Action and Alternatives that will be analyzed in this EA, as well as alternatives considered, but not carried forward for analysis. The following alternatives are analyzed in detail:

Table 2. Proposed Action and Alternatives

Proposed Action	Gather with fertility control and adjustment of sex ratios to favor males, removing excess wild horses to a post-gather population of 80 wild horses.
Alternative 1	Gather to remove excess wild horses to a post-gather population of 80 wild horses. Adjustment of sex ratios to favor males. No implementation of fertility control.
No Action	No gather or removal of wild horses.

The Proposed Action and Alternative 1 were developed to meet the Purpose and Need (i.e. to remove excess wild horses, manage wild horses within identified HMA boundaries, reduce herd growth rates, maintain AML and ensure a thriving natural ecological balance). The Proposed Action and Alternative 1 were developed in consideration of the issues identified during internal and external scoping and agency consultation. The post-gather target of 80 wild horses in the HMA was determined based on a projected 20% annual increase and a 3-year interval until AML is exceeded and another gather is necessary. Additionally, these alternatives considered current National Wild Horse and Burro Program

direction that directs the BLM to implement population controls during gathers in an effort to reduce population growth rates so as to reduce gather frequency and the number of excess wild horses that ultimately must be removed from the range in order to maintain populations at AML.

2.1. Management Actions Common to the Proposed Action and Alternative 1 (Action Alternatives)

The proposed gather would be completed in accordance with this EA, Wild Horse and Burro Gather Plan and SOPs (Appendix A).

- In accordance with the 1987 stipulated settlement and 2001/2002 IBLA Orders, removal of excess horses would first occur outside of the HMA boundaries within the Reveille Allotment.
- The helicopter drive method would be used, with multiple locations for trap corrals. The BLM would be responsible for contractor compliance to national contract specifications including SOPs.
- The gather operation would take place in September 2010.
- Excess wild horses removed from the range would be transported to BLM Wild Horse and Burro facilities to be offered for adoption or transport to long term holding pastures.
- Hair samples would be collected for genetics analysis as described in Appendix A.
- A helicopter inventory flight may be conducted following the gather to collect information about numbers and locations of remaining wild horses within the HMA.

Population inventory since 2006 indicates that 34-88% of the population may be residing outside of HMA boundaries. With the 2010 post foaling population estimated at 278 wild horses, it is expected that an average of 65% or 181 wild horses may be located outside of the HMA boundaries. Under the Proposed Action and Alternative 1, these animals would be gathered and removed first. Depending upon the actual number of animals captured from outside of the HMA boundaries, the gather would then continue within the HMA boundaries in order to remove an estimated total 198 wild horses to achieve a post-gather population of 80 wild horses. Within the HMA, the gather would continue to capture all animals so that the identified population controls could be implemented for the largest proportion of the population. Table 3 below displays the anticipated gather and removal figures.

Following the capture of wild horses, animals would be sorted by age, sex and for release back to the HMA or for transport to the BLM Wild Horse and Burro facilities.

Wild horses captured from outside of the HMA boundaries would be removed regardless of age. Animals gathered from inside the HMA boundaries would be subject to the National Selective Removal Policy to the extent possible (refer to Appendix A), while ensuring that the post-gather populations consist of diverse age groups and animal characteristics. Goals for the gather include releasing horses within all age classes except weanlings, and most yearlings.

If removal of wild horses within the HMA is necessary in order to achieve the post-gather population goal, then the priority for removal would be for animals that were four years of age or younger. It is anticipated that most animals ages five to ten years of age, would be released back to the HMA. If necessary to achieve the post-gather population objective, animals within the eleven to nineteen age class could be selected for removal.

An emphasis would be placed on older mares and studs (15-19 years of age and primarily those 20+ years of age) to be released back into the HMA to avoid the stress of transportation and handling to

these older horses. BLM Wild Horse and Burro Specialists would adhere to the Wild Horse and Burro Euthanasia Instruction Memorandum WO-2009-041 (refer to Appendix A).

Wild horses would be selected and released back to the HMA, so as to represent the historic characteristics of the HMA. This would include selecting animals of moderate or larger stature, average or better confirmation, and coloring patterns, which are the historic range of colors found within the HMA. Animals that exhibit exceptional characteristics may be chosen for release outside of the selective removal priorities on a case by case basis. Wild horses to be released would be selected for health, stamina, strength and mothering abilities when these factors can be determined. Weak, unhealthy, and unthrifty animals would not be selected for release back into the HMA. Refer to Appendix B for detailed information about the anticipated age structures and sex ratios.

Most foals would be removed from the range and transported to BLM Wild Horse and Burro facilities with their mothers. In certain circumstances, some foals could be selected to be released with their mothers if it is determined that the foals are too young to travel safely or if the mother has been selected for release and the foal should not be weaned.

Terrain within the HMA is variable. Wild horses would typically be trailed approximately 4-7 miles to trap corrals. Some groups of horses could be herded 10 miles or more at the discretion of the BLM staff on site at the gather. Most horses would be located throughout foothills and other rolling terrain. Some groups of horses could be herded from within drainages or higher elevation areas. The pilot uses the helicopter to direct the wild horses towards the capture location, then stays back away from them (1/4 mile or farther), allowing them to travel at their own pace – usually a trot or light gallop. Only if the wild horses begin to deviate from the desired path, does the pilot redirect them with the helicopter. When the wild horses approach the gather corrals, the pilot moves the helicopter closer to the group of horses to apply additional pressure to make sure that the group does not scatter before entering the wings of the capture corrals, necessitating them be regrouped or roped by horseback, which would add additional stresses to the horses and increase risk of injury. Despite public perception, wild horses are not "stampeded" into capture corrals. Experience has proven over the last 30 years of wild horse gathers that the most effective and safe way to capture wild horses with a helicopter is to bring them to the capture corrals slowly.

If necessary the pilot will allow wild horses to walk in. This may occur if the horses are old, if young animals are included in the group or if the horses are suffering from lack of food or water and are in a weakened state. If foals are separated from mothers, the pilot alerts crew members of the foal's location, who will then go to the area and guide the foal to the gather location by horseback or load the foal into a stock trailer for transport to the gather corrals where it would be reunited with its mother. BLM staff would coordinate with the contractor on a daily basis to determine wild horse locations in proximity to trap corrals, and discuss terrain, animal health, gather distances and other gather logistics.

Table 3. Proposed Action and Alternative 1 Gather Estimates

HMA	AML	Est. Population[7]	Est. Gather Number[8]	Est. Un-gathered	Est. to Remove	Est. to Release	Est. Post-gather

7. Estimated population represents the population following 2010 foaling. The most recent inventory was conducted February 2010.
8. Estimated gather numbers based on ability to capture 90% of the population, which would vary depending on terrain, animal location, weather conditions and actual population size experienced during the proposed gather.

HMA	AML	Est. Population[7]	Est. Gather Number[8]	Est. Un-gathered	Est. to Remove	Est. to Release	Est. Post-gather
Reveille	138	278	250	28	198	52	80

2.2. Actions that differ among the Proposed Action and Alternatives

2.2.1. Proposed Action: Gather with fertility control and adjustment of sex ratios to favor males, removing excess wild horses to a post-gather population of 80 wild horses

The objective for a gather to be conducted under the Proposed Action would be a post-gather population of 80 wild horses within the HMA. Additionally, through application of fertility control and adjustment of sex ratios to favor studs, population growth rates could be reduced, extending the time before another gather was required, and reducing the number of excess wild horses that would have to be removed during future gathers.

Fertility control would be applied to all the released mares to decrease the future annual population growth. Approximately 85-95% of the population would be captured, and 100% of the mares released back to the range inoculated with a single dose of the two-year contraceptive vaccine Porcine Zona Pellucidae (PZP), for population growth rate control. When injected, PZP (antigen) causes the mare's immune system to produce antibodies and these antibodies bind to the mare's eggs, which effectively blocks sperm binding and fertilization (Zoo, Montana, 2000). PZP is relatively inexpensive, meets BLM requirements for safety to mares and the environment, and can easily be administered in the field. In addition, among mares, PZP contraception appears to be completely reversible.

The highest success obtained for fertility control has been achieved when applied during the timeframe of November through February. Refer to Appendix E for more information about fertility control research procedures. The efficacy for the application of the two-year PZP vaccine based on summer application is as follows:

Table 4. Fertility Control Efficacy (Effectiveness)

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

One-time application at the capture site would not affect normal development of the fetus (unborn foal), hormone health of the mare or behavioral responses to stallions, should the mare already be pregnant when vaccinated (Kirkpatrick, 1995). The vaccine has also proven to have no apparent effect on pregnancies in progress, the health of offspring, or the behavior of treated mares (Turner, 1997). Mares would foal normally in Year 1. Treated mares would be freeze-marked on the left hip for future identification.

The objective for the sex ratio of the post-gather population would be 60% studs (males) and 40% mares (females). Modification of sex ratios through the release of fewer mares can have the effect of slowing growth rates of the population. In order to achieve a post-gather population of 80 animals at the desired sex ratio, approximately 34 studs and 18 mares would need to be released. This assumes a 90% capture success rate and a total of 28 uncaptured animals with an estimated 50:50 sex ratio.

The Proposed Action was developed in conformity with the Tonopah RMP and the 2001 Reveille FMUD which determined that when a gather is conducted to achieve AML, that the population be reduced to a level that would allow for three years before another gather would be required. The Proposed Action is consistent with these provisions as well as current BLM policy and direction to reduce gather frequencies and the number of animals that need to be removed from the range over time through application of fertility control and adjustment of sex ratios to favor studs, which reduces the proportion of the population that would give birth to foals.

2.2.2. Alternative 1: Gather to remove excess wild horses to a post-gather population of 80 wild horses. Adjustment of sex ratios to favor males. No implementation of fertility control.

Alternative 1 is similar to the Proposed Action with the exception that Fertility Control would not be administered to any mares released back to the HMA. Wild horses would be selected for release back to the range to achieve a post-gather population of 80 wild horses. The objective for the sex ratio of the post-gather population would be 60% studs (males) and 40% mares.

2.2.3. Alternative 2: No Action Alternative (No Wild Horse Gather)

Under the No Action Alternative, a wild horse gather would not be conducted within the Reveille HMA. Wild horse populations would not be actively managed at this time, and wild horses would not be removed from areas outside of HMA boundaries that are not designated for use by wild horses. The current population of 278 wild horses would continue to increase at an estimated rate of 19-25% annually. The established AML of 138 wild horses would continue to be exceeded and the TFO's failure to act would be in contempt of the 1987 Stipulated Settlement and IBLA Orders of 2001 and 2002, which require the BLM to remove excess wild horses within 120 days of the determination that the population exceeds the AML. Additionally, implementation of the No Action Alternative would not result in progress towards attainment of the RAC Standards for Rangeland Health, or Land Use Plan/Allotment Specific Objectives for the Reveille Allotment and HMA.

The No Action Alternative is in violation of the Wild Free-Roaming Horses and Burros Act, of 1971 (PL-195, as amended) and is not in conformance with BLM wild horse and burro management requirements contained in 43 CFR §4700. The No Action Alternative would not achieve the identified Purpose and Need identified in Section 1.3; however, it is analyzed in this EA to provide a basis for comparison with the other action alternatives, and to assess the effects of not conducting a gather at this time.

Table 5 Comparison of Alternatives

Alternative	Est. Capture	Est. Removal	Est. stud:mare ratio	Est. Treated Mares for Fertility Control	Post-gather Population goal
Proposed Action (post-gather population of 80, fertility control and sex ratio adjustment)	250	198	60:40	18	80
Alternative 1(post-gather population 80, sex ratio adjustment, no fertility control)	250	198	60:40	0	80
Alternative 2 (No Action)	0	0	50:50	0	NA

2.3. Alternatives Considered but Eliminated from Detailed Analysis

Through completion of EAs for proposed wild horse gathers in Nevada in 2009 and 2010, several alternatives have been proposed for consideration and are discussed below. Through the 30 day comment period for the preliminary EA, no additional realistic or detailed Alternatives were received that would achieve the purpose and need of this management action.

2.3.1. Gathering the HMA to AML

An alternative that leaves a post-gather population size at the AML of 138 animals would result in the AML being exceeded with the next foaling season in 2011, requiring another gather to be conducted within 12 months under the terms of the Stipulated Settlement. This Alternative was put through the WinEquus Population model to simulate potential outcomes. The average population size in 11 years ranges from 189-219, which exceeds both the AML and the number of animals specified within the 2001/2002 IBLA Orders (138 wild horses) and the 1987 Stipulated Settlement (145-165).

The 2001 Reveille Allotment FMUD states: "*It has been determined that a thriving natural ecological balance can be obtained through an AML of 138 wild horses (maximum), or 1,661 AUMs for the Reveille Herd Management Area*", and provides for gathers to remove wild horses below the AML to allow for a three year gather frequency.

"*We interpret the term AML within the context of the statute to mean that 'optimum' number of wild horses which results in a thriving natural ecological balance and avoids a deterioration of the range*" (109 IBLA 119 API 1989). "*Proper range management dictates removal of horses <u>before</u> the herd size causes damage to the range land (emphasis added). Thus, the optimum number of horses is somewhere below the number that would cause resource damage*" (118 IBLA 75).

Removing excess wild horses to achieve a post gather population figure of 138 animals would result in the need to conduct another gather to remove additional excess animals within 1-2 years in order to be in conformance with the stipulated settlement and to prevent the population from exceeding the established AML. Progress would not be made towards attainment of Rangeland Health Standards or Land Use Plan/Allotment Specific Objectives. This Alternative would not meet the Purpose and Need identified in Section 1.3 and therefore was eliminated from further consideration in this document.

2.3.2. Control the excess wild horses with only the use of fertility control treatment

An alternative to gather a significant portion of the existing population (90%) and implement fertility control treatments only, without removal of excess horses was modeled using a two-year and three-year gather/treatment interval over a 10 year period. Based on WinEquus population modeling, this alternative would not result in attainment of the AML for the HMA and the wild horse population would continue to have an average population growth rate of 2.8-11.1% adding to the current wild horse overpopulation, albeit at a slower rate of growth. The modeling reflected an average population size in 11 years of 285-442 wild horses under a two year treatment interval. This alternative would not decrease the existing overpopulation of wild horses, resource concerns would continue, and implementation would result in significantly increased gather and fertility control costs. This alternative would not be in conformance with the 2001/2002 IBLA Orders or the 1987 Stipulated Settlement as the population would continue to exceed the established AML. Progress would not be made towards attainment of Rangeland Health Standards or Land Use Plan/Allotment Specific Objectives. This alternative would not meet the Purpose and Need identified in Section 1.3, and was eliminated from further consideration.

2.3.3. Use of Bait and/or Water Trapping

Another alternative considered was to accomplish the removal of excess wild horses through the use of bait and/or water trapping as the primary gather method. Water trapping involves the construction of gather corrals, and baiting wild horses into the corrals with the use of water. Specialized one-way gates are often used to prevent the animals from leaving the corral once inside. Bait and water trapping methods are usually only effective in areas where water is limited or absent, resulting in high motivation for wild horses to enter the trap to access them. All other water sources except the water trap source must be fenced off from the horses (and other range users).

This alternative was dismissed from detailed study for the following reasons: (1) the size of the area is too large to use this method; and (2) the presence of water sources on both private and public lands inside and outside the HMA boundary would make it almost impossible to restrict wild horse access to the extent needed to effectively gather and remove the excess animal and (3) water rights within the HMA are primarily held by the grazing permittee.

The large geographic area involved and the extended time necessary to trap the wild horses under this alternative would result in a significant increase in gather cost and would make it difficult to limit the gather to a reasonable time. The longer gather period (which could be 1-2 months) would either cause individually removed animals to be held for an extended time until the gather was completed in order to administer fertility control and adjust sex ratios, or it would preclude the use of these population control measures, and preclude any option to select removal and release animals for preferred age structure or other desirable traits. Given the impracticalities of implementing this alternative for such a large geographic area, this alternative was eliminated from detailed study.

2.3.4. Remove or Reduce Livestock within the HMAs

This alternative would involve no removal of wild horses and instead addresses the excess wild horse numbers through the removal or reduction of livestock grazing within the HMA. This alternative was not brought forward for analysis because it is inconsistent with the Tonopah RMP objectives, Reveille Allotment FMUD (2001) and is inconsistent with multiple use management. This alternative would also violate the 1987 Stipulated Settlement and 2001/2002 IBLA Orders.

The proposal to reduce livestock would not meet the Purpose and Need identified in Section 1.3 and is not consistent with the WFRHBA, which directs the Secretary to manage wild horses in balance with other multiple uses and to immediately remove excess wild horses. Analysis of population inventory and monitoring data resulted in the determination that limited forage resources within the HMA were causing wild horses to move outside of HMA boundaries, and in 2001 the Reveille Allotment FMUD adjusted the AML to balance the forage availability with the population size, and to reduce the number of wild horses moving beyond the HMA boundaries. Under this alternative, wild horses would continue to reside outside of HMA boundaries in areas that are not designated for their use.

Livestock grazing can only be reduced or eliminated following the process outlined in the regulations at 43 CFR § 4100. Such changes cannot be made through a wild horse gather decision. Changes in forage allocations between livestock and wild horses would have to be re-evaluated and implemented through the appropriate decision-making processes to determine whether a thriving natural ecological balance can be achieved at a higher AML and in order to modify the current multiple use relationship established in the RMP.

The allocation of livestock AUMs within the 1997 Tonopah RMP is 25,730 AUMs within the 650,000 acre allotment. The Reveille Allotment has been evaluated for Rangeland Health. These processes were completed with public involvement and resulted in data interpretation, and carrying capacity analysis, which determined the number of AUMs to be allocated to wild horses and livestock. These management actions, including determination of wild horse AML, were finalized in the FMUD following public comment.

The carrying capacity analysis for the Reveille Allotment Evaluation determined that the desired stocking level for livestock within the boundaries of the HMA is 2,210 AUMs or 184 head of cattle.

The carrying capacity analysis for livestock was based on use pattern mapping and actual use by wild horses within the HMA, as well as the estimated actual use for cattle using the preference allotted to each of seven base waters used by the permittee within the HMA. The remaining AUMs are allocated to cattle use outside of the HMA.

The current level of wild horses within the Reveille Allotment already exceeds the AUMs allocated to both wild horses and cattle combined within the Reveille HMA.

The Settlement Agreement of 2006 set forth several terms and conditions for livestock grazing management to make progress towards achieving the Standards for Rangeland Health. These terms and conditions pertained to management of the livestock for each Base Water Service Area (BWSA) which included monitoring of the seed ripe time desired utilization levels during the mid-year and/or end of year period to determine if the standards were met or exceeded. Other requirements consisted of annually filing actual use reports, and grazing plans for the allotment. Other provisions of the Settlement pertained to rangeland improvement projects.

While the BLM is authorized to remove livestock from HMAs "*if necessary to provide habitat for wild horses or burros, to implement herd management actions, or to protect wild horses or burros from disease, harassment or injury*" (43 CFR § 4710.5), this authority is usually applied in cases of emergency and not for general management of wild horses or burros.

For these reasons, this alternative was dropped from detailed analysis and this Gather Plan and EA would not involve reductions of permitted livestock or increases of the established AMLs. Allocations to livestock or wild horses would be re-evaluated in future years and implemented through appropriate decision and environmental analysis documents.

2.3.5. Alternative capture techniques instead of helicopter capture of excess wild horses

Within Nevada, scoping and issuance of Gather Plan EAs for wild horse gathers has resulted in comments from the public requesting that the BLM capture wild horses through alternative methods. The following is a summary of some of those methods with information about their use.

- Net gunning techniques normally used to capture big game animals also rely on helicopters. These methods can be safe and effective on a small scale with optimum ground conditions and access. The use of this method is not practical on a large scale and can result in additional injury to animals, humans and impacts due to the need for cross country off-road travel to access netted animals.
- Chemical immobilization is a very specialized technique and strictly regulated. Currently the BLM does not have sufficient expertise to implement this method and it would be impractical to use given the size of the HMA, access limitations and approachability of the horses.
- Use of wrangler on horseback drive-trapping to remove excess wild horses can be fairly effective on a small scale but due to number of excess horses to be removed, the large geographic size of the HMA, and approachability of the horses this technique would be ineffective and impractical.
- Horseback drive-trapping is also very labor intensive and can be very harmful to the domestic horses used to herd the wild horses and dangerous to humans. For these reasons, this method was eliminated from further consideration.

3. Affected Environment and Environmental Consequences

To comply with the National Environmental Policy Act (NEPA), the Bureau of Land Management is required to address specific elements of the environment that are subject to requirements specified in statute or regulation or by executive order (BLM 1988, BLM 1997, BLM 2008). The following table outlines the elements that must be addressed in all environmental analyses, as well as other resources deemed appropriate for evaluation by the BLM, and denotes if the Proposed Action, Alternative 1 or the No Action Alternative affects those elements.

Potential or expected impacts to the affected resources are discussed following the tables. Direct impacts are those that result from the actual gather and removal of wild horses from the Reveille HMA. Indirect impacts are those impacts that occur once the excess animals are removed.

Table 6a: Elements Checklist

ELEMENT	PRESENT YES/NO	AFFECTED YES/NO	RATIONALE
Air Quality	**Yes**	**No**	The proposed gather area is not within an area of non-attainment or areas where total suspended particulate matter exceeds Nevada air quality standards. Areas of disturbance would be small and any effects on air quality would be temporary and fleeting in nature, and would take the form of fugitive dust.
ACECs	**No**	**No**	Resource is not present.
Cultural Resources	**Yes**	**No**	Through adherence of the Standard Operating Procedures (SOPs) (Appendix A), potential impacts to cultural sites would be eliminated. Archeological clearance of gather corrals, holding corrals and others areas of potential effects would occur prior to construction. If cultural resources were encountered, those locations would not be utilized unless impacts could be avoided.
Environmental Justice	**No**	**No**	The Proposed Action or alternatives would have no effect on minority or low-income populations.
Fish Habitat	**No**	**No**	Resource is not present.
Flood Plains	**No**	**No**	Resource is not present.
Forests and Rangelands	**Yes**	**Yes**	Discussed in detail below under Vegetation.
Noxious Weeds and Invasive, Nonnative Species	**Yes**	**Yes**	Discussed below.
Migratory Birds	**Yes**	**Yes**	Discussed below under Wildlife.
Native American Religious Concerns	**No**	**No**	There are no known Native American concerns.
Prime or Unique Farmlands	**No**	**No**	Resource not present.
Threatened or Endangered Species (plants and animals)	**No**	**No**	No Threatened or Endangered Species are known to exist within the project area.
Wastes, Hazardous or Solids	**No**	**No**	Not Present.
Water Quality	**Yes**	**No**	Resource would not be affected.
Wetlands and Riparian Zones	**Yes**	**Yes**	Discussed in detail below.
Wild and Scenic Rivers	**No**	**No**	Resource not present.
Wilderness	**Yes**	**No**	Wilderness Study Areas are present. Discussed in detail below.

Other resources of the human environment that have been considered for this EA are listed in the table below.

Table 6b Checklist of other Resources

OTHER RESOURCES	PRESENT YES/NO	AFFECTED YES/NO	RATIONALE
Grazing/Livestock Management	**Yes**	**Yes**	Discussed below.
Land Use Authorization	**Yes**	**No**	Resource is not affected by the proposed action or alternatives
Minerals	**Yes**	**No**	Resource is not affected by the proposed action or alternatives.
Paleontological Resources	**No**	**No**	Resource is not affected by the proposed action or alternatives. There is a minimal likelihood that resources would be present. Any surface disturbance resulting from the proposed gather would not be sufficient to cause impacts.
Recreation	**Yes**	**No**	Resource is not affected by the proposed action or alternatives.
Socio-Economic Values	**Yes**	**No**	Resource is not affected by the proposed action or alternatives.
Soils	**Yes**	**Yes**	Discussed below.
Special Status Species	**Yes**	**Yes**	Discussed below under Wildlife.

OTHER RESOURCES	PRESENT YES/NO	AFFECTED YES/NO	RATIONALE
(plants and animals)			
Vegetation	**Yes**	**Yes**	Discussed below.
Visual Resources	**Yes**	**No**	Resource is not affected by the proposed action or alternatives. Gather operations would be temporary and isolated in nature. There would be no permanent changes to the landscape.
Wild horses	**Yes**	**Yes**	Discussed below.
Wildlife	**Yes**	**Yes**	Discussed below.

3.1. General Setting

The Reveille HMA is located 50 miles east of Tonopah and 12 miles south of Warm Springs, Nevada, in Nye County. The HMA consists of 105,494 acres and encompasses an area 17 miles wide and 10 miles long. The Proposed Gather Area encompasses the Reveille Allotment which exceeds 600,000 acres in size. This area is typical of the Great Basin region characterized by north-south trending mountain ranges. Significant features are large flat valley bottoms and steep mountains with elevations ranging from 5,000 feet in the Reveille Valley to over 9,400 feet on Kawich Mountain. The area is remote and rugged, with portions of four Wilderness Study Areas (WSAs) included within the proposed gather area, and portions of two WSAs within the Reveille HMA itself. The vegetation consists primarily of salt desert shrub, black sagebrush, and pinyon-juniper woodlands. Noteworthy species include Indian ricegrass, needleandthread, galleta grass, bottlebrush squirreltail, winterfat (white sage), fourwing saltbush, shadscale saltbush, and bud sagebrush.

The area falls within the Great Basin Desert which encompasses much of Nevada, western Utah, portions of southern Oregon and small parts of Idaho and California. The weather and precipitation patterns vary considerably within Central Nevada. The orographic features of the region play a very important role in the unequal distribution of precipitation. In some years, some valleys may receive higher levels of precipitation while others are deficient. The valleys which had an abundance of precipitation in one year, may receive very little the following year. The Sierra Nevada, the White Mountains, the Reveille and Hot Creek Ranges and Kawich Mountains are prominent orographic features, which affect the climate in parts of Central Nevada. The El Niño phenomenon plays an important role in providing precipitation fluctuations.

Nevada has two major weather patterns, the cool season weather pattern in northern Nevada and the warm season weather pattern in the southern most portion of Nevada. The majority of precipitation falls in winter and spring in the cool season weather pattern, while the majority of precipitation falls in summer in the warm season weather pattern. The summer rainfalls provide limited benefits to the vegetation because of the high evaporation rate from hot summer temperatures. The high temperatures during the summer months produce virgas, dust devils and microburst activities. Flash flood potential during the summer months is high. Central Nevada has many windy days because the geographical location favors the development of high and low pressure zones.

The Reveille area receives 5 inches of annual precipitation in the valley bottoms. The mountain tops can receive as much as 16 inches. The average precipitation received at the Reveille Rain gauge since 1985 is 4.90 inches annually. Summers are hot and dry, with high temperatures in the 90's or higher. Winters are cold, with temperatures dropping below freezing and below zero degrees. The Reveille HMA receives snow during the winter which may range from several inches to nearly a foot in depth depending upon the severity of the winter, and elevation.

Drought is a recurrent feature of arid Central Nevada. Drought should not be confused with aridity. Drought has been defined as a period when precipitation is less than 75% of the average amount (Society for Range Management 1989) while aridity refers to areas of low rainfall and is a permanent feature of climate. From 1944 to 1984 drought occurred in 17 out of 40 years in the southwestern United States (Holecheck and al. 1995). Klages (1942) concluded that "even slight reductions from normal precipitation can cause severe reductions in plant yield in areas below 300 mm (~11.81 inches) of precipitation. Two or more consecutive years of drought have far more impact on vegetation than one year of drought followed by normal or above-normal precipitation."

Helicopter inventory -- Reveille HMA, August 2009

3.2. Wild Horses

Affected Environment

The Reveille HMA is 105,494 acres in size, sharing its western boundary with the Stone Cabin HMA. The Hot Creek HMA is located several miles to the north, and the Nevada Wild Horse Range is located south of the Reveille HMA. Refer to Map 2, page 60.

The Reveille HMA wild horse gather area is comprised of the Reveille HMA, and areas outside of the HMA boundary within the Reveille Allotment. The AML for the Reveille HMA was most recently adjusted through the FMUD for the Reveille Allotment October 2001. The AML was established as 138 in order to ensure that the population was in balance with available forage resources and to make progress towards RMP Objectives, Allotment Specific Objectives and Standards for Rangeland Health. TFO staff completed the most recent helicopter inventory of the proposed gather area in February 2010, which resulted in a direct count of 231 wild horses. Following the spring 2010 foaling season, the population will grow to an estimated 278 animals. Inventory data indicates that the horse herd maintains an average annual rate of increase of 19 to 25%.

Wild horses of the Reveille HMA. August 2009 Inventory.

It is anticipated that the age structure of the Reveille HMA wild horses resembles a normal age structure with ages ranging from foals to animals in excess of 20 years of age. The sex ratio is estimated to be approximately 50% mares and 50% studs with variations 10% below or above these levels.

Genetic baseline sampling analysis has not been completed for the Reveille HMA, and this data would be collected during the proposed gather. Most herds sampled to date demonstrated high genetic variability and allelic diversity from herds of mixed origins (see discussion below about Stone Cabin and Saulsbury HMAs).

The Reveille HMA is contiguous with the Stone Cabin HMA to the west and portions of the Nevada Wild Horse Range to the south. Though fenced, some movement between HMAs is expected, particularly between Stone Cabin and Reveille HMAs due to the terrain, discontinuous fencing and known trailing and horse movement patterns. Movement has been documented between Reveille HMA and the Nevada Wild Horse Range. Refer to Appendix B for more information about movement of wild horses in the HMA, and Map 4 for an overview of the HMAs in the vicinity of the Reveille HMA. Prior to 2009, the State Highway 6 right-of-way was not fenced, allowing wild horse movement to occur between Reveille, Stone Cabin and Hot Creek HMAs. These HMAs also have potential movement with other HMAs and United States Forest Service (USFS) Wild Horse Territories which span nearly 100 miles north and 40 miles west of the Reveille HMA. This region of Nevada has no less than 13 HMAs in which wild horses could move throughout and in between. Though the degree of movement is unknown due to the inability to track individual horse movement, adequate interchange between HMAs within this “metapopulation” likely occurs to maintain genetic health of the Reveille HMA.

Since issuance of the preliminary EA, Genetics Analysis reports were received for the Stone Cabin and Saulsbury HMAs. The reports summarize the genetic information from blood samples taken during a gather in 2007. The analysis determined that the genetic variability of both herds is high “due to mixing with nearby herds” and “the ability of the herd to mix with other herds in the region will help keep effective population size high”, thus allowing genetic variability to remain high. Refer to the genetics discussion in Appendix B for more detail and an explanation of effective population size.

Because of the likely mixing with Stone Cabin HMA and the Nevada Wild Horse Range and the high genetic variability of these surrounding HMAs, it is expected that the variability of the Reveille HMA will also be high, reflecting a herd of mixed origins. Should the genetic analysis determine that the genetic diversity is below optimum levels, the TFO could develop plans to augment the herd with

animals from a genetically similar herd per guidance from an equine geneticist to decrease the future risk of inbreeding.

Through the history of the Reveille HMA, wild horses have maintained adequate health and no emergency gathers have been necessary in past years. The Reveille HMA wild horses are average in size, with adults weighing approximately 800-900 pounds, and reaching 14-15 hands in height. Henneke body condition averages condition class 4-5 (moderately thin to moderate). Colors are demonstrated in the above photo, and consist of primarily brown, black and bay animals, with some presence of roan and pinto.

The wild horses observed during the August 2009 and February 2010 inventories were of acceptable body weight and considered in good condition. Body condition score was estimated at 4 or greater. Though some groups of horses did not run when approached with the helicopter, they did not have the appearance of being weak or unthrifty. The wild horses within the Reveille Allotment were healthier than those observed in Stone Cabin HMA (South), despite the larger distribution of snow.

It is not uncommon for up to 80% of the population within the Reveille Allotment to be located outside of HMA boundaries, as indicated by inventory flights completed since 2006 (refer to Appendix B), especially when the population exceeds the established AML. The inventory flights also show that there are usually several (12-24) wild horses located north of State Highway 6 within the Reveille Allotment. These wild horses likely move in from Stone Cabin HMA to the west, as the boundary is not fenced in this location. Recent reports indicate as many as 30 wild horses may have moved into this area. Most of the wild horses south of State Highway 6 have been observed in groups located throughout the foothills on the west side of the Reveille Range.

Wild horses are a long-lived species with documented survival rates exceeding 92% for all age classes and do not have the ability to self-regulate their population size. Predation and disease have not substantially regulated wild horse population levels within or outside the Reveille HMA. Throughout the HMAs administered by the Battle Mountain District, there are few predators that exist to control wild horse or burro populations. Some mountain lion predation occurs, but it is not believed to be substantial. Coyote are not prone to prey on wild horses unless young, or extremely weak. Other predators such as wolf or bear do not exist. Wild horses in general are very resilient and adaptable animals with a metabolism that has evolved to allow them to survive and thrive in poor quality habitat. These animals are typically in top fitness, have strong bones and hooves and rarely succumb to ailments plagued by domestic horses.

The attached Wild Horse Gather Plan and SOPs located in Appendix A provides discussion of gather procedures, as well as photos of recent gather activities conducted by the BMDO. Appendix B provides information about the gather and inventory history, anticipated age structures and sex ratios of these HMAs. Refer to the documents identified in Section 1.7 as well.

Wild horses within the Reveille HMA, August 2009.

Environmental Consequences

Proposed Action and Alternative 1

Direct and Indirect Impacts of the Proposed Gather

The purpose of this section is to provide relevant information to the proposed gather and summarize the potential direct and indirect effects to wild horses that could occur with implementation of the Proposed Action, Alternative 1 or No Action Alternative.

The BLM has been gathering excess wild horses from public lands since 1975, and using helicopter since the late 1970's. Refer to Appendix A for information about methods that are utilized to reduce injury or stress to wild horses and burros during gathers. Since 2004, BLM Nevada has gathered just over 26,000 excess animals. Of these, mortality has averaged only 0.5% which is very low when handling wild animals. Another 0.6% of the animals captured were humanely euthanized due to pre-existing conditions and in accordance with BLM policy. This data affirms that the use of helicopters and motorized vehicles has proven to be a safe, humane, effective and practical means for the gather and removal of excess wild horses and burros from the range. BLM policy prohibits gathers during the six weeks that precede and follow the peak of foaling season.

The BLM TFO has been actively conducting wild horse gathers since the mid 1970's. Over time, methods and procedures have been developed and refined so as to minimize stress and impacts to wild horses during implementation of wild horse gathers. The capture of wild horses utilizing helicopter is the safest and most efficient method to remove large numbers of wild horses from public lands. Injury and death as a direct result of the helicopter herding is minimal and occurs in less than 1% of animals gathered. In fact, most injuries or death occur *after* the animal is gathered and in the process of being sorted or loaded for transport, or while in the holding corrals. BLM staff is on-site at all times to observe the gather, monitor animal health, and coordinate the gather activities with the contractor. The SOPs outlined in Appendix A would be implemented to ensure a safe and humane gather occurred, and to minimize potential impacts to wild horses.

Over the past 30 years, various impacts to wild horses from gathers have been observed. Individual, direct impacts to wild horses include handling stress associated with the capture, sorting, animal handling, and transportation of the animals. The intensity of these impacts varies by individual, and is indicated by behaviors ranging from nervous agitation to physical distress. The wild horse is a very adaptable animal and would assimilate into the environment with new members quite easily. Observations made through completion of gathers show that many of the wild horses captured

acclimate quickly to the holding corral situation, becoming accustomed to water tanks and hay, as well as human presence. Both the BLM Wild Horse and Burro Specialists and the Gather Contractor and crew are very attentive and sensitive to the needs of foals as well as all wild horses captured during gathers, and ensuring their health, safety and well being after being gathered is a focus and priority.

Accidental death or the need to humanely euthanize animals, as a direct result of gather activities is infrequent and averages less than one half to one percent of the wild horses gathered (0.5-1.0%). Injuries sustained by wild horses during gathers include nicks and scrapes to legs, face, or body from brush or tree limbs while being herded to the gather corrals by the helicopter. Rarely, wild horses will encounter barbed wire fences and will receive wire cuts. These injuries are not fatal and are treated with medical spray at the holding corrals until a veterinarian can examine the animal.

Most injuries are sustained once the horse has been captured and is either within the gather corrals or holding corrals, or during transport between the facilities and during sorting. These injuries result from kicks and bites, and from animals making contact with corral panels or gates. Transport and sorting is completed as quickly and safely as possible to reduce the occurrence of fighting, and then the wild horses are moved into the large holding pens to settle in with hay and water. Injuries received during transport and sorting consist of superficial wounds of the rump, face, or legs. Despite precautions, occasionally a wild horse will rear up or make contact with panels hard enough to sustain a fatal neck fracture.

Indirect individual impacts are those impacts which occur to individual horses after the initial stress event, and may include spontaneous abortions in mares, and increased social displacement and conflict in studs. These impacts, like direct individual impacts, are known to occur intermittently during wild horse gather operations. An example of an indirect individual impact would be the brief skirmish which occurs with amongst older studs following sorting and release into the stud pen which lasts less than two minutes and ends when one stud retreats. Traumatic injuries usually do not result from these conflicts. These injuries typically involve a bite and/or kicking with bruises, which don’t break the skin.

Injuries and death may occur within the holding pens containing mares awaiting fertility control and studs awaiting release. Oftentimes, these animals must be held for 7-10 days or longer while the gather in a given area is being completed and before they can be released. During this time, through fighting and other behaviors, injuries can occur but rarely result in death. Spontaneous abortion events among mares following capture is very rare, and is least likely to occur during gathers conducted in the summer months.

Through the capture and sorting process, wild horses are examined for health, injury and other defect. BLM Euthanasia Policy IM-2009-041 is used as a guide to determine if animals that meet the criteria and should be euthanized (refer to SOPs Appendix A). Animals that are euthanized for non-gather related reasons include those with old injuries (broken hip, leg) that have caused the animal to suffer from pain or prevents them from being able to travel or maintain adequate body condition; old animals that have lived a successful life on the range, but now have few teeth remaining, are in poor body condition, or are weak from old age; and wild horses that have congenital (genetic) or serious physical defects such as club foot, or sway back and would not be successfully adopted, or should not be returned to the range.

In a recent gather completed by the Battle Mountain District in January 2009, a total of 1,705 wild horses were captured. Eleven of these animals (0.65%) were humanely euthanized in accordance with BLM policy due to pre-existing conditions such as blindness, excessive tooth wear or congenital defects. Eight additional animals (0.47%) were euthanized (5) or accidently killed (3) from injuries attributable to the gather. These injuries occurred within the holding corrals several days after the animal was captured, or occurred during the actual capture activities. All total, 19 wild horses were euthanized or died, which equates to 1.1% of the total number captured.

Foals may be orphaned during gathers, but generally is rare. This may occur due to:

- The mare rejects the foal. This occurs most often with young mothers or very young foals,
- The foal and mother become separated during sorting, and cannot be matched,
- The mare dies or must be humanely euthanized during the gather,
- The foal is ill, weak, or needs immediate special care that requires removal from the mother,
- The mother does not produce enough milk to support the foal.

Oftentimes, foals are gathered that were already orphans on the range (prior to the gather) because the mother rejected it or died. These foals are usually in poor, unthrifty condition. Orphans encountered during gathers are cared for promptly and rarely die or have to be euthanized.

During summer gathers, roads and corrals may become dusty, depending upon the soils and specific conditions at the gather area. The BLM ensures that contractors mitigate any potential impacts from dust by slowing speeds on dusty roads and watering down corrals and alleyways. Despite precautions, it is possible for some wild horses to develop complications from dust inhalation and contract dust pneumonia. This is rare, and usually affects animals that are already weak or otherwise immune-suppressed due to older age or poor body condition.

Summer gathers pose increased risk of heat stress; however, this can occur during any gather, especially in older or weaker animals. Adherence to the SOPs as well as the techniques utilized by the gather contractor minimizes heat stress. For example, during the summer, the gather activities occur in the early morning, when temperatures are coolest, and stop well before the hot period of the day. If there are extreme heat conditions, gather activities are suspended during the heat wave. Water consumption is monitored, and horses are often lightly sprayed with water as the corrals are being sprayed to reduce dust. The wild horses appear to enjoy the cool spray during summer gathers. Individual animals are also monitored, and veterinary or supportive care administered as needed.

The environmental conditions and the overall health and well being of the wild horses is continually monitored through both summer and winter gathers to adjust gather operations as necessary to protect the wild horses from gather related health issues. For example, experience during gathers has shown that gathers of HMAs with wild horses that are in very good body condition (moderate, Henneke body condition score 5 or higher), may have more heat or gather related issues than horses that do not have as high of a body condition score. The reasons for this are unknown, but do show that body condition is not always an indication of the animal's ability to easily handle the stresses of a wild horse gather. Due to genetics or other unknown factors, two similar HMAs could be gathered under exactly the same circumstances, with horses from one HMA showing more signs of heat or other gather related stresses than the other herd. For these reasons, constant monitoring and adjustment of gather operations on a daily or hourly basis is an inherent part of the gathers.

Electrolytes can be administered to the drinking water during gathers that involve animals in weakened conditions or during summer gathers. Additionally, Battle Mountain District Wild Horse and Burro staff maintains supplies of electrolyte paste if needed to directly administer to an affected animal. Heat stress does not occur often, but if it does, death can result. Should wild horses be in a weakened state due to emergency conditions brought on by shortage of water or forage, higher mortality could be experienced due to these pre-existing conditions. In these cases, the BLM takes extra precautions to ensure the safe capture and post-gather care of these animals and provides immediate veterinary care.

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

The BLM does not gather wild horses during the *peak* foaling period or six weeks before or after, and gathers do not occur for the 4 months between March 1 and June 30. The peak foaling period is usually between April and mid-May. During summer months, foals are typically small, and average 4 months old. It is not uncommon for a very small number of foals to be encountered during gathers in January, February, July or August. If newborn foals or foals too young to wean are gathered, they are matched up with their mothers after being gathered. During the proposed gather, most foals will be 4-7 months old and of bigger body size, and can easily be weaned. Fall and winter time-frames are less stressful to foals than summer gathers. Young foals in summer months may be more prone to dehydration and complications from heat stress. Additionally, the handling, sorting and transport can be a stress to the young animals however, the BLM staff on site takes every precaution to assure that the horses are handled and maintained to reduce these concerns.

Wild Horses Remaining or Released into the HMAs following Gather

The post-gather goal would be for 80 wild horses to remain within the HMA. Approximately 198 excess wild horses would be removed, with an estimated 28 wild horses uncaptured. The goal would be to first remove excess wild horses and burros from outside of the HMA boundaries. The wild horses that are not captured may be temporarily disturbed and move into another area during the gather operations. With the exception of changes to herd demographics, direct population wide impacts have proven, over the last 20 years, to be temporary in nature and with most if not all impacts to individual wild horses disappearing within hours to several days of release. No observable effects associated with these impacts would be expected within one month of release except a heightened awareness of human presence.

As a result of lower density of wild horses across the HMAs, competition for resources would be reduced, allowing wild horses to utilize preferred, quality habitat. Confrontations between stallions would also become less frequent, as would fighting among bands at water sources.

The primary effects to the wild horse population that would be directly related to the proposed gather would be to herd population dynamics, age structure or sex ratio, and subsequently to the growth rates and population size over time.

The National Selective Removal Criteria of selecting wild horses for release (Appendix A) would be followed to the extent possible, however it is expected that release and non-gathered animals would consist of all age groups except for weanlings, yearlings and two-year olds. Reveille HMA is expected to reflect a normal age structure due to the length of time since the last gather or other activities that would have influenced the age structure. Appendix B displays the estimated age structures. The National Selective Removal Criteria of selecting wild horses for release (Appendix A) would be followed to the extent possible. It is estimated that most horses released to the range within the HMA would be 5 years old or older. The core breeding aged horses of 5-10 years of age would be first priority for release back to the range, followed by horses aged 10-20+.

Herd shifts favoring older age horses (over 15 years) have been observed resulting in a favoring of studs over mares in some herds. Explanations include sex-based differences in reproductive stress (relative demand for individual contributions to reproduction) and biological stress (timing the most physically demanding period of the annual cycle).

The effects of successive removals on populations causing shifts in herd demographics favoring younger horses (under 15 years) would also have direct consequences on the population. These impacts are not thought of typically as adverse to a population. They include development of a population, which is expected to be more biologically fit, more reproductively viable, and more capable of enduring stresses associated with traumatic natural and artificial events.

For more information regarding wild horse behavior, biology and population dynamics, the reader is referred to *Wild Horses of the Great Basin* (Berger, 1986) which describes the results of over 8,000 hours of observational data collected on the Granite Range wild horses through a five-year study.

It is not expected that genetic health would be impacted by the Proposed Action, or Alternatives 1. Smaller, *isolated* populations (< 200 total population size) are particularly vulnerable when the number of animals participating in breeding drops below a minimum needed level (Coates-Markle, 2000), (emphasis added). The wild horses in the Reveille HMA do not fall into this category, even though AML is less than 200, because of the known intermixing between the Reveille HMA and surrounding HMA herds. Most wild horse herds sampled have high genetic heterozygosity, genetic resources are lost slowly over periods of many generations, and wild horses are long-lived with long generation intervals (Singer, 2000). Refer to the discussion under the Affected Environment Section and Appendix B.

Research compiled by Coates-Markle (2000) indicates that a sex ratio which favors males and results in larger numbers of smaller sized harems, within the herd, will act to increase the genetic effective population size (and male participation in breeding) to a point. The genetic effective population size (Ne) is a measure of the total number of mares and stallions which contribute genetically, through successful breeding, to the next generation. A population with an age structure involving high numbers of young animals (<5 years of age) will have a lower value of Ne than a similar sized population with a larger component of older breeding-age animals (>5 years of age). Through implementation of the BLM selective removal policy, the core breeding group of wild horses aged 5-10 years of age would be the first priority for release back to the range. Most or all wild horses under five years of age would be removed, thus resulting in a potential increase to the Ne for the Reveille HMA. Similarly, adjustment of the sex ratio to favor males as identified in the Proposed Action and Alternative 1 could also increase the Ne for the Reveille HMA.

Genetic data would be collected during the proposed gather and would allow for future monitoring of the HMA and to ensure that the genetic health of the horses would not be compromised during future gathers or other management activities. Should future genetic analysis indicate the need for concern, future Herd Management Area Planning documents would address the findings and would include potential solutions such as augmentation through introducing animals from similar HMAs into the Reveille HMA.

The primary benefit of achieving and maintaining the established AML within the HMA would be the improvement of the health and sustainability of habitat attributes. Forage and water resources would be allowed to improve in quality and quantity. Rangelands at risk of further decline due to the excess population of wild horses would benefit from increased frequency and production of key perennial forage species. Improved range condition and increased forage availability would promote healthy, self-sustaining populations of wild horses able to achieve their genetic potential. Through maintenance of AML, progress would be made towards the Mojave/Southern Great Basin RAC Standards for Rangeland Health and Guidelines for Wild Horse and Burro Management, and the Reveille Allotment Specific and RMP Objectives. Adherence to the established AML would also conform to the 1987 Stipulated Settlement and 2001/2002 IBLA Orders which require the BLM to remove excess wild horses within 120 days of a determination that the AML has been exceeded.

A thriving natural ecological balance between wild horses and other resource values would be maintained throughout the Reveille HMA, and future deterioration of the range would be avoided. It is anticipated that at population levels consistent with the AML wild horses within the Reveille HMA would also be less likely to move outside the boundaries of the HMA and into non-HMA area that are not managed for wild horses. Managing wild horse populations in balance with the habitat and other multiple uses would ensure that the populations are less affected by drought or other climate fluctuations, and that emergency gathers are either avoided or minimized, thus reducing stress to the animals, and increasing the long-term success of these herds.

Temporary Holding Facilities During Gathers

Wild horses gathered would be transported from the gather corrals (trap sites) to a temporary holding corral within the HMA in goose-neck trailers. At the temporary holding corrals wild horses would be sorted into different pens based on sex. The horses would be aged and fed good quality hay and water. Mares and their un-weaned foals would be kept in pens together. Horses identified for retention in the HMA and for fertility control treatment would be maintained in these temporary corrals until the fertility control treatment can be implemented and then returned to the HMA.

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

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

About 198 excess horses would be removed. Animals would be transported from the capture/temporary holding corrals to the designated BLM short-term holding corral facility(s). From

there, they would be made available for adoption or sale to qualified individuals or to long-term pastures (LTPs).

Wild horses selected for removal from the range are transported to the receiving short-term holding facility in a straight deck semi-trailers or goose-neck stock trailers. Vehicles are inspected by the BLM COR or PI prior to use to ensure wild horses can be safely transported and that the interior of the vehicle is in a sanitary condition. Wild horses are segregated by age and sex and loaded into separate compartments. A small number of mares may be shipped with foals. Transportation of recently captured wild horses is limited to a maximum of 8 hours. During transport, potential impacts to individual horses can include stress, as well as slipping, falling, kicking, biting, or being stepped on by another animal. Unless wild horses are in extremely poor condition, it is rare for an animal to be seriously injured or to die during transport.

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

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

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

Adoption or Sale with Limitations, and Long Term Pastures

Adoption applicants are required to have at least a 400 square foot corral with panels that are at least six feet tall for horses over 18 months of age. Applicants are required to provide adequate shelter, feed, and water. The BLM retains title to the horse for one year and the horse and the facilities are inspected to assure the adopter is complying with the BLM's requirements. After one year, the adopter may take title to the horse after an inspection from an official, veterinarian, or other individual

approved by the authorized officer to ensure humane care, at which point the horse becomes the property of the adopter. Adoptions are conducted in accordance with 43 CFR 5750.

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

Between 2007 and 2009, nearly 62% of excess wild horses or burros were adopted and about 8% were sold with limitation (to good homes) to qualified individuals. Wild horses generally 5 years of age and older (those for which there is less adoption or sale demand) are transported to Long-Term Pastures ("LTPs"). Each LTP is subject to a separate environmental analysis and decision making process. Animals in LTPs remain available for adoption or sale to individuals interested in acquiring a larger number of animals and can provide the animals with a good home. The BLM has maintained LTPs in the Midwest for over 20 years.

Potential impacts to wild horses from transport to adoption, sale or LTP are similar to those previously described. One difference is that when shipping wild horses for adoption, sale or LTP, animals may be transported for a maximum of 24 hours. Immediately prior to transportation, and after every 18-24 hours of transportation, animals are offloaded and provided a minimum of 8 hours on-the-ground rest. During the rest period, each animal is provided access to unlimited amounts of clean water and 25 pounds of good quality hay per horse with adequate bunk space to allow all animals to eat at one time. Most animals are not shipped more than 18 hours before they are rested. The rest period may be waived in situations where the travel time exceeds the 24-hour limit by just a few hours and the stress of offloading and reloading is likely to be greater than the stress involved in the additional period of uninterrupted travel.

LTPs are designed to provide excess wild horses with humane, life-long care in a natural setting off the public rangelands. There wild horses are maintained in grassland pastures large enough to allow free-roaming behavior (i.e., the horses are not kept in corrals) and with the forage, water, and shelter necessary to sustain them in good condition. About 22,700 wild horses, that are in excess of the existing adoption or sale demand (because of age or other factors), are currently located on private land pastures in Iowa, Kansas, Oklahoma, and South Dakota. Located in mid or tall grass prairie regions of the United States, these LTP are highly productive grasslands as compared to more arid western rangelands. These pastures comprise about 256,000 acres (an average of about 8-10 acres per animal). The majority of these animals are older in age.

Mares and castrated stallions (geldings) are segregated into separate pastures except one facility where geldings and mares coexist. No reproduction occurs in the long-term grassland pastures, but some foals are born to mares that were pregnant when they were removed from the range and placed onto the LTP. These foals are gathered and weaned when they reach about 8-10 months of age and are then shipped to short-term facilities where they are made available for adoption. Handling of wild horses at the LTPs is minimized to the extent possible although regular on-the-ground observation and weekly counts of the wild horses to ascertain their numbers, well-being, and safety are conducted. A very small percentage of the animals may be humanely euthanized if they are in very thin condition and are not expected to improve to a Henneke Body Condition Score of 3 or greater due to age or other factors.

Natural mortality of wild horses in LTP averages approximately 8% per year, but can be higher or lower depending on the average age of the horses pastured there (GAO-09-77, Page 52). The savings to the American taxpayer which results from contracting for LTP averages about $4.45 per horse per day as compared with maintaining the animals in short-term holding facilities.

Euthanasia and Sale without Limitation
While humane euthanasia and sale without limitation of healthy horses for which there is no adoption demand is required under the WFRHBA, Congress prohibited the use of appropriated funds between 1987 and 2004 and again in 2010 for this purpose. It is unknown if a similar limitation will be placed on the use of Fiscal Year 2011 appropriated funds.

Effects that differ between the Proposed Action, and Alternative 1:
Under the Proposed Action, the objective for the gather would include the application of fertility control to approximately 18 mares released back to the range, and adjustment of sex ratio to 60:40, favoring studs.

The procedures to be followed for the implementation of fertility control are detailed in Appendix E. Each released mare would receive a single-dose of the two-year PZP contraceptive vaccine. When injected, PZP (antigen) causes the mare's immune system to produce antibodies and these antibodies bind to the mare's own eggs, and effectively block sperm binding and fertilization (Zoo Montana, 2000). PZP is relatively inexpensive, meets BLM requirements for safety to mares and environment, and can easily be administered in the field. In addition, among mares, PZP contraception appears to be completely reversible, and to have no ill effects on ovarian function if the mare is not contracepted for more than three consecutive years.

This one-time application, applied at the capture site, would not affect normal development of the fetus, hormone health of the mare or behavioral responses to stallions, should the mare already be pregnant when vaccinated (Kirkpatrick, 1995). The vaccine has also proven to have no apparent effects on pregnancies in progress, the health of offspring, or the behavior of treated mares (Turner, 1997). Mares would foal normally in 2011 (year 1).

The efficacy for the application of the two-year PZP vaccine based on summer application is as follows:

Table 7. Fertility Control Efficacy (Effectiveness)

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

The injection would be controlled, handled, and administered by a trained BLM employee. Mares receiving the inoculation would experience slightly increased stress levels from increased handling while being inoculated and freeze branded. There would be additional impact to animals at the isolated injection site following the administration of the fertility control vaccine. Injection site injury associated with fertility control treatments is extremely rare in treated mares, and may be related to experience of the administrator. Any direct impacts associated with fertility control would be minor in nature and of short duration. The mares would quickly recover once released back to the HMA.

Population wide indirect impacts are more difficult to quantify and would occur over time. A large percentage of inoculated mares would experience reductions in fertility. Recruitment of foals into the population would be reduced over a three-year period. Up to 80% of the mares treated would not foal the second year following implementation of fertility control, and 65% and 50% of mares in the following two years. The potential multi-year reprieve from foaling would greatly increase overall health and fitness of the mares, as well as the health of the foals born after fertility returns.

Past application of fertility control has shown that mares reflect improvements to overall health and body condition even after fertility resumes. Subsequent observations of mares treated in past gathers showed that many of the mares were larger than the others were, maintained higher body condition than untreated mares, and had large healthy foals.

Following resumption of fertility, the proportion of mares that conceive and foal could be increased (rebound effect) due to the increased fitness. Additionally, fertility control treatment could cause breeding and foaling seasons to become "out of sync" with foals born earlier or later in the year, or throughout the year but is generally associated with the timing of the treatment and not the vaccine itself. Research is continuing to document and quantify these effects.

The indirect effect of fertility control and adjustment of sex ratios to favor studs would include the reduced need to conduct a wild horse gather for several years. According to the population modeling (Appendix D), the application of fertility control could extend the need for a gather by 1 or more years when compared a gather without implementation of fertility control (Alternative 1).

Wild horses would experience reduced stress and disruption to population dynamics as a result of less frequent gathers. By reducing population growth rates and the need for gathers, the number of wild horses that would have to be removed during future gathers would be reduced. Refer to the Population Modeling Summary below for additional information.

Fertility control application would allow the average population size to be maintained at a level consistent with the AML. Long term genetic and physical health, and future reproductive success of mares within the herd would be sustained. Reduced growth rates and lower population sizes would also allow for improvements to range condition, which would have long-term benefits to wild horse habitat quality and contribute to the achievement and maintenance of a thriving natural ecological balance, and would reduce the movement of wild horses from within the Reveille HMA to areas that fall in non-HMA areas that are not managed for wild horses.

Population control methods including the adjustment of sex ratios to favor studs would be expected to have relatively minor impacts to overall population dynamics. Under the Proposed Action and Alternative 1, impacts could include: decreased band size, increased competition for mares, and increased size and number of bachelor bands. These effects would be slight, as the proposed sex ratio is not an extreme departure from normal sex ratio ranges. Conversely, a selection criterion, which leaves more mares than studs, would be expected to result in fewer and smaller bachelor bands, increased reproduction on a proportional basis with the herd, lengthening of the time after birth when individual mares begin actively reproducing, and larger band sizes.

Modification of sex ratios for a post-gather population favoring studs could also reduce growth rates and subsequent population size, as a smaller proportion of the population would consist of mares that

are capable of giving birth to foals. As a result, gather frequency could be reduced as well as the numbers of horses gathered and removed in future gathers.

Alternative 1 would involve a post-gather population of 80 wild horses and a sex ratio of 60% studs and 40% mares; however no fertility control would be applied under this Alternative. The population could experience impacts identified above under sex ratio adjustment; however, mares would not undergo the additional stress of receiving fertility control injections or freeze marking. Mares would foal at normal rates until the next gather is scheduled.

The primary differences among the Action Alternatives would be to growth rates, average population sizes, and numbers of horses needing to be gathered and/or removed over the next 10-11 years. Refer to the discussion below and Appendix D for more detail.

Population Modeling Summary

The WinEquus Feral Horse Population Model, developed by Dr. Steven Jenkins at the University of Nevada at Reno was designed to assist wild horse and burro specialists evaluate various management plans and possible outcomes for management of wild horses that might be considered for a particular area. Several scenarios were put through the model (simulated) to assess potential effects to the population by implementation of the Proposed Action and Alternatives. The simulations were run for 10 years for 50 trials. Several forms of outputs were analyzed including tables and graphs of population sizes, growth rates and gather schedules.

The results of the modeling suggest that implementation of fertility control (Proposed Action) when compared to Alternative 1 could result in reduced population growth rates. The median growth rates displayed by the model were 13.6% for the Proposed Action, 17.9% for Alternative 1 and 20.4% for the No Action Alternative, indicating that the Proposed Action would be most effective in slowing wild horse population growth rates, followed closely by Alternative 1.

The following table provides a summary of all of the results of the modeling that are displayed in Appendix D. The ranges presented are the spans of results between the lowest and the highest trials. Refer to Appendix D for more detailed discussion about the results of the Population Modeling.

Table 8. Results of WinEquus Population Modeling

Alternative	Minimum Populations	Average Populations	Maximum Populations	Average Growth Rates	Gather	Remove	Treat
Proposed Action	70-100	113-135	231	8.0-16.2	304-484	177-292	33-85
Alternative 1	72-98	120-136	231	13.0-23.2	233-400	202-363	0
No Action	152-231	385-992	775-2,297	12.9-25.8	0	0	0

<u>No Action Alternative (No Wild Horse Gather)</u>

If No Action is taken, excess wild horses would not be removed from within or outside the Reveille HMA at this time. The animals would not be subject to the individual direct or indirect impacts as a result of a gather operation in September 2010. Under the No Action alternative, AML would not be achieved within the HMA. There would be no active management to control the size of the population at this time, and the wild horse population would steadily increase in the foreseeable future at an average rate of 19-25% per year. Refer to Appendix D for more detail.

The increasing population of wild horses in excess of AML would compete for the available water and forage resources. Excessive utilization, trampling, and trailing by wild horses would degrade the vegetation resources and prevent improvement of range that is already in less than desirable or degraded condition. Social stress would increase as the density of the wild horses increases, and more wild horses would move out of the established HMA boundaries to areas not designated for their use. Fighting among stud horses would increase, particularly at water sources.

A pattern of habitat decline would occur as a result of uncontrolled increases of the population, including depletion of forage and water resources affecting the long term health of the habitat and the wild horses within and outside of the HMA. Experience has shown that because wild horses are so resilient, the herds do not show impacts to growth rates, body condition or sudden and catastrophic mortality rates until the habitat has already become severely and potentially irreparably degraded.

In the long term, the population would grow to a point that would result in decline of the body condition and health of the wild horse population or significant rates of wild horse mortality as the existing habitat is unable to sustain the overpopulation of wild horses. Continued decline of rangeland health and irreparable damage to vegetative, soil and riparian resources, would have detrimental impacts to the future of the HMA and all other users of the resources. As a result, the No Action Alternative would not ensure healthy rangelands that would allow for the management of a healthy, self-sustaining wild horse population, and would not promote a thriving natural ecological balance.

The BLM realizes that some members of the public advocate "letting nature take its course", however allowing horses to die of dehydration and starvation would be inhumane treatment and clearly indicates that an overpopulation of horses exists in the HMA. The Wild Free-Roaming Horses and Burros Act of 1971 mandates the Bureau to "*protect the range from the deterioration associated with overpopulation*", "*remove excess animals from the range so as to achieve appropriate management levels*", and *"to preserve and maintain a thriving natural ecological balance and multiple-use relationship in that area"***.**

Promulgated Federal Regulations at Title 43 CFR 4700.0-6 (a) state "*Wild horses shall be managed as self- sustaining populations of healthy animals in balance with other uses and the <u>productive capacity of their habitat</u>"* (emphasis added).

3.3. Livestock Management

The purpose of this section is to assess the potential direct and indirect effects to livestock management within the various grazing allotments as a result of the Proposed Action, Alternative 1 or No Action Alternatives. The information presented here is to supply the reader with a general background of the history and degree of livestock use that occurs within the HMA being considered for gather. Please refer to Map 1, which displays the allotment boundaries in the Proposed Gather Area.

The Reveille HMA is located within the Reveille Allotment administered by the TFO within Nye County, NV. Table 9 displays the permitted season of use and AUMs for the Reveille Allotment. Livestock grazing has been at or below permitted levels in recent years.

The Reveille Allotment spans approximately 650,520 acres in size, with the Reveille HMA consisting of105,494 acres or just 16% of the total allotment area. The Reveille Allotment permitted livestock

use is based on base water service areas, which involve the allocated use of livestock to the various water sources in the allotment to which the permittee holds vested water rights. There are seven base water service areas that fall totally or partially within the HMA out of the 31 base water service areas in the Reveille Allotment. Carrying capacity calculations completed in the Final Reveille Allotment Evaluation determined that 2,210 AUMs would be allocated within the Reveille HMA for use by 184 head of livestock (which represents less than 10% of the total permitted grazing in the Reveille Allotment). The following table displays the actual use by livestock within the whole of the Reveille Allotment since 2005.

Table 9. Livestock Actual Use -- Reveille Allotment

Year	Active /Permit (AUMs)	Actual Use (AUMs)	% of Active Permit
2005	25,730[9]	24,167	94%
2006		21,678	84%
2007		19,407	75%
2008		19,456	76%
2009		21,444	83%
2010		20,574	80%

The following table displays the season of use for the Reveille Allotment.

Table 10. Reveille Allotment Season of Use

Livestock Number	Kind	Season	AUMs
2,440	Cattle	3/01-5/31	7,380
2,100		6/01-6/30	2,071
1,801		7/01-11/30	9,059
2,440		12/01-2/28	7,220
Total			25,730[7]

The Final Reveille Allotment Evaluation completed in 1999 evaluated vegetation, actual use, climate, riparian, utilization, ecological status and trend data to determine whether the Allotment Specific and RMP Objectives and Mohave/Southern Great Basin RAC Standards for Rangeland Health were being achieved. The evaluation determined that changes to livestock grazing were necessary to meet objectives and standards, as detailed in the Management Action Selection Report and a Proposed Multiple Use Decision issued in 1999, which changes were protested by the grazing permittee. Subsequently, additional data was collected and summarized in the Addendums to the Reveille Evaluation completed in 2001. This document further summarized the vegetation status throughout the Allotment, and made further determinations for changes in the livestock management system, which were detailed in the FMUD for the Reveille Allotment issued June 2001.

The FMUD was appealed by the permittee to the Department of the Interior Office of Hearings and Appeals. The administrative appeal was resolved through the *Stipulation to Revise the Livestock Decision and to Dismiss Appeal*, signed on March 3, 2006.

9. The permitted livestock indicated in these tables represents the entire allotment. The Reveille HMA is only 16% of the Reveille Allotment.

The Settlement Agreement of 2006 set forth several terms and conditions for livestock grazing management necessary to make progress towards achieving the Standards for Rangeland Health. These terms and conditions pertained to management of the livestock for each Base Water Service Area (BWSA) which included monitoring of the seed ripe time desired utilization levels during the mid-year and/or end of year period to determine if the standards were met or exceeded. Other requirements consisted of annually filing actual use reports, and grazing plans for the allotment. Other provisions of the Settlement pertained to rangeland improvement projects.

As required in the Settlement, the Permittee and BLM have met to discuss improving range condition, management of the BWSAs and evaluating key areas. The permittee took voluntary non-use of 1,287 AUMS for three years, but no reduction in the AUMs from the original permit was implemented through the Settlement. The Permittee has adjusted management of livestock based on ground conditions and has implemented rotational grazing. Since 2006, utilization data has been collected on key species (Indian ricegrass, James' galleta, needleandthread, sand dropseed). The utilization levels are in conformance with the terms and conditions of the 2006 Settlement. The permittee has been following the terms and conditions by submitting yearly actual use reports and grazing management plans.

Refer to the documents identified in Section 1.7 for more information about the livestock use within the Reveille Allotment.

Environmental Consequences

Proposed Action and Alternative 1:

The proposed gather would not directly impact livestock operations within the allotments or within the gather area. Operations involved in removing wild horses may temporarily disturb livestock present during the removal process. Livestock owners within the area would be notified prior to the gather, enabling them to take precautions and avoid conflict with livestock grazing.

The indirect effects of achieving the established AML would include promotion of healthy rangelands throughout the Proposed Gather area. Managing wild horses at the established AML would promote a thriving natural ecological balance between wild horses and other resource values and uses, allowing for improvement of rangeland health as excess wild horses both within and outside the HMA boundaries are removed. Wild horses would be less likely to leave the HMA and move onto areas not designated for their use in search of forage or water. The population would be consistent with the established AML, IBLA Orders and the 1987 stipulated settlement. As a result, availability and quality of forage and water resources would improve for use by livestock.

No Action Alternative (No Wild Horse Gather):

The effects of implementation of the No Action Alternative would be continued population increases within the Reveille HMA. According to the population modeling, the population could grow to over 400 wild horses by 2012, and over 600 wild horses by 2014 if a gather was not conducted to manage the population consistent with the established AML. More uncontrolled increases within the population size beyond the AML would result in continued use by wild horses outside of HMA boundaries which would affect utilization levels of native forage and use of riparian areas. Within the HMA, concentrated use by wild horses would also continue and affects to rangeland health would be commensurate with population size, increasing utilization levels, causing further decline in plant health and frequency of desirable key plant species which would affect the use of these areas by permitted livestock. With decline of rangeland health, forage and water availability and quality would also

decline for use by livestock. Failure to bring the wild horse population to AML through removal of excess wild horses could also subject BLM to being found in contempt of IBLA orders and of the 1987 Stipulated Settlement.

3.4. Noxious weeds, Invasive and Non-Native species

Affected Environment

Any surface disturbance activity can create a potential environment and opportunity for an invasive species to establish and spread. Although a complete inventory has not been completed, four weed species from the noxious weed list are known to be found on public lands within the proposed gather area. Russian knapweed (*Centaurea repens*), salt cedar (*Tamarisk chinensis*), Halogeton (*Halogeton glomeratus*), and Cheat grass (*Bromus tectorum*).

Environmental Consequences

Proposed Action:

The proposed wild horse gather could potentially result in the direct spread of existing populations of invasive and non-native species. Precautions would be taken prior to the set up of gather corrals and holding facilities. If noxious weeds are found, a different location would be selected to prevent the spread of seed. The Contracting Officers Representative (COR), Project Inspector (PI), or other qualified specialist would examine proposed holding facilities and gather corrals prior to construction to determine if noxious weeds are present.

Indirect Impacts of the Proposed Action relate to wild horse population size, as it affects ground disturbance and rangeland health. Noxious weeds, invasive, and non-native species can increase with overuse of the range by grazing animals or through surface disturbance. Maintenance of healthy populations of native perennial plant species minimizes the establishment of noxious weeds, invasive and non-native species. It is expected that implementation of the proposed wild horse gather and achievement of the established AML would result in improved condition of native rangeland and riparian areas throughout the Reveille HMA. As a result, the risk of spread by noxious weeds and invasive species across the Reveille HMA would be reduced.

No Action Alternative (No Wild Horse Gather):

Without completion of a wild horse gather, ground disturbing activities associated with the gather that could cause some spread of invasive and noxious plant species would not occur. However, there would be an increased risk of spread by noxious weeds and invasive species since existing concentrated use patterns by wild horses within the Reveille HMA would continue and could increase. The continued population levels in excess of the AML would prevent progress towards healthy rangeland conditions and could promote spread of invasive or noxious species particularly along trails and near water sources.

3.5. Rangeland Vegetation Resources (Forest and Rangeland)

Affected Environment

The Reveille Allotment Evaluation completed in 1999, involved the analysis of extensive vegetation data to include utilization, use pattern mapping, trend, production and ecological status inventory. The status and condition of the vegetation resources within the Reveille Allotment was evaluated for conformance to Tonopah RMP Objectives, Allotment Specific Objectives, and Rangeland Health Standards. The evaluation period for that evaluation was 1989-1997. The Evaluation was issued in 1999. The Addendums to the Reveille Final Allotment Evaluation was issued in 2001 following the

collection of additional monitoring data. The Reveille Allotment Final Multiple Use Decision was subsequently issued in 2001. The following information consists of a summary of the vegetation resources within the Reveille Allotment and HMA, and relevant excerpts from the above referenced documents. Refer to Appendix C for expanded information about the vegetation resources within the HMA, and to the documents identified in Section 1.7 for more information about the Reveille Evaluation and the analysis of monitoring data.

The vegetation resources within the Reveille Allotment and HMA are dictated by geologic and climatologic factors within the Great Basin, which determine what type of plant communities can be sustained. The climate associated with the Proposed Gather Area can be characterized as arid with hot, dry summers and cold winters. Periodic droughts occur on an intermittent basis within this area. During these events, the annual forage production can be substantially reduced. Oftentimes, it is not the total annual precipitation that is the largest factor, but the timing, as restricted precipitation during the active growth period can reduce the annual production of range vegetation, regardless of the precipitation received during the rest of the year.

The Reveille HMA is dominated by plant communities that are inherently less productive due to the climate and soils that support them. The Shallow Calcareous Loam ecological site (precipitation zone 8-12") represent about 51% of the HMA. These sites have the potential to produce 500 lbs per acre of annual, above ground vegetation, which should consist of 20-35% Indian ricegrass, and 25-45% black sagebrush with lesser grasses and forbs throughout the understory. These sites occur on the upper alluvial fans in Reveille Valley and on treeless hills and mountains in the Kawich and Reveille Ranges.

The Salt Desert Shrub ecological sites (precipitation zone 5-8") represents about 28% of the Reveille HMA, and occurs on the alluvial fans, low hills and valley basins in the Reveille and Railroad Valleys. These ecological sites are dominated by shadscale, Bailey's greasewood, black greasewood, fourwing saltbush and winterfat. Associated species include Nevada ephedra, spiny hopsage, galleta grass and Indian ricegrass. "*The salt desert shrub is primarily a browse range*[...]*the salt desert shrub range is the only one on which more than half the forage resource (65 to 90 percent) is browse*" (Holmgren, Hutchings, Selar 1972). "*Because of the arid climate, herbage yields and grazing capacities are low* […] *The salt desert is mainly a winter range* (Cook et al 1954). Despite the inherent capability of these sites, they have the potential to be the most productive ecological sites within the Reveille Allotment.

These sites should produce approximately 250-450[10] lbs per acre of current year growth in a normal year, which should consist of 5-45% Indian ricegrass and 20-50% shadscale along with other associated grasses, forbs and shrubs.

The Pinyon Juniper ecological sites represent about 16% of the HMA and are scattered throughout upper elevations of the HMA. These communities vary in the amount of understory grasses that are available due to the density of the trees and the soil composition. In general, wild horses do not prefer heavily timbered areas, but would frequently use open Pinyon-Juniper and individual trees for shade in summer or shelter in winter. Because of the position on the landscape, these upper elevations would

10. There are three ecological sites within the Reveille HMA that support the salt desert shrub vegetation. Approximately 14% of the HMA supports a lower producing site capable of supporting 250 lbs/acre with 5-15% Indian Ricegrass and 35-50% shadscale, (Loamy Slope 5-8") whereas the other two ecological sites make up approximately 14% of the HMA and can support up to 450 lbs/acre in a normal year comprised of 25-45% Indian ricegrass and 20-35% shadscale (Loamy 5-8"). Refer to Appendix C for more information.

sometimes be used throughout the year by wildlife, livestock, and wild horses. Lower elevations provide important winter habitat where snow depth would not deter use.

Vegetation Summary – Reveille Allotment and Herd Management Area

In vegetation communities dominated by extensive areas of sagebrush or salt desert shrub vegetation the carrying capacity is limited because the resources are finite, and forage production is either inherently low, or reduced below the Potential Natural Community (PNC) or the Desired Plant Community (DPC). The competition for forage resources between livestock and wild horses puts an increasing demand on the resources horses if the productive capacity of the vegetation is limited because of overlapping diets. The present condition of the vegetation communities displays significant departure from the potential. The most significant departure is a decrease in the percent of grasses and an increase in the percent of shrubs.

There are 15 key areas with trend and condition data in the Reveille Allotment. Two of these key areas fall within the Reveille HMA. Throughout the Reveille Allotment there has been a loss of Indian ricegrass, winterfat and fourwing saltbrush. This accounts for the downward trend on 9 of the 15 key areas. Trend on two key areas are upward. One is static and two are undetermined. One key area could not be re-located. Throughout the Reveille Allotment it is clearly evident that the three vital key species, (Indian ricegrass, winterfat, and fourwing saltbush), have decreased at most of these key areas between 1981 and 2001. This is due to excessive use by livestock and wild horses on the most productive soils in the allotment.

A significant portion of the salt desert shrub range, mainly fourwing and winterfat ecological sites, has been converted to plant communities dominated by Douglas rabbitbrush, galleta grass or Eurasian annuals. Galletta grass is rhizomatous and very resistant to grazing, increasing in plant communities as more desirable perennial grasses decline due to over use by grazing animals. It is less palatable and nutritious than the key bunch grasses that it replaces.

Indian ricegrass, winterfat and fourwing saltbush are highly palatable plants that currently produce at levels far below the potential for the soil. They have ceased being the dominant species because they are highly preferred by livestock and wild horses. Their absence is an indication of range overuse. Indian ricegrass should comprise 25 to 45% of the annual production on a Loamy 5-8" ecological site in PNC. It is currently between >1% to 15% on all Loamy 5-8" sites. Winterfat and fourwing saltbush are also producing below potential in the Reveille Allotment. Several of the key areas support little to no Indian ricegrass and it is generally decreasing or static within the Allotment. On Loamy 5-8" ecological sites shadscale is an increaser. As preferred forage is lost from the plant community, shadscale begins to decrease as it receives livestock use and trampling. Most of the highly palatable forage species, Indian ricegrass and winterfat, are now scarce in the Reveille Allotment.

Of all of the key areas assessed within the 1999 Reveille Allotment Evaluation, none of the sites were found to be representative of upward trends. With proper rangeland management, many plants established during wet cycles should survive dry and average rainfall years. Upward trend is not expected during droughts, but overall trend throughout wet and dry cycles should be upwards.

The common pattern was that production of key perennial forage species at all sites was well below the potential and key species of shrubs and grasses were continuing to decrease. Livestock were found to be having the largest impacts through utilization levels, however wild horses were noted as

contributing to the decline of perennial grass species to a lesser degree, with the emphasis that they display a preference for grasses, and had contributed to moderate, heavy and severe use within and outside of the HMA.

During Spring, 2010, cover data was collected throughout the Reveille HMA. A data point was collected every ten spaces and over 2,000 data points were taken during this period. The monitoring team travelled on foot approximately 15 miles throughout the HMA. The cover data was categorized into 5 categories which included bare ground, litter, gravel, stone and vegetation. The basal and canopy/foliar of the vegetation was taken to provide a more detailed perspective of the vegetative cover data. The cover data revealed that most of the HMA reflects only 20 percent cover of vegetation with a dominance of gravel and/or bare ground. The dominant vegetation was Wyoming big sagebrush and other shrubs which composed approximately 15 percent of the total cover with the rest as grasses. The dominant grass was Jame's galleta followed by squirretail. Indian ricegrass (the most important key perennial grass species in the HMA) was rare. In addition, winterfat and fourwing saltbush were uncommon and in many cases rare on Sandy Loam sites of the 5 to 8 inches precipitation zone. There were some areas within the Reveille HMA dominated by yellow rabbitbrush on coarse-textured soils. On a Wyoming big sagebrush/ Indian ricegrass-needleandthread site, the decrease in the percent by weight of grasses was estimated to be up to 50 percent under certain conditions. These sites have become dominated by Wyoming big sagebrush.

The estimated ecological site status varies from 30 percent (mid-seral) to 90 percent of the climax vegetation (PNC). The data demonstrates that the age distributions of the plant communities are dominated by mature plants followed by decadent and dead plants. The recruitment of new plants was not observed. There has been a shift in structure and dynamic of the plant communities. Some of the plant communities have reached the threshold level of the transition model to a lower state in which the plant communities will remain in their present condition.

Rangeland Health Standards and Objectives Summary

The Reveille Allotment was evaluated for conformance with Mojave/Southern Great Basin (MSGB) RAC Standards for Rangeland Health in 1999. The determination was based on the review of actual use by livestock and wild horses, and analysis of monitoring data, and the evaluation of Land Use Plan and Allotment Specific Objectives.

The MSGB Standards consist of Standard 1: Soils; Standard 2: Ecosystem Components, and; Standard 3: Habitat and Biota. The evaluation found that none of the Standards were being met within the Reveille Allotment (including within the Reveille HMA), and that the RMP and Allotment Specific Objectives were not being met in most cases. Livestock use was the primary factor given for the Standards not being met, however wild horse use was specifically identified as having contributed to the non-attainment through moderate, heavy and severe use levels. Wild horses were also identified as contributing to the functional-at-risk ratings of some riparian areas due to trailing.

Use pattern mapping data indicated that wild horse use contributed to the failure to achieve allotment specific utilization objectives in some areas of the allotment, and that a significant percentage of the wild horses had established residency outside of the HMA, indicating that the habitat needs of the existing populations of wild horses were not being met at a level which could support the existing AML (145-165 wild horses). As a result, the AML was subsequently adjusted from 145-165 to 138 wild horses through the Reveille Allotment FMUD issued in 2001.

The evaluation also determined that significant progress was not being made towards attainment of the standards in most cases. Reasons for the failures included the fact that most ecological sites were producing at levels far below potential, and that key forage species were below the potential as well, having been replaced by less palatable plants that increase in the plant community such as rabbitbrush, galleta grass, cheatgrass and Russian thistle.

Trend data indicated a decline in ecological status since 1986. Heavy grazing utilization during the critical growth period was identified as the primary factor that caused seral stages to decline. The Ecological Status Inventory indicated that vegetation composition was not meeting Desired Potential Condition, equating to a loss of valuable forage species, reducing the quality and quantity of wildlife habitat.

It was determined that 31% of the allotment was in mid or early seral state, which translates to a loss of palatable and nutritious native vegetation which had been replaced by invaders and increasers. These communities have departed from their potential and their productivity has been reduced because of increasing grazing pressure. The plant communities at this ecological status stage are unhealthy and have unbalanced structural and dynamic functioning energy flows.

The 2001 Reveille Allotment Addendum concluded that livestock were the primary reason for the decline of the rangeland health within the Allotment, and made recommendations for changes to livestock grazing to reverse these trends.

Because of the inherent low precipitation levels received in the Great Basin and the frequency of drought occurrence, vegetation improvement from past grazing abuse can be very slow to manifest itself. Improvement can be further impeded and can even be depleted should these areas continue to receive over-use caused by excess numbers of wild horses. Proper management of wild horses is paramount to ensure that further decline of the Reveille HMA wild horse habitat does not occur.

Reveille HMA, August 2009

Environmental Consequences

Proposed Action and Alternative 1

Disturbance would occur to native vegetation in and around temporary gather corrals and holding facilities due to the use of vehicles and concentration of horses in the immediate area. The disturbed area, however, would make up less than one acre. Gather corrals and holding facility locations are usually selected in areas easily accessible to livestock trailers and standard equipment, often utilizing

roads, gravel pits or other previously disturbed sites, and which are accessible using existing roads. New roads are not created to construct capture corrals. Based on typical wild horse gather operations, it is estimated that approximately 2 to 4 trap-sites and 1 set of holding corrals would be needed within the Proposed Gather Area.

Wild horses affect vegetation through grazing, or actual utilization of the above ground forage, and through trampling or trailing. In general, wild horses disperse throughout the landscape and are not as apt to congregate in some areas as livestock sometimes do, and typically utilize steeper terrain. A wild horse may consume 20 to 25 lbs of forage per day to maintain its metabolic, physiological and energy levels. Therefore, a wild horse must travel various distances to locate enough food to maintain itself throughout the day. An increasing herd size further increases the level of forage depletion in which the plant communities continue to deteriorate to a lower seral level.

Achieving and maintaining the established AML, would benefit the vegetation by reducing the grazing pressure on the forage resources. Removal of excess wild horses would reduce the population of horses to a level that would be in balance with the available water sources and forage availability.

Maintaining AML within the Proposed Gather area would prevent overgrazing, damage by trampling or pawing, and would help promote improved rangeland health through increased seedling establishment of shrubs, forbs and grasses. Increased cover, frequency, production, and vigor of desirable key species would also be promoted through the long term. Repeated utilization and widespread use of plants during the critical growing period would not be as likely to occur, and heavy utilization would be minimized or avoided. By bringing the wild horse population within the established AML, degradation of the range by wild horses would not occur, and limited vegetation available during drought years would not be damaged by an overpopulation of wild horses.

Implementation of the proposed gather and resulting improved rangeland health would promote attainment of the 1997 Tonopah RMP vegetation objectives, and the goal of achieving desired plant communities as identified in the Reveille Allotment Evaluation, 1999 and Addendums to the Evaluation, 2001. The removal of the excess wild horses would also result in significant progress being made towards meeting the Standards and Guidelines for Rangeland Health over the long-term and improve vegetation resources that are important for wild horse and wildlife habitat.

Under the Proposed Action, the population growth would be lower than under Alternative 1 according to the modeling, which would have the effect of reducing average population sizes and gather frequency. In turn, rangeland health would benefit slightly more under the Proposed Action. Both alternatives would maintain a healthy wild horse population at levels consistent with the established AML; however a gather to remove excess with horses would need to occur sooner under Alternative 1.

<u>No Action Alternative (No Wild Horse Gather)</u>
The Reveille Allotment Evaluation and assessment of Rangeland Health Standards concluded that excess wild horses were contributing to the non-attainment of RMP, and Allotment objectives and Standards for Rangeland Health, and determined that an adjustment of AML was necessary to further protect and improve resources and address the problem of forage loss and maintaining plant diversity. Continued populations of excess wild horses would result in continued degradation and loss of vital key perennial forage species and the long term loss of rangeland forage capacity.

The No Action Alternative would not allow for improvements of the plant community structures and dynamics. According to the population modeling, the population could grow to over 400 wild horses by 2012, and over 600 wild horses by 2014 if a gather is not conducted to manage the population consistent with the established AML. An overpopulation of excess wild horses at these levels would have obvious consequences to the vegetation health of the HMA through overutilization, trampling and diminished plant health and frequency of key forage species within the plant community.

Increased trailing and trampling would occur as horses travel longer distances to locate forage from the available water sources. Key forage species would further be lost within the plant communities, along with increases in undesirable species. The majority of the Reveille HMA receives less than 8 inches of annual precipitation and has very low potential for improvement under even optimal conditions. Without a gather to achieve AML, continued downward trends and reductions in ecological condition would be expected. It would not be possible to make significant progress towards attainment of RAC Standards for Rangeland Health, RMP or Allotment Objectives under the no action alternative.

3.6. Riparian-Wetland Resources and Water Quality

Affected Environment

Riparian-wetland areas are the most productive and valuable resources found on public land. These areas play a significant role in restoring and maintaining the chemical, physical, and biological integrity of the nation's water. Wildlife species use riparian-wetland areas more than any other type of habitat. In the Great Basin, approximately 69 different species of wildlife are found within riparian areas.

Typical water development and pond in the Reveille Allotment

Direct field observation of feces and hoof prints are the primary means of differentiating animal use. Based on direct field observations, livestock, wildlife, and wild horse use of riparian and wetland areas for food, water and shelter have collectively affected the functioning condition of riparian-wetland areas.

In most cases, wild horses briefly visit water sources. The exception may include large open springs or meadows. High wild horse populations in relationship to limited water sources result in degradation of riparian and wetland habitat. Wild horses utilize lotic (streams) and lentic (springs) sites differently because of inherent social behaviors. Wild horses tend to move quickly away from lotic sites to avoid dangerous encounters with other horses or predators. Lentic sites have a valley landform that is wider and capable of being viewed from further distances. These sites deteriorate faster with continuous concentrated use. In addition to potential physical impacts to riparian areas, dominant horses can physically exclude other wildlife and livestock species.

Currently, some of the riparian areas within the Reveille HMA are degraded, and monitoring indicates that many of the natural water sources and riparian areas throughout the allotment and HMA are at non-functioning condition. Many of the springs in the allotment and HMA have been developed by the permittee, with the water rights held by the permittee. These springs are used by cattle, wild horses and wildlife. Some riparian areas have been impacted by excess horses. Such impacts include over-grazing of riparian vegetation and trampling or trailing (e.g., at Cap Henry and Rose Spring), which causes loss of riparian vegetation and erosion, particularly evident in the Kawich Range. There are no perennial streams within the HMA that are utilized by wild horses.

Environmental Consequences

Proposed Action and Alternative 1

The proposed wild horse gather would not have any direct impacts to riparian or wetland zones within the Reveille HMA because gather corrals and holding corrals would not be constructed near riparian areas.

The proposed gather would indirectly impact riparian wetland zones by decreasing utilization, trailing and trampling by wild horses in these sensitive areas, thus allowing for riparian wetland areas to improve through natural processes. Achieving and maintaining AML would relieve some of the grazing pressure from the springs and riparian areas. Achievement of AML would further ensure that wild horse populations are in balance with forage and water availability.

Implementing the Proposed Action would result in the greatest benefits to riparian areas in Reveille HMA. Decreased population growth rates would decrease competition for water and alleviate pressures on riparian habitat due to wild horses congregating around these sensitive areas.

No Action Alternative (No Wild Horse Gather):

Wild horse population size would continue to increase in excess of the established AML. According to the population modeling, the population could grow to over 400 wild horses by 2012, and over 600 wild horses by 2014 if a gather is not conducted to manage the population consistent with the established AML. An overpopulation of excess wild horses at these levels would have obvious consequences to the health of riparian areas within the HMA through overutilization, trampling erosion and potential infestation of invasive weeds. The No Action Alternative could cause irreparable damage to these critical wildlife habitats and to the animals and other species that depend on these areas.

Small spring source in the Reveille Allotment

3.7. Soils

Affected Environment

Soils in the Reveille HMA are typical of soils found throughout the Great Basin and Nevada. The geophysical configuration of the gather area consists primarily of north-south trending mountain ranges with intervening valleys and playas. Most of Nevada's mountains were originally formed from either volcanism or related, plate tectonic processes. Refer to the Natural Resource Conservations Service (NRCS) Soil Survey for Nye County. Soils within the Proposed Gather Area vary widely in their physical and organic characteristics. They are described in very broad taxonomic classifications as aridisols, entisols and inceptisols.

Most of the Proposed Gather Area receives 8 inches or less of annual precipitation and soils are poorly developed, little or no organic matter, shallow and well drained. Many of the ecological types within the HMA inherently support large proportions of bare ground between shrub interspaces.

Environmental Consequences

Proposed Action and Alternative 1

Direct impacts such as soil erosion and compaction would potentially occur at gather corrals, which are one acre or less in size. Gather corrals are typically situated in areas of previous disturbance such as gravel pits or along roadsides. Procedures identified in the Gather Plan and SOPs would be followed to minimize impacts to soils during gather operations.

Achievement of AML, in balance with the capacity of the habitat, would result in improvements to vegetation communities, less bare ground, reduced erosion of soil by wind and water, and reduced trailing, and concentrations of wild horses around water sources. This would benefit soils. Achievement of AML would improve or maintain biological crusts, where present, due to reduced hoof action by wild horses.

No Action Alternative (No Wild Horse Gather)

Current soil disturbance would continue as wild horse populations continue to increase at 17 to 20% annually. Concentrated use of areas around water, and trailing would increase proportionally with increases in the population. Soils would be disturbed more frequently, and wind and water erosion would increase. Loss of soils would promote degradation of the native plant communities, reducing available forage, and increasing vulnerability for establishment of invasive and annual weeds such as halogeton, Russian thistle, and cheatgrass.

3.8. Threatened & Endangered Species, Special Status Species, Migratory Birds and Wildlife

Affected Environment

Threatened, Endangered and Special Status Species

No federally listed threatened or endangered species inhabit the Reveille HMA, therefore the Proposed Action and Alternative 1 would not affect any of them and they will not be further discussed in this document.

BLM protects by policy, *special status* plant and animal species. The list includes certain species designated by the state of Nevada, as well as species designated as "sensitive" by the Nevada BLM

State Director. Refer to the table below for the list of BLM Sensitive Species whose range or migration routes are known or believed to occur within the gather area.

Table 11. Special Status Species

Special Status Species that may occur in the gather area	
Mammals	**Common Name**
Antozous pallidus	Palid bat
Eptesicus fuscus	Big brown bat
Corynorhinus townsendii	Townsend's big-eared bat
Myotis califoricus	California myotis
Myotis ciliolabrum	Small-footed myotis
Myotis evotis	Long-eared myotis
Myotis lucifungus	Little brown myotis
Myotis volans	Long-legged myotis
Ovis canadensi nelsoni	Desert bighorn sheep
Birds	**Common Name**
Aquila chrysaetos	Golden eagle
Athene cunucularia	Burrowing owl
Buteo regalis	Ferruginous hawk
Falco mexicanus	Prairie falcon
Grus Canadensis	Loggerhead shrike
Lanius ludovicianus	Vesper sparrow

Migratory Birds

"Migratory bird" means any bird listed by the United States Fish & Wildlife Service (USFWS) in 50 CFR 10.13. All native birds found commonly in the United States, with the exception of native resident game birds, are protected under the Migratory Bird Treaty Act (MBTA) (16 United States Code 703711). The MBTA prohibits taking of migratory birds, their parts, nests, eggs, and nestlings. Executive Order 13186, signed January 10, 2001, directs federal agencies to protect migratory birds by integrating bird conservation principles, measures, and practices.

Additional direction is provided within the, Memorandum of Understanding (MOU) between the BLM and the USFWS dated January 17, 2001. This MOU strengthens migratory bird conservation through enhanced collaboration between the two agencies, in coordination with state, tribal, and local governments. The MOU identifies management practices that could impact populations of high priority migratory bird species including migratory bird nesting, migration, and overwintering habitats, and develops objectives and recommendations that would avoid or minimize these impacts. A variety of migratory birds use the habitat types within the Proposed Gather Area for breeding and foraging.

Potential migratory bird species that may be found within the Reveille Allotment could include but are not limited to the Ash-throated Flycatcher, Bewick's Wren, Black-headed Grosbeak, Black-throated Gray warbler, Black-throated Sparrow, Blue-gray Gnatcatcher, Brewer's Sparrow, Brown-headed Cowbird, Bushtit, Cassin's Finch, Chipping Sparrow, Common Raven, Costa's hummingbird, Gray

Flycatcher, Horned Lark, House finch, House Sparrow, House Wren, Le Conte's Thrasher, Lesser Goldfinch, Loggerhead Shrike, Mourning Dove, Northern Mockingbird, Rock Wren, Sage Sparrow, Say's Phoebe, Spotted Towhee, Swainson's thrush, Vesper Sparrow, Western Scrubjay, and the White-crowned sparrow (Great Basin Bird Observatory 2007).

Wildlife
Wildlife species found in the HMA include, mountain lion, coyote, bobcat, badger, long-tailed weasel, black-tailed jackrabbit, numerous birds, reptiles and small mammals. Hoofed mammal species include mule deer, pronghorn and bighorn sheep.

Environmental Consequences
Proposed Action and Alternative 1
Removing excess wild horses from the Reveille HMA would have minimal, short-term direct impacts to wildlife. Individual animals of all species that could be present in or near gather corrals or holding facilities could be temporarily displaced. The possibility exists that special status plant and animal species could be disturbed during the gather activities. However, gather corrals would typically be located in areas that have previously been disturbed (i.e. gravel pits), and for short periods of time (1-3 days). Once the gather corrals were dismantled and the helicopter gone, animals should return to normal activities. Should it be determined necessary by a qualified biologist, gather sites would be inventoried prior to selection to determine the presence of sensitive species. If potential impacts could not be mitigated, these areas would be avoided. There would be no direct impacts to animal populations as a result of the gather operations.

Because the proposed gather would not occur during the nesting season, (roughly March through July) wild horse gather activities would not affect birds protected under the Migratory Bird Treaty Act. The proposed gather activities constitute relatively low potential for disturbance to individual nesting birds and no potential for impact to migratory bird populations because no gather corrals would be located at riparian areas that many migratory bird species depend heavily on.

Wildlife and wildlife habitat would be indirectly affected by the Proposed Action or Alternative 1. Removal of excess wild horses and achievement of the established AML would provide the best opportunity for conservation, protection, and preservation of identified species and their habitats. Implementation of the proposed gather would reduce utilization on key forage species, improving the quantity and quality of forage available to wildlife and decrease competition for water sources. Habitat conditions within in riparian areas, and uplands would be expected to improve to the benefit of most wildlife, sensitive species and migratory birds.

Under the Proposed Action, the population growth would be lower than under Alternative 1 according to the modeling which would have the effect of reducing average population sizes and gather frequency. In turn, wildlife, sensitive species and migratory bird habitat (upland and riparian areas) would benefit slightly more than under the Proposed Action. Competition between wildlife and wild horses would also be slightly less under the Proposed Action, and reduced gather frequency would equate to fewer disturbances to wildlife.

No Action Alternative (No Wild Horse Gather):
According to the population modeling, the population could grow to over 400 wild horses by 2012, and over 600 wild horses by 2014 if a gather is not conducted to manage the population consistent with the

established AML. An overpopulation of excess wild horses at these levels would have obvious consequences to wildlife habitat health and would increase competition between wildlife and wild horses.

Wild horse populations would continue to increase, resulting in heavy and severe use of vegetation resources, and degradation of plant communities including riparian areas. Across the allotment and HMA continuing downward trends would be expected in key perennial species and overall ecological condition, resulting in reduced forage availability to wildlife, livestock, and wild horses, and to declining condition of habitat relied on by wildlife and sensitive species.

The No Action Alternative would have no direct impact to migratory birds since the gather would not take place. However, indirect impacts would be decreased forage and cover caused by large numbers of horses, which could cause a loss of preferred habitat for some species of migratory birds and other wildlife.

Bighorn Sheep in the Reveille Allotment, August 2009

3.9. Wilderness Study Areas (WSAs)

Affected Environment

Four Wilderness Study Areas (WSAs) are located within the proposed gather area. WSAs are known for their rugged, remote and sometimes inaccessible mountain peaks and ranges. Canyons in some of the WSAs consist of rock outcroppings, spires, rock faces, and ridges with sheer vertical drops. Vegetation consists mainly of dense pinion pine and juniper woodland with a sagebrush and grass understory. See Map 3, for locations of each WSA.

Palisade Mesa WSA

The Palisade Mesa WSA is located in northeastern Nye County approximately 65 miles east of Tonopah, Nevada. The WSA includes 99,500 acres of public land, and lies in the Pancake Range adjacent to Wall WSA. Roughly rectangular in shape, the WSA is approximately 18 miles north to south, and 9 miles east to west. The area is in nearly pristine condition due to the rugged topography. Huge boulder fields cap the mesas and provide habitat for desert bighorn sheep. The area is also host to prairie falcons and numerous other raptors can be observed.

Kawich WSA

The Kawich WSA is located in the Kawich Range in northeastern Nye County approximately 50 miles east of Tonopah, Nevada, and includes 54,320 acres of public land. The area provides winter habitat

for a large population of mule deer. The Kawich WSA consists of mountainous country with a high central plateau and several peaks. There are two small one-half acre lakes, the Bellehelen Lakes, located on the top of the plateau at the northern end of the WSA.

Rawhide Mountain WSA
The Rawhide Mountain WSA is located in the Hot Creek Range in northeastern Nye County approximately 50 miles east of Tonopah, Nevada. The WSA includes 64,360 acres of public land, although only about half of the WSA is within the proposed gather area. The central portion of the Rawhide Mountain WSA is extremely rugged with high elevations and remote drainages and pristine riparian settings around springs.

South Reveille WSA
South Reveille WSA is located in northeastern Nye County, approximately 70 miles east of Tonopah, Nevada. The WSA includes 106,200 acres of BLM lands. The rugged mountainous core of the WSA is a thick, multi-ridged strip of steep-sided mountains rising to crests and flat-topped summits between 8,000 and 9,000 feet. Sheer cliffs and large canyons with steep walls run out to the edge of the valleys.

Environmental Consequences
The Interim Management Policy (IMP) for Lands under Wilderness Review, (H-8550-1) provides guidance for management of WSAs. The IMP addresses wild horse and burro management in Chapter III, Section E which specifically allows for the use of helicopters for the gathering of wild horses. In addition, the IMP states:

> "*Taking into account that wild horse and burro numbers fluctuate dramatically within WSAs due to a variety of factors, the Bureau must still endeavor to make every effort not to allow populations within WSAs to degrade wilderness values, or vegetative cover as it existed on the date of the passage of the Federal Land Policy and Management Act (FLPMA). Wild horse and burro populations must be managed at appropriate management levels as determined by monitoring activities to ensure a thriving natural ecological balance".*

Proposed Action and Alternative 1:
The Proposed Action would not have any direct impacts to the WSAs within the Reveille HMA. Since the Proposed Action excludes the use of motorized/mechanized vehicles within the WSAs, the non-impairment criteria would be met, and the completion of a wild horse gather would not result in any unacceptable impacts to WSA lands.

The gather operation would result in the complete removal of all wild horses from areas not designated for their use, and achievement of AML within the HMA. As a result, riparian areas and native vegetation would benefit and experience improvement, and wilderness values and wildlife habitat would be enhanced in the WSAs within the gather area, particularly within the South Reveille and Rawhide Mountains WSAs.

No Action Alternative (No Wild Horse Gather)
The No Action Alternative would allow wild horses to continue utilizing resources within the WSAs both inside and outside of established HMA boundaries. Heavy use of vegetation and riparian areas within the WSAs would continue and increase under the No Action Alternative leading to degradation

of wilderness values. The No Action Alternative would not allow for a thriving natural ecological balance, would allow wild horses to degrade wilderness values, wildlife habitat and vegetative cover, and would not be in conformance with the IMP.

4. Cumulative Impact Analysis

The NEPA regulations (40 CFR 1508.7) define cumulative impacts as the 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 other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.

The Cumulative Effects Study Area (CESA) for this project includes the Reveille Allotment. The time frame for analysis is from the passage of the Wild Free-Roaming Horses and Burros Act of 1971 to 2020, ten years past the proposed gather which is a reasonable time frame to consider potential future actions within this analysis.

Cumulative analysis for the Reveille HMA and completion of a wild horse gather was completed within the Stone Cabin Complex Wild Horse Gather EA # NV065-EA07-028, December 2006. The analysis has been reviewed and found to provide an adequate analysis that is still pertinent for most resources. Therefore, cumulative analysis focuses on Wild Horses, which are the subject of the action and the most likely to be cumulatively affected by the actions.

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

Effects of Past, Present, and Reasonably Foreseeable Future Actions

Past Actions

The Tonopah Management Framework Plan, signed on July 16, 1981, designated the Reveille Wild Horse Management Area and established an interim herd size. The original Reveille Herd Area boundaries designated by the Battle Mountain District encompassed approximately 371,163 acres. In 1985 the grazing permittee initiated a court action to redefine the boundary of the HMA and establish an AML. On October 31, 1986, Judge Bruce Thompson's ruling declared that a new boundary be established. Judge Thompson further required that an AML be established by the Nevada State Director. The AML of 145-165 was set by the Nevada State Director on December 1, 1986. The AML was further adjusted in 2001 to 138 wild horses through an FMUD issued for the Reveille Allotment in 2001.

The gather area has been utilized by domestic livestock since the area was settled over 100 years ago. The BLM instituted structured and organized administration of domestic livestock use of the public lands in the Tonopah area in the 1960's. Some changes were made to the livestock management within the Reveille Allotment through the 2001 FMUD and *Stipulation to Revise the Livestock Decision and to Dismiss Appeal,* signed on March 3, 2006.

The Settlement Agreement of 2006 set forth several terms and conditions for livestock grazing management to make progress towards achieving the Standards for Rangeland Health. These terms and conditions pertained to management of the livestock for each Base Water Service Area (BWSA) which included monitoring of the seed ripe time desired utilization levels during the mid-year and/or end of year period to determine if the standards were met or exceeded. Other requirements consisted of annually filing actual use reports, and grazing plans for the allotment. Other provisions of the Settlement pertained to rangeland improvement projects. The permittee took voluntary non-use of 1,287 AUMS for three years, but no reduction of the original permit was made through the Settlement. The Permittee has adjusted management of livestock based on ground conditions and have incorporated rotational grazing.

Historic wild horse and domestic livestock use have contributed to degradation of range condition within the gather area. Historically, very high numbers of wild horses have inhabited the Reveille Allotment. Recreation, mineral exploration, and invasive weed treatment have had, and are expected to continue to have negligible impacts to grazing or wild horse management within the project area.

Since passage of the Wild Free-Roaming Horses and Burros Act of 1971, the Reveille HMA has experienced wide fluctuations in wild horse populations. Wild horse populations skyrocketed from 470 in 1974 to 1,230 in 1980. A total of fifteen gathers have taken place within the Reveille Allotment since 1980, with over 3,900 wild horses removed through gathers. After the 1987 Stipulated Settlement became effective, gathers took place annually until 1995 to remove excess wild horses in order to adhere to the settlement. Four gathers have taken place since 1995, with the most recent occurring in 2007 when 23 wild horses were removed outside of the HMA boundaries. Refer to Appendix B for more detailed information about the past gathers.

Population controls such as fertility control and sex ratio modification have not been implemented within this HMA in the past. Gathers occurring in 1992, 1995 and 1999 involved the release of wild horses older than 10 years of age and removal of younger animals. This would have resulted in a population that favored older horses and very young horses. Growth rates through the years have not indicated that the population was negatively affected by these actions.

Past activities, which may have affected wild horses within the Reveille HMA primarily, include livestock grazing through the impacts on vegetation condition and availability, as well as water quality and quantity. Although there are no mineral and geothermal activities in the gather area at the present time, such activities and other small projects may have had or in the future may have temporary and isolated impacts to the wild horses.

Present Actions

Currently, the Reveille HMA population is estimated to be 231 wild horses, with a post foaling population estimate of 278 wild horses in 2010. This population currently exceeds the established AML, and a substantial portion of the population resides outside of the HMA boundary. Permitted livestock use is the primary use that occurs within the Allotment in addition to the use by wild horses and wildlife.

Reasonably Foreseeable Future Actions

Future activities which could occur include adjustments to livestock grazing numbers or season of use, water developments and spring enclosures, and mineral exploration activities. The future may also

involve further adjustments (increases or decreases) to the AML of the Reveille HMA and development of Herd Management Area Plan (HMAP). Other activities, such as future gathers to maintain AML, implementation of fertility control and/or modification of sex ratios within the Reveille HMA could occur. Should the genetic analysis indicate concerns with genetic variability, specific treatment protocols would be developed to address these concerns such as potential augmentation of wild horses from other similar HMAs.

Wild horses will continue to move throughout the Reveille and Stone Cabin HMAs. Future planning involves management of the Reveille HMA as a Complex with the Stone Cabin HMA located south of State Highway 6. Inventory and gathers would be planned to occur together to improve management of these areas.

The BLM would continue to conduct monitoring to assess progress towards meeting Rangeland Health Standards, RMP objectives and Allotment Specific Objectives. Wild horses would continue to be a component of the public lands, managed within a multiple use concept.

While there is no anticipation for amendments to the Wild Free-Roaming Horses and Burros Act that would change the way wild horses could be managed on the public lands, the Act has been amended three times since 1971. Therefore, there is potential for amendment as a reasonably foreseeable future action.

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

Impacts

Cumulative beneficial effects from the Proposed Action and Alternative 1 are expected, and would include continued improvement of the rangeland vegetation and riparian areas, which in turn positively impact wildlife, wild horse populations, and livestock as forage and water availability and quality is maintained and improved.

The combination of the past, present, and reasonably foreseeable future actions, along with the Proposed Action or Alternative 1, should result in stable wild horse populations, healthier rangelands, healthier wild horses, and fewer multiple-use conflicts within the Reveille HMA.

The Proposed Action and Alternative 1 would contribute to isolated areas of disturbed vegetation through the gather activities. Due to the small size or short duration of the disturbance (<2 weeks), cumulative impacts associated with the Proposed Action, when compared to the overall CESA, are expected to be negligible especially when identified mitigation measures are implemented.

The Proposed Action and Alternative 1 are expected to result in indirect impacts that would contribute to improved rangeland health, proportional to the number of horses on the range via the alternatives. In the long term, the achievement of AML in conjunction with other foreseeable actions would lead to improved habitat for wild horses and wildlife. An overall lower population and density of wild horses across the landscape would promote recovery of native vegetation currently in a state that is less than the potential or desirable condition, as well as reduce or eliminate additional degradation to vegetation and riparian areas. Removal of excess wild horses from the Reveille Allotment would not impact the

movement of wild horses among the HMAs that has been found to occur, which promotes continued genetic viability. No impacts to neighboring HMAs are expected.

With implementation of the Proposed Action or Alternative 1, excessive use by wild horses would not occur as the AML is maintained. Key forage species would improve in health, abundance and robustness, and would be more likely to set seed and reproduce, which in turn would contribute to their increase within the plant community.

As future wild horse decisions are implemented and future gathers conducted to remove excess wild horses and maintain AML, these impacts are expected to continue and result in overall improvements to the forage availability for livestock, wild horses and wildlife. Wild horse habitat would be protected from further losses of important key forage species, which would increase in frequency, vigor and production. Improved habitat condition would lead to improved equine body condition, healthier foals, and ensure herd sustainability through drought years.

Cumulatively, application of fertility control through the Proposed Action could greatly increase the health of mares within the HMA over many years to come with reduced biological costs due to raising foals. Once normal fertility resumes, mares would reflect higher body condition which would result in larger, stronger foals more apt to reach their genetic potential and survive adverse conditions.

The proposed gather and other foreseeable actions would begin to offset past negative trends in habitat modification by allowing for attainment of Rangeland Health Standards and Allotment Specific Objectives. When combined with past, present, and reasonably foreseeable future actions, and incorporating mitigation measures, the potential for cumulative impacts to wildlife habitat from the Proposed Action would also be negligible.

The No Action Alternative would not result in any long-term cumulative benefits to any rangeland user. The No Action Alternative would allow continued degradation of vegetation by an excess population of wild horses which in the long term could cause continued loss of key perennial forage species replaced by less palatable and nutritious native and non-native plants. Past impacts would not be offset, and downward trends would occur.

Deterioration of uplands and riparian areas through an overpopulation of wild horses would not improve habitat for future generations of wild horses, burros and other wildlife. Chronic and long term degradation of rangeland resources could result in irreparable damage to the arid habitat and could result in the need to permanently remove all wild horses from the Reveille HMA, cumulatively resulting in reduced AML or discontinuing long term management of wild horses within this HMA for due to degraded habitat.

Range deterioration and degradation of riparian and upland habitat in conjunction with any reasonably foreseeable projects or other management actions would not improve forage availability for wild horses, livestock or wildlife. In the long term, the No Action Alternative could result in further reductions of livestock numbers, wild horses and wildlife within the gather area.

In light of other foreseeable actions, the No Action Alternative would result in long-term and potentially permanent severe degradation to the health of public lands throughout the HMA. Cumulative impacts of the No Action Alternative, coupled with the impacts from past, present, and

reasonably foreseeable actions, would hinder success in attaining RMP objectives and Standards for Rangeland Health, and would preclude any improvement to the health of vegetative communities and the ecological condition of the range as a whole.

5. Suggested Monitoring

The BLM would continue to conduct the necessary monitoring to periodically evaluate the effects of livestock grazing and use by wild horses and wildlife, and determine if progress is being made in the attainment of multiple use objectives and Standards for Rangeland Health. Monitoring would be in accordance with BLM policy as outlined in the *Nevada Rangeland Monitoring Handbook* and other BLM technical references.

The TFO would continue to plan for periodic inventory flights to monitor the growth and distribution of the wild horse populations within the Reveille HMA, movement between the Reveille HMA and Stone Cabin HMA, and the effects of fertility control on growth rates. Annual inventory flights are required for the Reveille HMA. Vegetation monitoring to consist of utilization, trend, frequency, cover, production, species composition, proper functioning condition and other rangeland studies would continue to be completed.

6. Consultation, Coordination and List of Preparers

Refer to Section 1.9 for a summary of the public scoping issuance of the Preliminary EA. During the 30 day comment period for the Preliminary EA, in excess of 3,000 comments were received via letters, emails or phone calls to the Tonopah Field Office. Comments were received from individuals, various organizations and agencies. The overwhelming majority of these comments were fashioned from a mass form letter. These form letters were reviewed and considered, however, only yielded 5 distinct comments. Several other comments were reviewed and considered, resulting in 77 responses to comments.

All comments received were reviewed and considered in finalizing this EA and accompanying Decision and Finding of No Significant Impact (FONSI). Substantial changes to the analysis were not warranted; however, the comments did lead to elaboration in the genetic variability discussion in the document to better explain and clarify the BLM's analysis. As a result, the reader should be better informed regarding the proposed gather plan and its expected impacts. The Response to Comments table is located in Appendix F of the EA.

Most comments reviewed fell among but were not limited to the following themes:
Appropriate management level (AML) is too low
Concerns/effects/results of fertility control
Outside the scope of this analysis
Viewpoint/matter of opinion
Removing/reducing livestock use from Herd Management Area
Post-gather population's genetic health
On-the-range management
Poor range conditions/range improvements
Concerns of adjusting sex ratios

Public hearings are held annually on a state-wide basis regarding the use of helicopters and motorized vehicles to capture and transport wild horses and 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 and burros. The Elko District Office held the state-wide meeting on July 1, 2010; thirteen public participants attended and their comments were entered into the record for this hearing. Most were in support of the use of helicopters and the gathering of excess wild horses. Standard Operating Procedures were reviewed in response to these concerns and no changes to the SOPs were indicated based on this review.

List of Preparers

Marc Pointel	Supervisory Natural Resource Specialist
Shawna Richardson	Wild Horse and Burro Specialist
Sheryl Post	Rangeland Management Specialist
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Cory Gardner	Planning and Environmental Coordinator

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Reveille HMA Interested Party Mailing List

Name	**Organization**
Robin Lohnes	American Horse Protection Association
Rob Mrowka	Center for Biological Diversty
David Murphy	Hot Creek Ranch
D. Bradford Hardenbrook	NDOW Southern Region
Tracy Kipke	NDOW Southern Region
Joni Eastley	Nye County Commissioner
Richard A. Orr	Sustainable Grazing Coalition
Barbara Durham	Timbisha Shoshone Tribe
Joe Kennedy	Timbisha Shoshone Tribe
Joe B. Fallini Jr	Twin Springs Ranch
Robert Williams	US Fish and Wildlife Service
Dawn Lappin	Wild Horses Organized Assistance (WHOA)
Makendra Silverman	The Cloud Foundation
Steve Siegal	NDOW
Virginia Sanchez	Duckwater Shoshone Tribe
Gary Hollis	Nye County Commissioner
Bud Johns	Indiviual
Terri Slatauski	NDOW
Maurice Frank Churchill	Duckwater Shoshone Tribe
James Wells	Indivdual
Annette George-Harris	Duckwater Shonshone Tribe
	Western Watersheds Project
	Nevada State Clearinghouse
	Nevada Cattelmens Association
	National Mustang Association
Erik Kleiman	In Defense of Animals
Lee Chesterfield	Individual
Sherry Oster	Individual
Cammille Sigmund	Individual
Irene Lopez	Individual
Suzanne Roy	American Wild Horse Protection Campaign
Ginger Kathrens	The Cloud Foundation
Alma Blackwelder	Individual

Appendix A: Wild Horse Gather Plan and Standard Operating Procedures

I. Gather Plan

The purpose of the gather plan is to outline the methods and procedures for conducting a gather to remove excess wild horses from public lands administered by the TFO. Implementation of the Proposed Action would require the capture of 250 and removal of approximately 198 wild horses to achieve a post-gather population of 80 wild horses.

A. Gather Area

The Proposed Gather Area includes the Reveille HMA and areas outside of HMA boundaries in the Reveille Allotment. The area is approximately 650,520 acres in size, which includes 105,494 acres within and approximately 545,026 acres outside of HMA boundaries. Refer to Map 1 and 2, which display the HMA, grazing allotment and the gather area.

B. Administration of the Contract /Gather Operations

The National Wild Horse and Burro Gather Contract would be used to conduct the wild horse gather tentatively scheduled for the summer and fall 2010. BLM personnel would be responsible for overseeing the contract for the capture, care, aging, and temporary holding of wild horses from the capture area. BLM Wild Horse and Burro Specialists would be present during all aspects of the gather activities.

Standard Operating Procedures (SOPs) described within this document would be utilized for the capture and handling of wild horses and burros. SOPs have been developed over time to ensure minimal impacts associated with gathering, handling, and transporting wild horses and burros and collecting herd data.

It is estimated that between 2 to 4 gather corrals and 1 set of central holding corrals would be necessary to complete the gather. Ideally, gather corrals would be established in areas of previous soil or vegetation disturbance (such as gravel pits, roads etc.), to avoid impacts to unaltered vegetation and soils. A cultural resources investigation would be conducted prior to the construction of gather corrals and temporary holding facilities. Refer to the SOPs, Section H for more detailed information.

A notice of intent to impound would be made public prior to the gather. Branded and/or claimed horses would be transported to a temporary holding facility. Ownership would be determined under the estray laws of the State of Nevada by a Nevada Brand Inspector. Collection of gather fees and any appropriate trespass charges would be collected per BLM policy and regulation.

A veterinarian would be on-call or on-site for the duration of the gather to provide recommendations to Wild Horse and Burro Specialists for care and treatment of sick or injured wild horses. Consultation with the veterinarian may take place prior to the euthanasia of wild horses in accordance with Washington Office Instruction Memorandum (IM 2009-041). Refer to Part II for more information about the euthanasia policy.

Precautions would be taken to ensure that young or weak horse foals are safely gathered and cared for appropriately. If a foal were determined to be an orphan, qualified adopters would be contacted immediately to provide proper care for the foal. Milk replacer formula and electrolytes would be available to care for orphan foals if necessary.

C. General Overview of Wild Horse and Horse Gather Methods

The gather contractor supplies and transports all equipment needed to conduct a gather to a central location where Holding Corrals are constructed. These corrals consist of six or more pens constructed of sturdy panels, with a

central alleyway and working/squeeze chute in the center. Corral panels are covered with snow fencing to keep animals calm, and water tanks located within the pens. The central alley and pen arrangement allows the BLM staff and the contractor to sort recently captured animals, separating animals to ship to the adoption facilities, and mares and foals from studs to prevent fighting and injury. The pen arrangement allows the contractor to off-load wild horses from stock trailers into the pens, and facilitates the loading of the horses to be transported to facilities onto large straight deck trucks. Refer to photos 5, 8, and 14-17 at the end of this Appendix.

At various locations throughout the HMA, smaller sets of gather corrals are constructed called "traps". The trap or gather corrals consists of a series of pens made out of panels, and "wings" made out of jute netting that funnel wild horses into the corrals as they are captured. Refer to photos 2-3 and 10-13 at the end of this Appendix. Once captured, the horses are loaded into stock trailers and transported to the central Holding Corrals for sorting. Horses may remain in the gather site or on the stock trailer for no time at all, or up to an hour or more while other groups of horses are brought to the gather corrals.

The contractor utilizes a helicopter and pilot to conduct gathers. Use of a helicopter is humane, safe and effective. Methods for use of helicopter are well established, and the contract pilots very skilled. Wild horses settle down once gathered and do not appear to be more than slightly annoyed by the helicopter.

The pilot locates groups of wild horses within the HMA and guides them towards the gather corrals. In most cases, horses are allowed to travel at their own pace, and are not "pushed". Distances average 4-7 miles over mixed terrain which may consist of rolling foothills, or steeper terrain, drainages, ridges and valley bottoms. The horses often follow their own trails. The pilot and the BLM staff monitor the condition of the horses to ensure their safety, checking for signs of exhaustion, injuries etc. The contractor and pilots are very skilled at designing and building gather corrals, and safely herding the horses to them. Generally, wild horses are very fit, and recover quickly from being captured. Distances that the horses travel are modified to account for summer temperatures, snow depth, animals in weakened condition, young foals, or older/lame animals. Under ideal conditions, some horses could be herded 10 miles or more at the discretion of the COR/Wild Horse and Burro Specialist.

Once near the gather site, the contractor holds a "Prada" horse at the mouth of the wings. As the pilot pushes the wild horses closer, the Prada horse is released, who then runs into the gather corrals, leading all of the wild horses with him. Refer to photos 4 and 7. Crewmembers rush in to secure gates once the horses are within the corrals. Refer to photos 2-3 and 10-13. During summer gathers, the crew often separates foals from adults at the gather site so that they may be transported to the Holding Corrals separately and avoids being injured by adult horses. Foals may be loaded into a separate stock trailer where they can have shade, water, and electrolyte if necessary. Once unloaded at the Holding Corrals, foals may be rejoined with the mothers if not old enough to wean, and monitored to ensure that all of the foals "join-up". Often paint marks are applied to the foals and mothers to assist the contractor and BLM staff in identifying pairs.

Occasionally (and more frequently for difficult to gather areas) helicopter-assisted roping is implemented, in which the pilot moves a small group of horses to the gather area, and the crewmembers rope the animals by horseback. This method often prevents overstressing the horses from repeated attempts to move them into the gather corrals. The roped horses are then led to the corrals, to awaiting stock trailers, or immobilized on the ground until they can be loaded into stock trailers.

Once horses are loaded and transported to the Holding Corrals, they are sorted by the contractor's staff and BLM employees. The contractor looks at the horse's teeth to estimate age while held in the chute, and the BLM staff documents age, color, body condition and lactation status of the horse. Refer to photo 6. Aging wild horses is a process of estimation due to the type of wear that can occur to the teeth of a wild horse on the range.

Injuries are noted and treated if needed. Once sorted, the horses are given hay and unlimited water. During this time, the BLM may consult with a veterinarian to treat sick or injured animals, or make recommendations for euthanasia.

When the pens hold enough horses to transport to the BLM adoption facility, they are loaded into the straight deck trailers that hold 35-45 wild horses depending upon their size. The trailers have three compartments so that mares, studs and foals can be transported separately. It may require 3-6+ hours for the wild horses to arrive at the adoption preparation facility. The TFO typically ships horses to National Wild Horse and Burro Center at Palomino Valley near Sparks, Nevada; or may ship horses to the facility at Ridgecrest, California Arizona if needed.

During sorting, the BLM staff identifies the wild horse to be re-released back to the HMA according to the objectives for the herd. Mares may be held until the end of the gather so that fertility control can be given to them to slow future population growth rates. When it is time for the release, the mares and studs are each loaded into separate stock trailers and transported back inside the HMA near water sources. The rear of the trailer is opened up, and the horses are allowed to step off and travel back into the HMA. Sometimes the horses are released directly from the holding corrals if they are centrally located within the HMA. Refer to photos 1 and 18.

Before the wild horses are transported to adoption facilities or released, hair is sampled for genetic testing. Data collected during the gather in conjunction with genetic analysis report will be incorporated into a Herd Management Area Plan (HMAP) in the future.

F. Data Collection

Wild Horse and Burro Specialists (WHB Specialists) would be responsible for collecting population data. The extent to which data is collected may vary among the field offices to meet specific needs pertaining to each HMA.

1) Hair Samples/Genetics Analysis

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

WHB Specialists would collect a minimum sample size of 25 hair samples from captured horses. Hair would be collected from both mares and studs in a ratio similar to the sex ratio released. Age would not be a defining factor in determining which animals to sample. Samples would be sent to Dr. Gus Cothran of the Texas A&M University for analysis.

2) Herd Health and Viability Data Collection

WHB Specialists would document information related to age, sex, color, overall health, pregnancy, or nursing status from each animal captured. An estimate of the number of horses evading capture would also be recorded.

Information on reproduction and survival would be collected to the extent possible, through documentation of the wild horses captured during the gather, and the age of those released following the gather.

3) Characteristics

WHB Specialists would record color and size of the animals, and any characteristics as to type would be noted, if determined. Any incidence of negative genetic traits (parrot mouth, club foot etc.) or other abnormalities would be noted as well.

4) Condition Class

A body condition class score would be recorded based on the Henneke System. This would be recorded for the population in general and/or for specific animals if necessary.

H. Euthanasia

The Authorized Office (or designee) will make decisions regarding euthanasia, in accordance with BLM policy as expressed in Washington Office Instructional Memorandum No. 2009-041. A veterinarian may be called to make a diagnosis and final determination. Euthanasia shall be done by the most humane method available. Authority for humane euthanasia of wild horses or burros is provided by the Wild Free-Roaming Horses and Burros Act of 1971, Section 3(b)(2)(A), 43 CFR 4730.1, BLM Manual 4730 - Euthanasia of Wild horses and Burros and Disposal of Remains. The following are excerpted from IM 2009-41:

> *A Bureau of Land Management (BLM) authorized officer may authorize the euthanasia of a wild horse or Burro in field situations (includes free-roaming horses and burros encountered during gather operations) as well as short- and long-term wild horse and Burro holding facilities with any of the following conditions:*
>
> *(1) Displays a hopeless prognosis for life;*
> *(2) suffers from a chronic or incurable disease, injury or serious physical defect; (includes severe tooth loss or wear, severe club feet, and other severe acquired or congenital abnormalities)*
> *(3) would require continuous treatment for the relief of pain and suffering in a domestic setting;*
> *(4) is incapable of maintaining a Henneke body condition score greater than two, in its present environment;*
> *(5) has an acute or chronic injury, physical defect or lameness that would not allow the animal to live and interact with other horses or burros , keep up with its peers or exhibit behaviors which may be considered essential for an acceptable quality of life constantly or for the foreseeable future;*
> *(6) suffers an acute or chronic infectious disease where State or Federal animal health officials order the humane destruction of the animal as a disease control measure.*
>
> *There are three circumstances where the authority for euthanasia would be applied in a field situation:*
>
> *(A) If an animal suffers from a condition as described in 1-6 above that causes acute pain or suffering and immediate euthanasia would be an act of mercy, the authorized officer has the authority and the obligation to promptly euthanize the animal. If the animal is euthanized during a gather operation, the authorized officer will describe the animal's condition and report the action using the gather report in the comment section that summarizes gather operations (See attachment 1). If the euthanasia is performed during routine monitoring, the Field Manager will be notified of the incident as soon as practical after returning from the field.*
>
> *(B) Older wild horses and burros encountered during gather operations should be released if, in the opinion of the authorized officer, the criteria described in 1-6 above for euthanasia do not apply, but the animals would not tolerate the stress of transportation, adoption preparation, or holding and may survive if returned to the range. This may include older animals with significant tooth wear or tooth loss that have a Henneke body condition score greater than two. However, if the authorized officer has inspected the animal's teeth and feels the animal's quality of life will suffer and include health problems due to dental abnormalities, significant tooth wear or tooth loss; the animal should be euthanized as an act of mercy.*
>
> *(C) If an animal suffers from any of the conditions listed in 1-6 above, but is not in acute pain, the authorized officer has the authority to euthanize the animal in a humane manner. The authorized officer will prepare a written statement documenting the action taken, and notify the Field Manager and State Office Wild Horse and Burro (WH&B) Program Lead. If available, consultation and*

advice from a veterinarian is recommended, especially where significant numbers of wild horses or burros are involved.

I. Special Stipulations

1) Private landowners or the proper administering agency(s) would be contacted and authorization obtained prior to setting up gather corrals on any lands which are not administered by BLM. Wherever possible, gather corrals would be constructed in such a manner as to not block vehicular access on existing roads.

2) Gather corrals would be constructed so that no riparian vegetation is contained within them. No vehicles would be operated on riparian vegetation or on saturated soils associated with riparian/wetland areas.

3) The helicopter would avoid eagles and other raptors, and would not be flown repeatedly over any identified active raptor nests. No unnecessary flying would occur over big game on their winter ranges or active fawning/calving grounds during the period of use.

4) Standard operating procedures in the site establishment and construction of gather corrals will avoid adverse impacts from gather corrals, construction, or operation to wildlife species, including threatened, endangered, or sensitive species.

5) Archeological clearance by a BLM archaeologist or District Archeology Technician of gather corrals, holding corrals, and areas of potential effects would occur prior to construction of gather corrals and holding corrals. If cultural resources were encountered, those locations would not be utilized unless they could be modified to avoid impacts. Due to the inherent nature of wild horse gathers, gather corrals and holding corrals would be identified just prior to use in the field. As a result, Cultural Resource staff would coordinate with Wild Horse and Burro personnel to inventory proposed locations as they are identified, and complete required documentation.

6) Wilderness Study Areas: When gathering wild horses from within Wilderness Study Areas (WSAs), applicable policy will be strictly adhered to. Only approved roads will be traveled on. A Wilderness Specialist or designee would be present to ensure that only inventoried ways or cherry stemmed roads are traveled on by vehicles within the WSA.

7) Wildlife stipulations
The following stipulations would be applied as appropriate.

a. Sage Grouse
   i. Avoid active leks (strutting grounds) by 2 miles. March 1- May 15
   ii. Avoid nesting and brood rearing areas (especially riparian areas where broods concentrate beginning usually in June) by 2 miles. April 1 – August 15
   iii. Avoid sage grouse wintering areas by 2 miles while occupied. Most known wintering grounds in the Shoshone-Eureka Resource Area occur at high elevations and are not likely to be affected. Dates vary with severity of winter
   iv. Minimize and mitigate disturbance to the vegetation in all known sage grouse habitat.

b. Ferruginous Hawk: Avoid active nests by 2 miles. March 15- July 1.

II. Standard Operating Procedures for Wild Horse and Horse Gathers

Gathers would be conducted by utilizing contractors from the Wild Horse Gathers-Western States Contract, or BLM personnel. The following procedures for gathering and handling wild horses would apply whether a contractor or BLM personnel conduct a gather. For helicopter gathers conducted by BLM personnel, gather operations will be conducted in conformance with the *Wild Horse Aviation Management Handbook* (January 2009).

Prior to any gathering operation, the BLM will provide for a pre-capture evaluation of existing conditions in the gather area(s). The evaluation will include animal conditions, prevailing temperatures, drought conditions, soil conditions, road conditions, and a topographic map with wilderness boundaries, the location of fences, other physical barriers, and acceptable trap locations in relation to animal distribution. The evaluation will determine whether the proposed activities will necessitate the presence of a veterinarian during operations. If it is determined that a large number of animals may need to be euthanized or capture operations could be facilitated by a veterinarian, these services would be arranged before the capture would proceed. The contractor will be apprised of all conditions and will be given instructions regarding the capture and handling of animals to ensure their health and welfare is protected.

Gather corrals and temporary holding sites will be located to reduce the likelihood of injury and stress to the animals, and to minimize potential damage to the natural resources of the area. These sites would be located on or near existing roads.

The primary capture methods used in the performance of gather operations include:

1. Helicopter Assisted Trapping. This capture method involves utilizing a helicopter to direct wild horses into a temporary corral.
2. Helicopter Assisted Roping. This capture method involves utilizing a helicopter to herd wild horses or burros to ropers.
3. Bait Trapping. This capture method involves utilizing bait (e.g., water or feed) to lure wild horses into a temporary corral.

The following procedures and stipulations will be followed to ensure the welfare, safety, and humane treatment of wild horses in accordance with the provisions of 43 CFR 4700.

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

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

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

2. The rate of movement and distance the animals travel shall not exceed limitations set by the COR/PI who will consider terrain, physical barriers, weather, condition of the animals and other factors. Under normal circumstances, this travel should not exceed 10 miles and may be much less dependent on existing conditions (i.e. ground conditions, animal health, extreme temperature (high and low)).

3. All gather corrals, wings, and holding facilities shall be constructed, maintained and operated to handle the animals in a safe and humane manner and be in accordance with the following:

a. Gather corrals and holding facilities shall be constructed of portable panels, the top of which shall not be less than 72 inches high for horses and 60 inches for horses, and the bottom rail of which shall not be more than 12 inches from ground level. All gather corrals and holding facilities shall be oval or round in design.

b. All loading chute sides shall be a minimum of 6 feet high and shall be fully covered, plywood, metal without holes larger than 2”x4”.

c. All runways shall be a minimum of 30 feet long and a minimum of 6 feet high for horses, and 5 feet high for horses, and shall be covered with plywood, burlap, plastic snow fence or like material a minimum of 1 foot to 5 feet above ground level for horses and 1 foot to 6 feet for burros. The location of the government furnished portable fly chute to restrain, age, or provide additional care for the animals shall be placed in the runway in a manner as instructed by or in concurrence with the COR/PI.

d. All crowding pens including the gates leading to the runways shall be covered with a material which prevents the animals from seeing out (plywood, burlap, plastic snow fence, etc.) and shall be covered a minimum of 1 foot to 5 feet above ground level for horses and 2 feet to 6 feet for burros.

e. All pens and runways used for the movement and handling of animals shall be connected with hinged self-locking or sliding gates.

4. No modification of existing fences will be made without authorization from the COR/PI. The Contractor shall be responsible for restoration of any fence modification which he has made.

5. When dust conditions occur within or adjacent to the trap or holding facility, the Contractor shall be required to wet down the ground with water.

6. Alternate pens, within the holding facility shall be furnished by the Contractor to separate mares or mares with small foals, sick and injured animals, estrays, or other animals the COR determines need to be housed in a separate pen from the other animals. Animals shall be sorted as to age, number, size, temperament, sex, and condition when in the holding facility so as to minimize, to the extent possible, injury due to fighting and trampling. Under normal conditions, the government will require that animals be restrained for the purpose of determining an animal’s age, sex, or other necessary procedures. In these instances, a portable restraining chute may be necessary and will be provided by the government. Alternate pens shall be furnished by the Contractor to hold animals if the specific gathering requires that animals be released back into the capture area(s). In areas requiring one or more satellite gather corrals, and where a centralized holding facility is utilized, the contractor may be required to provide additional holding pens to segregate animals transported from remote locations so they may be returned to their traditional ranges. Either segregation or temporary marking and later segregation will be at the discretion of the COR.

7. The Contractor shall provide animals held in the gather corrals and/or holding facilities with a continuous supply of fresh clean water at a minimum rate of 10 gallons per animal per day. Animals held for 10 hours or more in the gather corrals or holding facilities shall be provided good quality hay at the rate of not less than two pounds of hay per 100 pounds of estimated body weight per day. An animal that is held at a temporary holding facility through the night is defined as a horse/horse feed day. An animal that is held for only a portion of a day and is shipped or released does not constitute a feed day.

8. It is the responsibility of the Contractor to provide security to prevent loss, injury, or death of captured animals until delivery to final destination.

9. The Contractor shall restrain sick or injured animals if treatment is necessary. The COR/PI will determine if animals must be euthanized and provide for the destruction of such animals. The Contractor may be required to humanely euthanize animals in the field and to dispose of the carcasses as directed by the COR/PI.

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

B. Capture Methods That May Be Used in the Performance of a Gather

1. Capture attempts may be accomplished by utilizing bait (feed, water, mineral licks) to lure animals into a temporary gather corral. If the contractor selects this method the following applies:

    a. Finger gates shall not be constructed of materials such as "T" posts, sharpened willows, etc., that may be injurious to animals.

    b. All trigger and/or trip gate devices must be approved by the COR/PI prior to capture of animals.

    c. Gather corrals shall be checked a minimum of once every 10 hours.

2. Capture attempts may be accomplished by utilizing a helicopter to drive animals into a temporary trap. If the contractor selects this method the following applies:

    a. A minimum of two saddle-horses shall be immediately available at the trap site to accomplish roping if necessary. Roping shall be done as determined by the COR/PI. Under no circumstances shall animals be tied down for more than one half hour.

    b. The contractor shall assure that foals shall not be left behind, and orphaned.

3. Capture attempts may be accomplished by utilizing a helicopter to drive animals to ropers. If the contractor with the approval of the COR/PI selects this method the following applies:

    a. Under no circumstances shall animals be tied down for more than one half hour.

    b. The contractor shall assure that foals shall not be left behind, or orphaned.

    c. The rate of movement and distance the animals travel shall not exceed limitations set by the COR/PI who will consider terrain, physical barriers, weather, condition of the animals and other factors.

C. Use of Motorized Equipment

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

2. All motorized equipment, tractor-trailers, and stock trailers shall be in good repair, of adequate rated capacity, and operated so as to ensure that captured animals are transported without undue risk or injury.

3. Only tractor-trailers or stock trailers with a covered top shall be allowed for transporting animals from trap site(s) to temporary holding facilities, and from temporary holding facilities to final destination(s). Sides or stock racks of all trailers used for transporting animals shall be a minimum height of 6 feet 6 inches from the floor. Single deck tractor-trailers 40 feet or longer shall have two (2) partition gates providing three (3) compartments within the trailer to separate animals. Tractor-trailers less than 40 feet shall have at least one partition gate providing two (2) compartments within the trailer to separate the animals. Compartments in all tractor-trailers shall be of equal size plus or minus 10 percent. Each partition shall be a minimum of 6 feet high and shall have a minimum 5 foot wide swinging gate. The use of double deck tractor-trailers is unacceptable and shall not be allowed.

4. All tractor-trailers used to transport animals to final destination(s) shall be equipped with at least one (1) door at the rear end of the trailer, which is capable of sliding either horizontally or vertically. The rear door(s) of tractor-trailers and stock trailers must be capable of opening the full width of the trailer. Panels facing the inside of all trailers must be free of sharp edges or holes that could cause injury to the animals. The material facing the inside of all trailers must be strong enough so that the animals cannot push their hooves through the side. Final approval of tractor-trailers and stock trailers used to transport animals shall be held by the COR/PI.

5. Floors of tractor-trailers, stock trailers and loading chutes shall be covered and maintained with wood shavings to prevent the animals from slipping.

6. Animals to be loaded and transported in any trailer shall be as directed by the COR/PI and may include limitations on numbers according to age, size, sex, temperament and animal condition. The following minimum square feet per animal shall be allowed in all trailers:

   11 square feet per adult horse (1.4 linear foot in an 8 foot wide trailer);
   8 square feet per adult horse (1.0 linear foot in an 8 foot wide trailer);
   6 square feet per horse foal (.75 linear foot in an 8 foot wide trailer);
   4 square feet per horse foal (.50 linear feet in an 8 foot wide trailer).

7. The COR/PI shall consider the condition and size of the animals, weather conditions, distance to be transported, or other factors when planning for the movement of captured animals. The COR/PI shall provide for any brand and/or inspection services required for the captured animals.

8. If the COR/PI determines that dust conditions are such that the animals could be endangered during transportation, the Contractor will be instructed to adjust speed.

D. Safety and Communications

1. The Contractor shall have the means to communicate with the COR/PI and all contractor personnel engaged in the capture of wild horses utilizing a VHF/FM Transceiver or VHF/FM portable Two-Way

radio. If communications are ineffective the government will take steps necessary to protect the welfare of the animals.

a. The proper operation, service and maintenance of all contractor furnished property is the responsibility of the Contractor. The BLM reserves the right to remove from service any contractor personnel or contractor furnished equipment which, in the opinion of the contracting officer or COR/PI violate contract rules, are unsafe or otherwise unsatisfactory. In this event, the Contractor will be notified in writing to furnish replacement personnel or equipment within 48 hours of notification. All such replacements must be approved in advance of operation by the Contracting Officer or his/her representative.

b. The Contractor shall obtain the necessary FCC licenses for the radio system

c. All accidents occurring during the performance of any task order shall be immediately reported to the COR/PI.

2. Should the contractor choose to utilize a helicopter the following will apply:

a. The Contractor must operate in compliance with Federal Aviation Regulations, Part 91. Pilots provided by the Contractor shall comply with the Contractor's Federal Aviation Certificates, applicable regulations of the State in which the gather is located.

b. Fueling operations shall not take place within 1,000 feet of animals.

E. Site Clearances

Personnel working at gather sites will be advised of the illegality of collecting artifacts. Prior to setting up a trap or temporary holding facility, BLM will conduct all necessary clearances (archaeological, T&E, etc). All proposed site(s) must be inspected by a government archaeologist (or designee). Once archaeological clearance has been obtained, the trap or temporary holding facility may be set up. Said clearance shall be arranged for by the COR, PI, or other BLM employees.

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

G. Public Participation

Opportunities for public viewing (i.e. media, interested public) of gather operations would be made available to the extent possible; however, the primary considerations will be to protect the health, safety, and welfare of the animals being gathered and the personnel involved. The public must adhere to guidance from the on-site BLM representatives. 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.

H. 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. Shawna Richardson, Wild Horse and Burro Specialist would serve as the primary COR. Alternate COR and PI(s) would be selected prior to the start of the gather. Marc Pointel, Supervisory Natural Resources and Thomas Seley, Field Manager, TFO will take an active role to ensure the appropriate lines of communication are established between the field, Field Office, State Office,

National Program Office, and BLM Holding Facility offices. All employees involved in the gather operations will keep the best interests of the animals at the forefront at all times.

All publicity, formal public contact and inquiries will be handled through the Nevada State Office and Battle Mountain District Office Public Affairs Officer. These individuals will be the primary contact and will coordinate with the COR on any inquiries.

The COR will coordinate with the contractor and the BLM Corrals to ensure animals are being transported from the capture site in a safe and humane manner and are arriving in good condition.

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

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

Photos

The following pages of photos are provided to show examples of the various aspects of wild horse gathers completed by the BLM, MLFO and TFO.

1. Young foal safely released with its mother back to the Fish Creek HMA, February 2006.

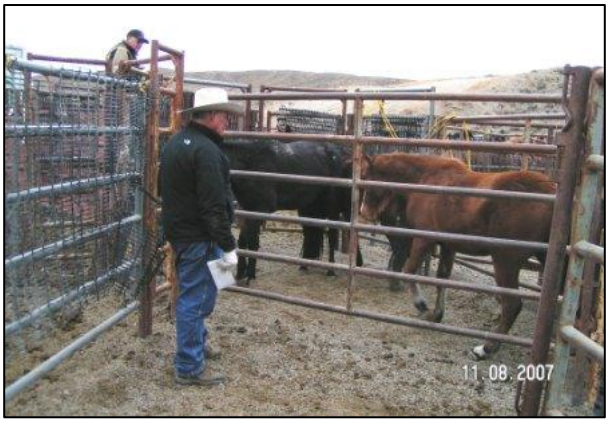
2 and 3. Augusta Mountains Gather, November 2007. View of trap corrals and wings.

4. Augusta Mountains Gather, November 2007. Prada horse leads the wild horses into the mouth of the trap. Crew stands by to secure gates.

5. New Pass/Ravenswood Gather, November 2007. Mares settle in at the Holding Corrals and enjoy some hay.

6. New Pass/Ravenswood Gather, November 2007. The contractor and crew estimate the age of a horse in the working chute.

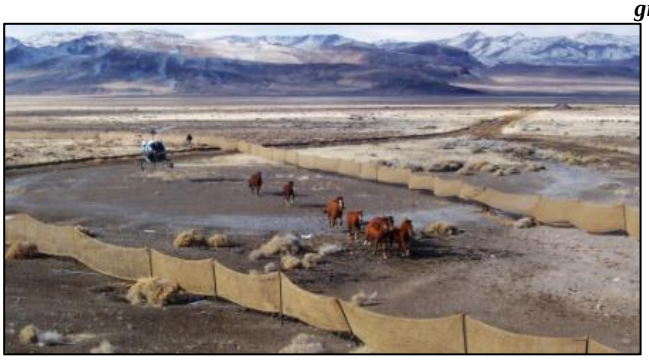
7. New Pass/Ravenswood Gather, November 2007. The contractor gets ready to release the Prada horse (far left) as the helicopter guides the horses closer to the gather corrals.



8. New Pass/Ravenswood Gather, November 2007. The Brand Inspector checks the horses for possible brands before transport to the BLM WHB facilities.

9. New Pass/Ravenswood Gather, November 2007. Release of the horses back to the range at a water location within the HMA.

10 and 11. South Shoshone HMA Gather, January 2008. The helicopter (far left) guides the horses closer to the gather corrals built at a gravel pit.



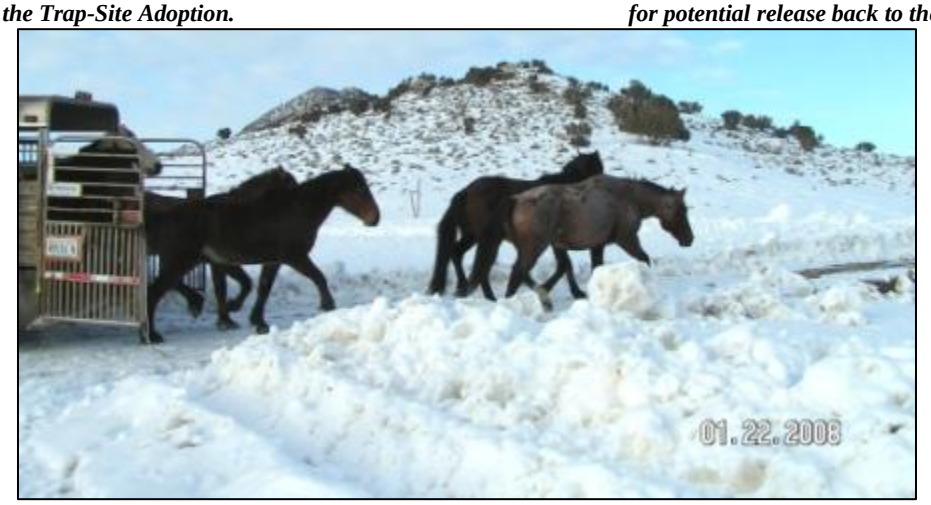
12 and 13. South Shoshone HMA Gather, January 2008. The wild horses are funneled around the gravel pit and into the gather corrals.

14. South Shoshone HMA Gather, January 2008. Holding Corrals.

15. South Shoshone HMA Gather, January 2008. Release mares in the Holding Corrals on a foggy morning.

16. Roberts Mountain HMA Gather, January 2008. Studs offered at the Trap-Site Adoption.

17. Roberts Mountain HMA Gather, January 2008. Animals marked for potential release back to the range.



18. Wild horses released back to the Roberts Mountain HMA in January 2008.

Appendix B: Reveille HMA Background Information

Introduction

The Reveille HMA is located 50 miles east of Tonopah and 12 miles south of Warm Springs, Nevada, in Nye County. The area consists of 105,494 acres and encompasses an area 17 miles wide and 10 miles long. The area receives 5 inches of annual precipitation in the valley bottoms. The mountain tops can receive as much as 16 inches. Average precipitation received at the Reveille rain gauge is 4.90 inches annually.

Reveille HMA – helicopter inventory August 2009

Appropriate Management Level (AML)

As discussed in Section 1.2, the Reveille HMA AML was originally established through a Court Order and Stipulated Settlement in 1987. The AML was further adjusted in 2001 to 138 wild horses through an FMUD issued for the Reveille Allotment in 2001.

The Tonopah Management Framework Plan, signed on July 16, 1981, designated the Reveille Wild HMA and established an interim herd size. The original Reveille Herd Area boundaries designated by the Battle Mountain District encompassed 371,163 acres. In 1985 the permittee initiated a court action to redefine the boundary of the HMA and establish an AML. On October 31, 1986, Judge Bruce Thompson's ruling declared that a new boundary be established. Judge Thompson further required that an Appropriate Management Level be established by the Nevada State Director. The AML of 145-165 was set by the Nevada State Director on December 1, 1986.

The District Court Findings of Fact, Conclusions of Law and Judgment in the case of Fallini v. Hodel, 1986, describes "overwhelming" evidence that the territorial limits of the herd when the WFRHBA passed were much smaller, and described the legal description of this historical use area within the Reveille Allotment. This boundary (later known as the "blue line") was further explained within the 1987 Settlement Documents where it was stated:

> Such area is the historical wild horse use area described within Findings of Fact No. 36, 37, and 38 and Trial Exhibit No. 71. This area will be managed for a population of between 145 and 165 horses. The defendants are under no duty to physically restrain horses within this area. An accurate annual census of the whole of the Reveille Allotment shall be taken by the defendants. Written notice of the results of each annual census shall be sent by the defendants to the plaintiff within thirty (30) days of completing the census. Should a population of over 165 horses be determined to exist within the whole of the Reveille Allotment, the defendants shall remove the excess horses within 120 days. Any such removal of excess horses shall first occur within the Reveille Allotment outside of the wild horse herd use area. Range monitoring programs will be continued by the defendants. Should the public range land conditions of the Reveille wild horse herd use area substantially improve, the defendants may amend this provision governing the population of wild horses. A substantial improvement in condition means that more forage is available on a sustained yield basis within the Reveille wild horse herd use area for domestic livestock, wild horses, and wildlife. Should range land conditions within the Reveille wild horse herd use area substantially deteriorate, by reason of drought, fire, disease, or other circumstances, the defendants retain their discretion under applicable statute or regulation to make adjustments in the multiple uses of the Reveille wild horse herd use area

Thus, the Reveille Herd Area originally defined by the BMDO was reduced to the HMA boundaries acknowledged today and identified on Map 1-2. The present day HMA boundary is not fenced on the north, east and south, and wild horses are not prevented from moving outside of the boundary in response to climate, population density or other factors. The provisions of the 1987 Stipulated Settlement were brought forward into the adjusted AML through IBLA Orders identified in Section 1.3 and an Amended Wild Horse Decision issued for the Reveille HMA in October 2001.

Historical and Background Information

The Reveille HMA shares its west boundary with the Stone Cabin HMA south of State Highway 6. The boundary is partially fenced, and movement between the two HMAs is likely, which may result in fluctuations in the populations of both HMAs. Field Observations document high wild horse traffic and trailing in the Bellehelen and Cow Canyon areas between the two HMAs.

In 2009 a right of way fence was constructed along Highway 6 through the middle of the Stone Cabin HMA, which may have caused changes in the distribution and movement of wild horses within the southern portion of the Stone Cabin HMA and consequently into the Reveille HMA. For these reasons these two HMAs will be managed as a Complex for purposes of population inventory and gathers. Movement between the Nevada Wild Horse Range within the Nevada Test Site boundaries and Reveille HMA has been documented through gathers where freezemarked wild horses treated with fertility control and released during Nevada Wild Horse Range gathers were later gathered during Reveille HMA gathers. The same has occurred during gathers of the Stone Cabin HMA.

A significant portion of the Reveille wild horse herd has established residency outside of the HMA. This has been documented during inventory flights conducted of the HMA in past years.

Extremely high populations within the Reveille HMA and Allotment during the 1980's resulted in the above referenced court settlement that required the BLM to manage for a wild horse population range of 145-165 horses. Reveille HMA has been gathered frequently since the 1987 court decision. The most recent gather was in 2007. The following table displays the gather history for the Reveille HMA.

Table 1. Reveille Allotment and HMA Wild Horse Gather History

Year	Wild Horses Captured	Removed	Released
1980	455	455	0
1984	388	388	0
1985	1,200	1,200	0
1987	1,214	1,214	0
1988	238	238	0
1989	236	236	0
1990	197	197	0
1991	47	47	0
1992	103	54	49
1993	26	26	0
1994	26	26	0
1995	86	49	37
1999	59	30	29
2001	107	107	0
2007	23	23	0

After the 1987 Stipulated Settlement, a series of annual gathers took place to keep the population within the specified range. During the same period of time, thousands of wild horses were also removed from within the Stone Cabin HMA. The early populations in excess of 1,000 animals likely caused degradation to the range that is still recovering to this day.

In the mid 1990's age selection criteria required the return of animals over age 10 back to the range. This likely affected the age structure to favor mostly older and mostly younger horses. Any affects to the age structure would no longer be present due to the length of time since that policy was implemented. The current population should reflect a normal age structure.

During the gather completed in 2001, 107 wild horses were captured and removed from the Reveille Allotment. Only 19 animals were within the HMA boundaries, the remainder were captured from outside of the HMA boundaries. No animals were released, and an estimated 83 wild horses remained within the HMA.

During the gather, it was noted that movement between Stone Cabin and Reveille Allotments was occurring, with wild horses moving out of the Reveille HMA west into Stone Cabin Valley during the gather. The 2001 gather was the most recent complete gather of the Reveille HMA

In January 2007, 23 wild horses were removed from north of State Highway 6 outside of the Reveille HMA boundary in conjunction with the Stone Cabin Complex gather.

Wild Horse Inventory

The most recent aerial inventory flight of the Reveille HMA was conducted February 14, 2010 which resulted in a direct count of 231 wild horses. The average annual rate of increase for the Reveille HMA based on aerial inventory since 2006 is 19-25%. Using 20%, the anticipated post-foaling wild horse population in 2010 will be 278 wild horses.

Inventory Results -- February 14, 2010											
HMA	Allotment	Inside HMA			Outside HMA			Totals			% yearlings observed
		Adult	Yrl	Total	Adult	Yrl	Total	Adult	Yrl	Total	
Reveille	Reveille North of Hwy 6	0	0	0	10	2	12	10	2	12	20
	Reveille South of Hwy 6	87	25	112	88	19	107	175	44	219	
	Total	87	25	112	98	21	119	185	46	231	

Reveille HMA Census Results – August 2009											
HMA	Allotment/Area	Inside HMA			Outside HMA			Total			
		Adult	Foal	Total	Adult	Foal	Total	Adult	Foal	Total	Foals%
Reveille	Reveille North of Hwy 6	0	0	0	19	5	24	19	5	24	**21**
	Reveille South of Hwy 6	22	3	25	131	33	164	153	36	189	**19**
	Total	22	3	25	150	38	188	172	41	213	**19**

Reveille HMA Census Results – January 2007 (Pre-Gather)											
HMA	Allotment/Area	Inside HMA			Outside HMA			Total			
		Adult	Yrl	Total	Adult	Yrl	Total	Adult	Yrl	Total	Yearling %
Reveille	Reveille North of Hwy 6	0	0	0	13	6	19	13	6	19	**32**
	Reveille South of Hwy 6	9	2	11	42	7	49	51	9	60	**15**
	Total	9	2	11	55	13	68	64	15	79	**19**

Reveille HMA Census Results – January 2006											
HMA	Allotment/Area	Inside HMA			Outside HMA			Total			
		Adult	Yrl	Total	Adult	Yrl	Total	Adult	Yrl	Total	Yearling %
Reveille	Reveille North of Hwy 6	0	0	0	17	3	20	17	3	20	**15**
	Reveille South of Hwy 6	68	10	78	19	2	21	87	12	99	**12**
	Total	68	10	78	36	5	41	104	15	119	**13**

The number of yearling estimated for the January flights in 2006 and 2007 indicate the number of yearlings observed that would have been born the previous spring and approaching one year of age. Oftentimes, differentiating yearlings from young adults is difficult, but the numbers were estimated in order to estimate the percent foals, and thus provide additional information for estimating population

growth. The number of foals indicated for the August 2009 results are the foals that would have been born during the spring of 2009 and were 5-8 months of age.

Despite the fact that a January 2006 inventory documented a total of 113 wild horses within the Reveille Allotment, a "pre-gather" flight one year later only documented 79 wild horses. Because only 79 wild horses were observed within the Reveille Allotment during the 2007 inventory, the 2007 gather did not include any horses removed from within the Reveille HMA. Rather, 23 horses were removed from north of Highway 6, outside of HMA boundaries.

At the time, it was suspected that the occurrence of fewer horses than anticipated within the Reveille HMA could be due to several factors. Movement between Stone Cabin and Reveille HMAs could have resulted in horses moving into Stone Cabin Valley. Lack of winter snowfall could have caused changes in movement (or limited the movement), and wild horses could have moved south onto Nevada Wild Horse Range, or north to Hot Creek HMA.

Movement of this nature is common in areas where horses move in response to forage quality, water availability or seasonally between winter and summer due to snow depth or in response to population density. Within the Reveille Allotment, there has been observed a large band of wild horses, which was almost not sighted during the 2009 and 2010 inventories due to the terrain and animal coloring. It would have been easy to miss this group of horses in 2007 as well. A flight conducted in August 2009, documented 213 wild horses. A direct count of 231 wild horses in February 2010 confirmed this population.

Reveille HMA – helicopter inventory August 2009

Stone Cabin HMA was gathered in January 2007, at which time 205 wild horses were removed from the HMA and 107 released. Since January 2006, the Reveille HMA has been inventoried in conjunction with the Stone Cabin HMA and other adjacent HMAs in order to collect data regarding animal movement.

Reveille HMA Genetics Discussion

Since issuance of the preliminary EA, Genetics Analysis reports were received for the Stone Cabin and Saulsbury HMAs. The reports summarize the genetic information from blood samples taken during a gather in 2007. Stone Cabin HMA is adjacent to and west of the Reveille HMA, and the Saulsbury HMA is adjacent to and west of the Stone Cabin HMA. These reports indicate high genetic variants,

above average for wild horse herds. Genetic variation for both herds is well above the mean for wild horse herds as well. The data indicates likely "interchange of animals from neighboring HMAs". The reports were summarized by stating that the "genetic variability of this herd is high" and likely due to immigration/mixing from other herds in the area. The reports also state that the data suggests herds of mixed ancestry with no clear breed association.

The genetics data was compared to other herds in Nevada in a "Dendrogram" to display the relationship or similarity of these herds to others. In the dendrogram, the Stone Cabin and Saulsbury herds are close together and are both close to Nellis (Nevada Wild Horse Range). Refer to Map X for locations of these HMAs in relation to the Reveille HMA. Because Reveille HMA is adjacent to and shares a boundary with Stone Cabin HMA and the Nevada Wild Horse Range, it is likely that the genetics analysis will show the Reveille HMA very close to both Stone Cabin HMA and the Nevada Wild Horse Range. It is expected that the genetic variation for the Reveille HMA will be high as it has been determined for the adjacent HMAs.

The following excerpts from the *Summary Recommendations, BLM Wild Horse and Burro Population Viability Forum April 21, 1999* (Coates-Markle, 2000) are provided to the interested public for more information about wild horse genetics issues.

- In most herds, genetic resources will tend to be lost slowly over periods of many generations (~10 years/generation), and there is little imminent risk of inbreeding or population extinction.
- Smaller, *isolated* populations (<200 total census size) are particularly vulnerable when the number of animals participating in breeding drops below a minimum needed level (emphasis added).
- In order to fully evaluate genetic viability issues, populations which participate in a measurable level of natural ingress or egress activity and which are, in reality, a component of larger metapopulations, should be identified, and the genetic impact of this activity should be estimated.
- Metapopulation refers to two or more local breeding populations which are linked to one another by dispersal activities of individual animals. These populations may have unique demographic features (birth and death rates) but ultimately may share some genetic material if interbreeding is occurring between individuals. This sharing of genetic material may act to enhance genetic diversity within participating herds, and as such, these populations should be evaluated as one larger metapopulation.
- An exchange of only 2 to 3 breeding age animals (specifically females), every 10 years, is often sufficient to maintain genetic diversity within a given herd.
- BLM should, in its efforts to evaluate the genetic diversity and self-sustaining nature of managed herds, estimate the genetic effective population size (Ne) of all populations, or metapopulations, with a total census size of 200 animals or less
- Although no standard goal for Ne currently exists for wild horse and burro herds, a goal of Ne=50, which comes from domestic breeding guidelines, can be conservatively applied**.** Populations, where Ne is calculated to be less than 50, may experience higher rates of loss of genetic diversity than would be considered acceptable under recommended management goals.
- "Ne", for a herd under a natural age structure, is about 30-35% of the total census population size. In other words, a total population size of about 150 animals might support only a minimum

(Ne=50) genetic effective population size. Ne, however, is difficult to calculate for wild horses, since the calculation is complicated by a number of issues.

- A sex ratio which favors males and results in larger numbers of smaller sized harems, within the herd, will act to increase Ne (and male participation in breeding) to a point. A population with an age structure involving high numbers of young animals (<5 years of age) will have a lower value of Ne than a similar sized population with a larger component of older breeding-age animals (>5 years of age). Also, there is no single, uniformly accepted method to calculate Ne.
- [To increase genetic variability in a herd] Some options to be considered might include: altering population age structure (through removals) to promote higher numbers of reproductively-successful animals; altering breeding sex ratios (through removals) to encourage a more even participation of breeding males and females; increasing generation intervals (and reducing the rate of loss of genetic material) by removing (or contracepting) younger versus older mares; and/or introducing breeding animals (specifically females) periodically from other genetically similar herds to help in conservation efforts. In this last scenario, only one or two breeding animals per generation (~10 years) would need to be introduced in order to maintain the genetic resources in small populations of less than 200 animals.
- Simply increasing the total herd size by adding additional animals (adjusting the management AML upward) is not the only viable technique for enhancing the genetic effective population size (Ne) of a wild horse and burro population. With sound knowledge of existing herd demographic information, management alternatives for specific populations can be evaluated through research modeling efforts. As such, management also has the option of adjusting certain aspects of herd structure in order to promote genetic conservation. It should also be noted that any adjoining herds, which are naturally participating in an exchange of animals and genetic material through interbreeding, are probably self-maintaining their genetic diversity and management should consider both supporting and estimating this type of activity.

Wild Horse Management Objectives

Allotment Specific Objectives were developed by an interdisciplinary team as part of the Reveille Allotment Evaluation completed in 1999, which utilize measurable data and which relate to the attainment of the more general Land Use Plan objectives and standards for rangeland health.

Wild Horse Objectives

Manage the wild horse population within the Reveille Herd Management Area at levels which will preserve and maintain a thriving natural ecological balance. To preserve and maintain a thriving natural ecological balance, manage wild horses at optimum population levels which do not significantly contribute to the non-attainment of the following allotment specific objectives: a (vegetative production), b (watershed utilization), c (desired plant communities), d (DPC utilization), e (riparian stream bank cover), f (riparian proper functioning condition), and h (special status species objective).

Group of wild horses observed during a helicopter inventory in August 2009, Reveille HMA.

Estimated Age Structure

The estimated age structure of the Reveille HMA wild horses was derived from the age structure of 1,398 wild horses captured from the Diamond Complex in 1997. This Complex had not been previously gathered or had been subject to management that would have artificially affected the age structure. The current estimated age structure is identified below:

Age	Mares	Studs	Total
Foal	16	15	31
1	9	9	18
2	16	11	27
3	14	10	24
4	12	9	21
5	9	7	16
6	8	4	12
7	6	6	12
8	6	5	11
9	5	7	12
10-14	9	13	22
15-19	7	10	16
20+	3	5	8
Total	120	111	231

Appendix C – Vegetation and Monitoring Information

The vegetation resources of the Reveille Allotment have been assessed in detail in the documents identified in Section 1.7. This Appendix serves to provide a summary of some of the relevant and background information. Please refer to those documents for more information.

Management Objectives

Vegetation objectives for the Reveille Allotment and HMA are as follows:

Tonopah Resource Management Plan and Record of Decision, October 6, 1997:

> *Management of the vegetative resource will provide for the physiological needs (such as critical growth periods, biomass production, root reserve increase, and seed production) of the key forage plant species.*
>
> *Objective: To provide for vegetative and ecological diversity.*

The Mojave-Southern Great Basin Area Resource Advisory Council Standards and Guidelines:

> *Habitats and watersheds should sustain a level of biodiversity appropriate for the area and conducive to appropriate uses.*
>
> *Habitat indicators: Vegetation composition (relative abundance of species); Vegetation structure (life forms, cover, height, and age classes); Vegetation distribution (patchiness, corridors); Vegetation productivity; and Vegetation nutritional value.*

Ecological Sites

The primary ecological sites located within the Reveille HMA are displayed in the following table.

Table 1. Ecological Sites of the Reveille HMA

Major Plant Community Common Name	Major Plant Community Scientific Name	Ecological Site	Ecological Site Reference	Potential Production Normal Year lbs/ac	% composition within the HMA
black sagebrush – Indian ricegrass	*Artemisia nova/Achnatherum hymenoides*	Shallow Calcareous Loam 8-12" p.z[11].	R029XY008NV	500	51%
Pinyon pine-Utah juniper-black sagebrush - muttongrass	*Pinus monophylla-Juniperus ostersperma – Artemisia Nova-Poa fendleriania*	Forest Type	F029XY066NV	400	16%

11. "p.z." means precipitation zone – the annual precipitation received on that site.

Major Plant Community Common Name	Major Plant Community Scientific Name	Ecological Site	Ecological Site Reference	Potential Production Normal Year lbs/ac	% composition within the HMA
shadscale saltbrush - bud sagebrush/Indian ricegrass-Jame's galleta	*Atriplex confertifolia*-Picrothamnus desertorum/*Achnatherum hymenoides*	Loamy 5-8" p.z.	029XY017NV	450	11%
shadscale saltbrush / Indian ricegrass-Jame's galleta	*Atriplex confertifolia/Achnatherum hymenoides - Pleuraphis jamesii*	Sodic Hill 5-8" p.z.	029XY022NV	250	14%
shadscale saltbrush - bud sagebrush/Indian ricegrass-Jame's galleta	*Atriplex confertifolia*-Picrothamnus desertorum/*Achnatherum hymenoides*	Loamy 5-8" p.z.	029XY017NV_3	450	3%

The remaining 5% of the HMA is comprised of lesser ecological sites which include Claypan 16+ p.z, Sandy Loam 8-12" p.z. and Limestone Hill. For more information about the vegetation within this area, refer to the Natural Resource Conservation Service (NRCS), Nevada Ecological Site Descriptions for Major Land Resource Areas (MLRA) 29.

The potential production of an ecological site in pounds per acre within a normal year is based on the total production above ground for the current year's growth and does not indicate the total amount of biomass. The potential production does not differentiate between palatable and unpalatable plants. Therefore, only a certain percentage of the potential production in conjunction with the proper use factor is available to the grazing animal. For example, a plant community with a potential production of 300 lbs/acre may produce only 150 lbs/acre of useable forage for domestic livestock, wild horses and wildlife populations.

In addition, a proper use factor must be considered to assure the long term health of the plant community. This may reduce the available forage to 100 lbs/acre depending on the season of the year which will vary in accordance with the environmental tolerance of the vegetation. In degraded rangelands (such as the Reveille Allotment), the available forage is further reduced as the perennial key forage species have declined in the plant community to due over use by grazing animals. Drought conditions and the extreme precipitation fluctuations that occur within this region further reduce available forage and illustrate the need for conservative management to protect rangeland health and subsequently the well being of the animals that depend upon the arid rangeland for important habitat.

Precipitation Data

A BLM rain gauge is located within the Reveille Allotment and precipitation data has been collected at this location since 1985. This data is displayed by moisture year (June to June) through 2008 in Figure 11 at the end of this Appendix. Annual rainfall has ranged from 1.25 inches in 1986 to the maximum recorded precipitation of 9.56 inches in 2005. The average

annual precipitation received through this time was 4.90 inches. During 6 of these years, precipitation received met the definition of drought (<75% of average), and during 5 years, the precipitation was considered above normal (>125% of average). The precipitation patterns within the area demonstrate wide fluctuation as indicated in figure 11. As a result, it is important to manage the resources within the Reveille area conservatively so as to allow protection of vegetation resources and health of wildlife and wild horses through the poorest of years when drought can result in markedly reduced forage resources and water.

A review of precipitation data from other areas within the United States can provide a useful comparison. The annual precipitation received in Reveille Allotment averages 4.90 inches annually. The eastern half of Oregon receives over 10 inches of precipitation with the west coast receiving more than 30 inches and some areas receiving over 100 inches of precipitation annually. Texas receives more than 14 inches of precipitation, with a large portion of the state receiving over 30 inches annually. Northern California generally receives over 15 inches of precipitation annually. Kentucky receives over 14 inches annually with a large portion of the state receiving over 30 inches. Nebraska generally receives over 16 inches, with most of the state receiving over 30 inches annually. For more information, refer to www.wrcc.dri.edu/precip.

Key Areas and Key Species

Key areas are rangeland study locations. Use, trend and ecological status data are collected at key areas. Climate (mainly precipitation) data is also collected over a broader area (usually larger than the key areas), and is used in conjunction with the vegetation data to evaluate annual production. Key areas are indicator areas that are able to reflect what is happening on a larger area as a result of on-the-ground management actions (TR 1734-4, 1996).

Because BLM cannot physically measure all of the plants in a community to determine the impacts of grazing it selects specific perennial species, (referred to as key species) which best indicate the overall health of the community. Key species serve as indicators of change and may be, but are not necessarily, the main forage species within the community. More than one key species may be selected for an area, depending on objectives and data needs. In some cases, problem plants (poisonous, etc.) may be selected as key species (TR 1734-4, 1996).

The selection of key species is not directly related to the forage potential of the species, let alone their palatability. Key species reflect the resource concerns being assessed, and are indicators for the overall health of the plant community. The key species determination for Reveille Allotment also took into account winter deer range, wild horse use, and other issues. Of the key species designated for Reveille Allotment, those most commonly measured are Indian ricegrass, galleta grass, winterfat, fourwing saltbush, sand dropseed, and bottlebrush squirreltail. A description of a few of the more important species for wild horse management is given below.

Indian ricegrass

Within the Reveille HMA, Indian ricegrass is the most important perennial grass species, and is one of the most palatable species to wild horses. Therefore, it is one of the most heavily utilized, and has consequently decreased within the understory throughout the Reveille HMA.

Indian ricegrass is both attractive and palatable to all classes of livestock (especially during the growing season), and is one of the more important forage grasses of semi-arid ranges. The nutritious forage cures well and has special value on winter ranges (Hassell, Oaks 1986). The cool season grasses [...] begin growth again in early spring while the animals are still on the winter range. It begins growth earlier in the spring than galleta grass and other warm season plants, and has a longer season of use than soils supporting galleta grass.

Production data gathered in the Reveille Allotment at long term key areas shows Indian ricegrass produced well below its potential at 12 of 14 long term key areas, including those within the Reveille HMA, and those outside of the HMA that are utilized by wild horses as well as livestock. Production of Indian ricegrass at all of these sites should comprise 20-45% of the ecological sites but are only present in limited amounts of <1-14% of the plant community. This decline of this key, palatable and nutritious grass equates to a loss of forage in the wild horse habitat within this HMA. Further declines of this grass would equate to further loss of habitat and carrying capacity.

Galleta grass

Galleta grass is a low growing warm season rhizomatous grass; whereas Indian ricegrass is a taller cool season bunch grass. These plants often grow together in the Reveille Allotment. Galleta grass is less productive, less palatable and less nutritious, than Indian ricegrass and other common forage plants, and therefore has less forage value than Indian ricegrass and other common forage plants (winterfat, fourwing saltbush & most other grasses). Galleta grass has a later growing season than Indian ricegrass, and is mainly grazed during the warm growing season. Galleta is also much less productive than the palatable grasses and shrubs it replaces. This causes a loss of forage produced at a site as galleta grass increases. On ranges where Galleta grass has replaced Indian ricegrass in the understory due to long term overuse, the effect is a reduction of the availability of forage especially in early spring.

After curing the forage is relatively low in carotene, phosphorus and protein. During the winter, the cured forage is also quite coarse and not readily consumed if other feed is available (*Bulletin* 487, 1992). Where galleta occurs with highly preferred species it may not be utilized until the preferred forages become scarce.

Galleta grass spreads easily by rhizomes, resisting trampling and heavy use. Numerous reports indicate that galleta withstands heavy grazing quite well and increases in abundance as range condition deteriorates. Vallentine (1961) and Van Dyne (1964) report that galleta is quite resistant to grazing and is frequently found in areas where other desirable plants have been eliminated by overuse.

Galleta grass has increased due to heavy grazing on much of the Reveille Allotment, and now dominates much of the alluvial fans in Hot Creek, Reveille and Railroad Valleys. It is most common on loamy 5-8" and sandy loam 5-8" ecological sites. The Potential Natural Community (PNC), is not dominated by galleta grass. In PNC other species dominate these soils such as Indian ricegrass and shadscale, bud sagebrush or fourwing saltbush or winterfat. All of these plants are producing below potential in the Reveille Allotment. In PNC galleta grass should not

exceed 10% of the production at these sites, but comprises 21-67% of the plant community at key areas throughout the Reveille Allotment.

Salt Desert Shrubs

Because of its abundance, evergreen habit, palatability, nutritive value, and rapid growth rate, fourwing saltbush is one of the most valuable forage shrubs in arid rangelands (Blaisdell, Holmgren 1984).

Fourwing saltbush is decreasing at many of the key areas within the Reveille Allotment and is producing well below potential. Many of these areas are now dominated by Douglas rabbitbrush and galleta grass, less desirable and less palatable species.

Fourwing saltbush and winterfat are much more desirable forage species than galleta grass, and are highly nutritious, palatable winter forage species. Shrubs store carbohydrates in the upper portions of the plant. Heavy winter grazing can deplete these food reserves leaving little food to initiate spring growth. Repeated heavy use on shrubs, especially during the growing season, can lead to the death of these shrubs. Less palatable species, such as galleta or rabbitbrush, replace more palatable species in the plant community. This reduces the amount of desirable forage available for grazing animals in the plant community. This is evident at numerous key areas within the Reveille Allotment where these key areas were formerly dominated in PNC by fourwing saltbush or winterfat with Indian ricegrass.

Douglas rabbitbrush is an aggressive increaser on soils with a sandy surface has no forage value and is not generally grazed. Wild horses have been noted to have heavily browsed rabbitbrush during winter months when other grasses are not accessible or available. Increasers (plants which increase in population under strong grazing stress), such as galleta grass and Douglas rabbitbrush, often indicate poor condition range (early to mid seral stage). Much of Reveille Valley, the west half of Hot Creek Valley and parts of Railroad Valley are dominated by Douglas rabbitbrush and galleta grass instead of fourwing saltbush, winterfat or shadscale.

Background Information about Rangeland Plant Dynamics

Plant communities change over time. Disturbances, such as livestock and wild horse grazing, insects, weather, or fire, can modify the composition of communities. A lack of disturbance can also result in a change in the community. These changes are referred to as vegetative community dynamics.

Observation of the behavior of individual species led to categorizing them with respect to their response to grazing and their presence in the climax. If they were not present in native vegetation, they are called *invaders.* Those normally present in the climax are classed as (1) *increasers,* those which increase under heavy use, and (2) *decreasers,* those that diminish under heavy use. Generally, increasers are the less palatable plants, and decreasers the more palatable ones, although resistance to grazing is also a factor in the response of plants to use (Stoddart, Smith 1975).

Heavy grazing pressure can result in considerable damage to those plants which are most palatable. Grazing range plants closely removes too much of the food factory - the leaves […] it

is important then, to limit grazing to a season and intensity that will not harm the plants beyond tolerable limits (Cook, Stoddert 1964). Continued livestock and wild horse foraging can affect the viability of individual plants and populations through the repeated depletion of the carbohydrate stores which help maintain them through dormancy or stress. Plants were considered most vulnerable to grazing damage when carbohydrates are at their lowest and reserves may not be sufficient to initiate regrowth (Holechek, Pieper, Herbel, 1995).

Arid rangelands do not readily recover from improper grazing management and may take a decade to demonstrate any improvements in the vegetation resources (Anderson and Holte 1981). Cook and Child (1971) discovered when "*desert plants are defoliated to the extent that vigor is even moderately reduced, it required a rather long period of nonuse for complete restoration of vigor. Defoliation in the winter and again in the spring at even moderate intensities was considered deleterious to plant welfare. Late spring harvesting was significantly more harmful to plants than early spring harvesting*." Furthermore, the authors explained that "*the rate of recovery within a species was proportional to the stage of vigor: the lower the vigor, the less rapid the recovery*." Menke (1973) found that defoliated plants of fourwing saltbush *(A triplex canescens),* bitterbrush, and fringed sagewort *(Artemesia frigida)* required more than 1 year of rest for recovery of vigor and reserve stores. Cook and Child (1971) indicated that desert plants, when defoliated to the extent that vigor was moderately reduced, required more than 7 years of nonuse for recovery of vigor.

Empirical work has demonstrated time lags of 10-50 years following changes in nutrient stress and competition (Brown & Heske 1990, Heske et al. 1994; Milchunas & Lauenroth 1995, Havstad et al. 1999). Thus arid grasslands may be characterized by substantial inertia and may respond slowly to substantial changes in disturbance regime. Holecheck et al. (2003) concluded that "*during a 13-year study on the Chihuahuan desert rangelands that an upward trend occurred on lightly grazed rangeland while a downward trend occurred on an adjacent moderately grazed rangeland*." Hart et al. (1989) concludes that the stocking rate and distribution are much more important than rotation in determining the success of a grazing system. The effects of a few years of excessive stocking can be difficult to correct in arid lands."

Vegetation Status and Review of Applicable Key Areas

Long term monitoring is used to determine the status and trend of the vegetation in relation to a standard, such as the Potential Natural Community (PNC) or Desired Plant Community (DPC). The PNC is the biotic community which would become established if all successional sequences were completed without interference from man under the present environmental conditions. DPC is the biotic community identified by an interdisciplinary team as best meeting management objectives for a particular site. DPC may be a seral stage below the PNC, if that successional stage best serves wildlife management, watershed protection, livestock forage production or other management objectives. The following table displays the relationship between seral stage and PNC.

Table 2– Seral Stage in relationship to the percent climax vegetation

Seral Stage	Percent Deviation from Climax Vegetation
Potential Native Community (PNC)	76 to 100
Late Seral	51 to 75
Mid Seral	26 to 50
Low Seral	0 to 25

During the completion of the Reveille Allotment Evaluation, ecological status inventory assessment was used to determine seral stages of the vegetation within the Allotment. Early seral designations were given to 8% of the Reveille Allotment, with 28% allocated to mid-seral, 42% to late seral and only 0.45% to Potential Natural Community. Unclassified areas consisting of woodlands, rock outcrops and washes totaled 22%. The areas most notably being early and mid seral were typically located in valley bottoms and on alluvial fans in areas of moderate, heavy or severe use. The seral stage drops from PNC to late seral stage as sagebrush and rabbitbrush increase with the decrease of perennial grasses in the plant community due to overuse by grazing animals.

The current ecological status and trend were evaluated in combination with precipitation, utilization and other data. Studies were established throughout the Reveille Allotment and Herd Management Area between 1976 and 1986. Two key areas exist within the Reveille HMA, with several others located outside of the HMA boundaries where wild horse use has historically occurred, and still does occur to varying degrees. Frequency studies (trend data) are available for one key area within the Reveille HMA. The other key area was lost. Throughout the Reveille Allotment, ecological status, use pattern mapping and long term frequency data has been completed. Please refer to the Reveille Allotment Evaluation documents identified in Section 1.7 for more information.

Key Area 3

This key area is located within the Reveille within the HMA, and falls within the Shallow Calcareous Loam 5-8" ecological site (29-008).

As the following photos depict, this site is dominated by black sagebrush with limited perennial grass or forb species in the understory, and large expanses of bare ground. Understory grasses present include squirreltail, Indian ricegrass, and Jame's galleta. The primary key species at this site is Indian ricegrass which should be producing 20-35% or 40-120 lbs of forage per acre. This site is producing far below the potential. With proper management, Indian ricegrass should increase on this site. With overuse of this site, galletta grass and black sagebrush will increase.

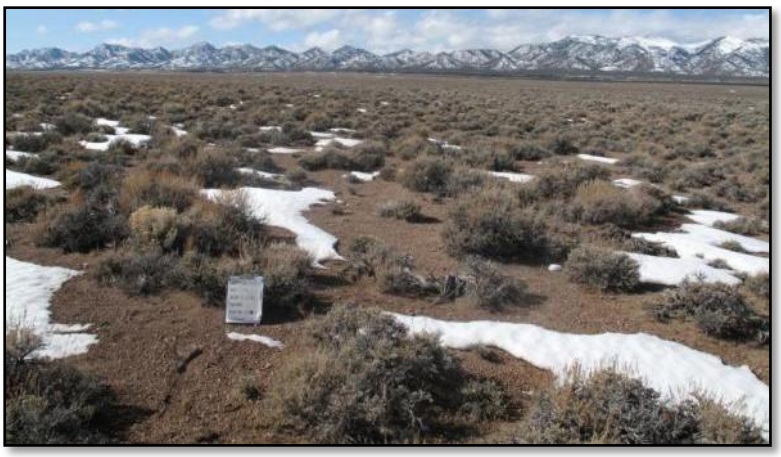


Figure 1 – Site dominated by black sage brush, with large interspaces bare of perennial key grasses.

Figure 2 – Dominance of black sagebrush with low production and occurrence of Indian ricegrass or other perennial grasses.

Figure 3 – Key area 3 reflecting low growing vegetation in the interspaces between shrubs.

Figure 4 -- Close-up view of a photo plot which shows the distribution of plants within key area 3.

Key Area 12

This Key Area 12 is north of and adjacent to the Reveille Herd Management Area. The present community is dominated by Wyoming big sagebrush with a component of bud sagebrush, shadscale saltbush, Jame's galleta, Indian ricegrass, squirreltail, green rabbitbrush and black sagebrush. The site is currently dominated by shrubs, with the understory grasses reflecting low production and frequency within the plant community, limiting forage availability for wild horses. With proper management, these key species should increase in the understory. With overuse by wild horses or livestock, Indian ricegrass will continue to decline in the understory and Wyoming and black sagebrush will increase, further decreasing the forage availability at this site.

Figure 5 - Sagebrush Community of Key Area 12.

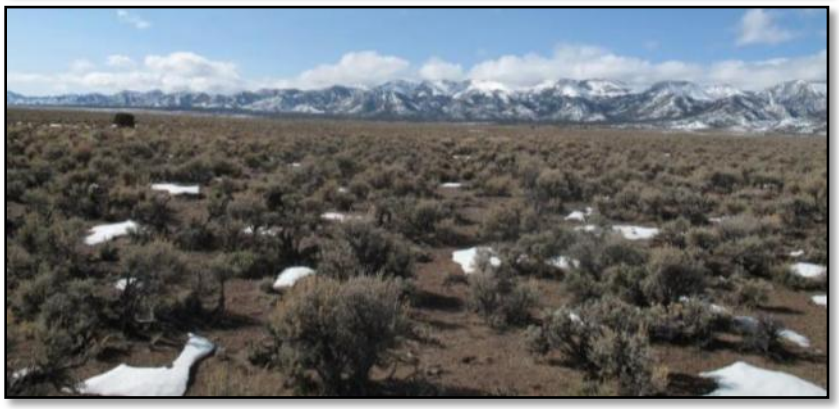


Figure 6 – Site dominated by sagebrush with low occurrence of perennial grasses in the understory.

Key Area 13

Key area 13 is in the Shallow Calcareous Loam 8-12" p.z. ecological site. The site is currently dominated by shrubs, with the understory grasses reflecting low production and frequency within the plant community, limiting forage availability for wild horses. There are scattered populations of Indian ricegrass, squirreltail, and Jame's galleta within this site.

This site should produce 500 lbs per acre of current year's growth during a normal year, of which 20-35 percent should consist of the key perennial grass species, Indian ricegrass. Ecological status of this site is mid seral, with approximately 2% of the composition consisting of Indian ricegrass (5 lbs/acre), an extreme departure from the PNC. Black sagebrush produced over 66% of the composition, with 21% squirreltail (58 lbs/acre) and 9% galleta grass (24 lbs/acre). At PNC, black sagebrush should only comprise 25-45% of this plant community.

Since 1981, there has been an increase on both squirreltail a palatable grass, and black sagebrush. Indian ricegrass was 0% frequency in 1981, increasing to 7.5% frequency in 1981 and decreasing to 3% frequency in 2001. Frequency is not comparable to production or pounds of usable forage on the site. Frequency indicates the frequency of occurrence of 200 plots on the site. Of the 200 plots, Indian ricegrass only occurred in 6 of them in 2001, whereas black sagebrush occurred in 66.5% of the plots – further indicating the dominance of this site by this shrub and the overall lack of Indian ricegrass on the site.

Black sagebrush is not considered a forage plant for horses and cattle. This increase in black sagebrush is not beneficial to wild horses or livestock. The Desired Plan Community for this site is to improve to 5-10% Indian ricegrass. With proper management of this site, Indian ricegrass would be expected to continue to increase in frequency and production. With overuse of the site by livestock and wild horses, blacksagebrush and galletta grass will increase to the expense of more beneficial perennial key grasses such as Indian ricegrass and squirreltail.

Figure 7 - General View of Key Area 13.

Figure 8 – Distribution of black sagebrush and lack of perennial grasses in the plant community.

Key Area 14

This key area is located south and near the Reveille HMA boundary. The present plant community is dominated by black sagebrush with a component of Wyoming big sagebrush, green rabbitbrush, squirreltail, Indian ricegrass, and Jame's galleta This plant community adjacent to the HMA and does not support the desired production of forage plants for cattle and wild horses at the present time. The site is dominated by shrubs that are not palatable to wild horses or cattle.

As the photos illustrate, the site is dominated by shrubs with an obvious lack of perennial grass species in the understory. With proper management, this site would be expected to support increased desirable species in both annual production and frequency of occurrence.

Figure 9 - Extensive black sagebrush community.

Figure 10 – Shrub dominated site with low production or frequency of perennial grasses within the understory

Conclusions

The rangeland within the Reveille HMA is inherently low producing and has been negatively impacted through historically large wild horse populations and livestock grazing, further reducing the ability of these areas to provide quality forage for wild horses and other rangeland users. The range sites are characterized by a lack of appropriate, desirable key grass species and domination by shrubs and other undesirable species that increase their presence on rangeland through overuse of more palatable species. Not only does the rangeland vegetation not reflect the potential composition of diverse perennial species, but also substantially reduced production of forage as well. Through the Reveille Allotment Evaluation and Multiple Use Decision, it was determined that 138 wild horses was the maximum population allowed to ensure that a thriving natural ecological balance exists within the HMA and that progress can be made towards improvement in the health of these rangelands into the long term.

Through the review of climate, actual use, ecological status, trend, forage availability, and wild horse distribution, the following conclusions can be made:

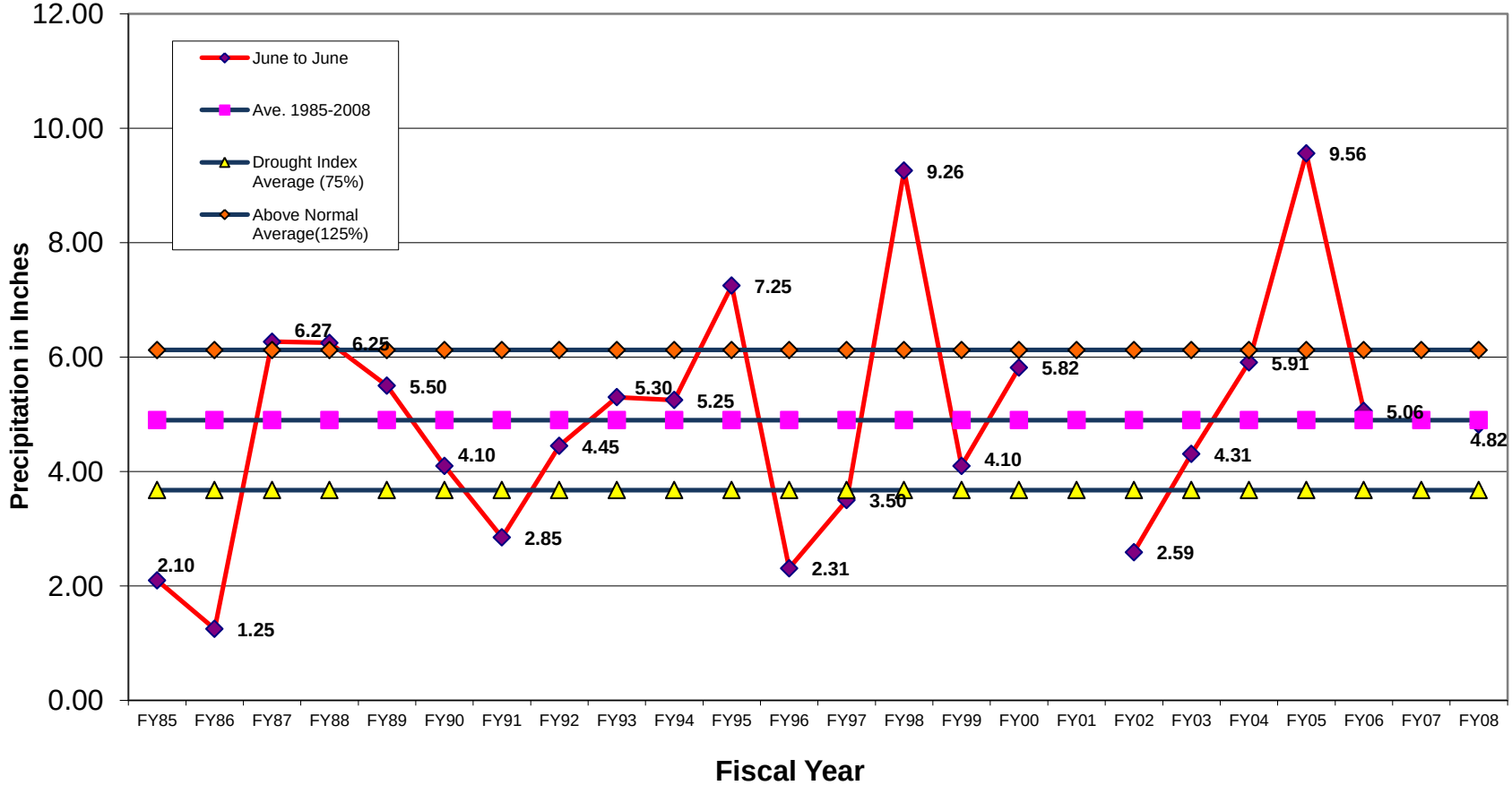
- Drought conditions have occurred an average of 27% of the precipitation years for the 22 years of available precipitation data or 1 out of every 3.7 years. Precipitation received within the Reveille area fluctuates widely from year to year.
- Many vegetation communities do not reflect proper frequency or production of perennial key forage species as compared to the Potential Natural Community.
- Wild horse habitat is at risk of further decline.
- Wild horse populations currently exceed the AML established through the 2001 FMUD, and will exceed the AML by an estimated 140 wild horses by completion of foaling in 2010.
- Key perennial grass species are present within the plant communities indicating that potential improvement is possible with proper wild horse management.
- The HMA is not being utilized uniformly, with large concentrations of wild horses using certain locations and wild horses moving outside of HMA boundaries.

Because of the current condition of the rangeland and riparian resources within these HMAs, it will be very important to maintain the population consistent with the established AML in order to minimize future over use of the resources, and promote improved habitat condition and long term population health.

Periodic monitoring of wild horse use throughout these HMAs will continue to include wild horse distribution, census, nested frequency, utilization and water availability/riparian condition.

Should the AML be maintained over the long term, upward habitat trend should be observed throughout the HMA. Genetics data, as well as data collected during the proposed gather and future monitoring data would be incorporated into an HMAP to outline long term management strategies for this HMA. Future Rangeland Health Assessments completed for this allotment and HMA will consider the use by wild horses, livestock and wildlife in addition to rangeland condition, and make appropriate changes to the wild horse AML.

Figure 11: June to June Precipitation Data
Reveille Rain Gauge



Appendix D: Summary of Population Modeling

Population Model Overview

The WinEquus Feral Horse Population Model, developed by Dr. Steven Jenkins at the University of Nevada at Reno was designed to assist wild horse and burro specialists evaluate various management plans and possible outcomes for management of wild horses that might be considered for a particular area. The population model is not applicable for burros. Windows version 1.40 of the model is accessible at www.equinox.unr.edu/homepage/jenkins.

The model uses average survival probabilities and foaling rates of wild horses to simulate population growth for up to 20 years. The model accounts for year-to-year variation in these demographic parameters by using a randomization process to select survival probabilities and foaling rates for each age class from a distribution of values based on these averages. This aspect of population dynamics is called environmental stochasticity, and reflects the fact that future environmental conditions that may affect horse populations cannot be known in advance. Therefore, each trial with the model will give a different pattern of population growth. Some trials may include mostly "good years", when the population grows rapidly; other trials may include a series of several "bad" years in succession. The stochastic approach to population modeling uses repeated trials to project a ***range of possible population trajectories*** over a period of years, which is more realistic than predicting a single specific trajectory.

The model incorporates both selective removal and fertility control treatment as management strategies. A simulation may include no management, selective removal, fertility control treatment, or both removal and fertility control treatment. Wild horse and burro specialists can specify many different options for these management strategies such as the schedule of gathers for removal or fertility control treatment, the threshold population size which triggers a gather, the target population size following a removal, the ages and sexes of horses to be removed, and the effectiveness of fertility control treatment.

For the Reveille HMA analysis, all simulations used the survival probabilities and foaling rates supplied with the WinEquus population model for the Garfield Flat HMA. Survival and foaling data was collected by M. Ashley and S. Jenkins at Garfield Flat, Nevada between 1993 and 1999.

The model was run for 50 trials for a 10 year period to assess the potential outcomes for these management scenarios over a longer period of time. This provides for a more useful comparison of alternatives when assessing small populations. The model output provides information for 11 years.

For each simulation, a series of graphs and tables were generated which included the "most typical" trial, projected population sizes, growth rates, and gather numbers, and minimum, average, and maximum population sizes. These numbers are useful to make relative comparisons of the different alternatives, and potential outcomes under different management options. This output, together with the time series and most typical trial graphs are useful representations of the results of the program in terms of assessing the effects of the management plan because it shows not only expected average results but also extreme results that might be possible. The following parameters were used for the Reveille HMA population modeling:

- Initial population was set as exact under advance options to remove variation due to random starting populations. The initial population was set as 231 horses, as the model automatically inserts a foaling season during the first year.
- Starting year is 2009 (see note below).
- Gathering occurs at minimum interval of 3 years.
- Initial gather year is 2009 (see note below).
- Threshold population size for gathers is 138.
- Target population size following removals is 80.
- Foals are included in AML.
- Percent of population that can be gathered = 90%.

The starting year of 2009 and initial gather year of 2009 were utilized because the model automatically inserts a foaling season during the first year. Because this gather is being proposed for September 2010 (after foaling for that year), it was undesirable for that to occur.

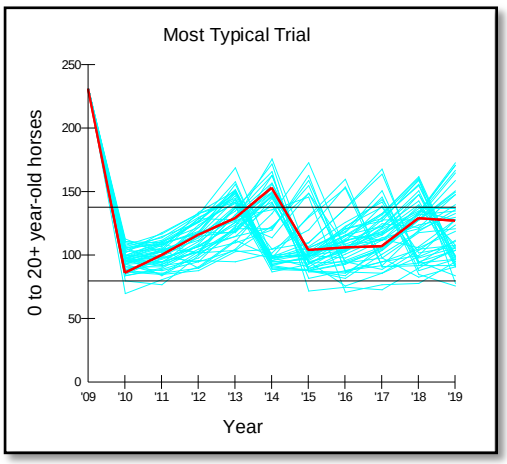
For the fertility control only scenarios, the model was set for regular gather intervals of 2 years, and was set to gather for fertility control regardless of population size.

For the fertility control with gather scenarios, the model was set to gather on a minimum interval of 3 years, and to gather when the threshold level of 138 animals was reached. The setting was to continue to gather to treat females after adequate removals had been made.

The application of fertility control should reduce growth rates, increase the time until the next gather is necessary, and reduce the number of animals that need to be gathered and removed from the range. The manipulation of the sex ratio to favor more studs than mares in the post-gather population should also result in reduced growth rates of the population (over a Gather Only simulation). The population model generates standard tables that display this information for the various trials. Additionally, data generated for all ages, sexes, years and trials can be compiled into tables for comparison of average or most typical trials. The "Spaghetti" and most typical trial graphs are generated by the model. Each line on the graph represents a trial simulated by the model. With the exception of the "overall average", all data in the following section were generated by the model. BMDO staff generated the "overall average" by averaging the 11 years of data over the 50 trials. Refer to the summary provided in Section 3.2 of this document.

Proposed Action

For the Proposed Action, modeling was completed with the Fertility Control with Gather Option and the selection criteria for removed animals set to simulate a 60:40 sex ratio favoring studs. The model displayed results for 11 years through year 2019. In addition to the standard tables created by the model, "pivot tables" of the results were compiled to identify the projected population size for each year for each of the 50 trials. The most typical trial was examined, as was the average population for the typical trial for years 2009 through 2019, and the average of all trials.



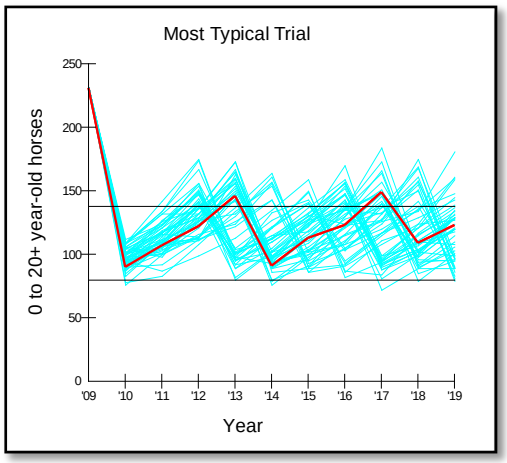
Most Typical Trial – Proposed Action

Average population growth rates for the Proposed Action simulations were 8.0-16.6%, with average population size over eleven years of 113-135 wild horses. Average populations for all trials and for the most typical trial are within this range. The model produced tables and graphs depicting the number of gathers that could occur under each scenario. For the Proposed Action scenario, no gathers are reflected in year 2 (2011) or year 3 (2012). Forty percent of the trials in year 4 (2012) reflected a gather, followed by 35% in Year 5, 14% in year 6 and 6% in year 7.

One of the substantive outputs of the model is the anticipated number of animals that would need to be gathered and/or removed under each scenario. The model reflects that as many as 70 fewer wild horses would need to be removed from the range under this alternative over the next 11 years, when compared to Alternative 1. Average growth rates were within reasonable ranges, and none of the trials reflect a "crash" in the population. The graph above depicts the "most typical trial" (indicated in red) of the 50 trials (indicated in blue) simulated for this alternative. The graph shows a gather occurring between 2009 and 2010, then increasing to 2014 when a gather would occur. The slope of the increase is gradual, reflecting the effects of fertility control and sex ratio modification to the population growth rates.

Alternative 1

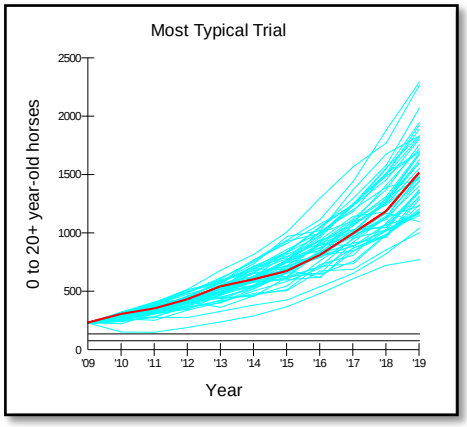
This alternative was modeled using the Removal Only Option. Selection criteria for removed animals set to simulate a 60:40 sex ratio favoring studs. The results are similar to the Proposed Action, but show slightly higher potential population growth rates ranging from 13.0-23.2%. The growth rates fall in between the Proposed Action and the No Action Alternative (which reflects normal growth rates). Population sizes in 11 years were also very similar to the Proposed Action.



Most Typical Trial – Alternative 1

The primary difference between the Proposed Action and Alternative 1 is the numbers of gathers that might occur within 11 years. According to the model, a gather would likely be needed a year sooner under Alternative 1 than for the Proposed Action. The model reflects 40% of the trials with gathers in 2012 for Alternative 1, and none for 2012 under the Proposed Action. For Alternative 1, the percent of trials requiring various numbers of gathers within 11 years was reflected as 2% --2 gathers, 83% -- 3 gathers and 14% -- 4 gathers. Conversely, only 40% of trials under the Proposed Action resulted in 2 gathers, and 60% with three gathers. The graph below depicts the "most typical trial" for Alternative 1. A gather is completed between 2009 and 2010, at which time the population grows to a point in 2013 when a gather is triggered, followed by another in 2017. The slope of the increase in the population size is more steep than depicted for the Proposed Action due to the absence of fertility control for Alternative 1.

The number of animals needing to be gathered within 11 years is slightly lower than the Proposed Action; however, the number of animals reflected by the model for removal was higher than the Proposed Action. According to the model, with all other parameters being equal, the use of fertility control and sex ratio modification could result in the need to remove as many as 70 fewer excess animals in eleven years. The use of sex ratio modification alone could result in as many as 43 fewer animals removed according to the population modeling.



Most Typical Trial -- No Action

No Action

The No Action Alternative was also simulated through the model and produced expected results consisting of continued herd growth with average growth rates of 12.0-25.8%. The average population within 11 years reflects 385-992 wild horses, with a maximum of 775-2,297 identified. Under the most typical trial, the model reflects population growth to 353 in Year 2011, followed by growth to 432 (2012), 542 (2013), and 602 (over 430% of the AML) within four years (2014). By 2019, the model reflects a population of 1,516 for the most typical trial.

The graph depicts the modeling simulation of the No Action Alternative.

The results of the population modeling are summarized below.

- **Do any of the Alternatives "crash" the population?**

Results of the modeling do not indicate that implementation of any of the alternatives would result in a crash of the population. Minimum population levels and growth rates are all within reasonable levels, and adverse impacts to the population are not likely.

- **What effect does fertility control have on population growth rate?**

The results of the modeling suggest that implementation of fertility control (Proposed Action) when compared to Alternative 1 could result in reduced population growth rates. The median growth rates displayed by the model were 13.6% for the Proposed Action, 17.9% for Alternative 1 and 20.4% for the No Action Alternative, indicating that the Proposed Action would have the most affect to slowing population growth rates, followed closely by Alternative 1.

Table 1. Median Trial for Average Growth Rates in 11 years

Proposed Action	Alternative 1	No Action
13.6%	17.9%	20.4%

- **What effect do the different alternatives have on the average population size?**

The results of the model indicate that the Proposed Action with implementation of fertility control and sex ratio modification to favor studs could result in average population sizes that are slightly lower than for Alternative 1. The model suggests that manipulation of sex ratios to favor studs without fertility control (Alternative 1) would have less notable influence. Through implementation of the Proposed Action, and reduced growth rates and lower average population sizes over time, the frequency of gathers would be reduced, as would the total number of animals that would need to be gathered and number of excess wild horses that would need to be removed in the future to maintain AML. Because the frequency of gathers would likely be lessened, the disturbance to individual animals and the population as a whole through gathers would also be reduced.

The following tables display the average population sizes produced and projected gather and removal numbers for each Alternative between the 10th and 90th percentile. These numbers may be interpreted as in 50 trials and 11 years, only 10 percent of the trials produced results lower than presented below, and 10 percent produced results higher than those presented below. In other words, 80 percent of the trials had results that fell within the ranges given in these tables.

Table 2. Average Population Sizes in 11 years – 10th -90th Percentile

Proposed Action	Alternative 1	No Action
118-130	122-133	589-849

Table 3. Horses gathered, removed and treated in 11 years – 10th -90th Percentile

Action	Proposed Action	Alternative 1	No Action
Gathered	317-457	281-361	0
Removed	194-266	247-301	0
Treated	38-75	0	0

When compared to no population controls implemented at all following a wild horse gather, fertility control and adjustment of sex ratios could reduce the number of animals that would have to be removed in 11 years by about 47-76 animals or a reduction of about 19-31%. The use of sex ratio adjustment alone could reduce the number of excess wild horses that would have to be removed by about 5-43 wild horses equivalent to an approximate reduction of 2-16%.

The results of the model indicate that the number of gathers that would be necessary within 11 years could be reduced with the implementation of the Proposed Action and to a lesser degree than Alternative 1. The following table displays the results.

Table 4. Percent of trials reflecting gathers by Alternative

Alternative	% of trials with 2 gathers	% of trials with 3 gathers	% of trials with 4 gathers
Proposed Action	40	60	0
Alternative 1	2	84	14
No population controls with gather	2	60	38

The following table displays the range of outcomes produced by the model. Detailed tables follow below.

Table 5. WinEquus Population Model Results for Reveille HMA

Alternative	Minimum Populations	Average Populations	Maximum Populations	Average Growth Rates	Gathered	Removed	Treated
No Action	152-231	385-992	775-2297	12.9-25.8	0	0	0
Proposed Action --FC and 60% studs	70-100	113-135	231	8.0-16.2	304-484	177-292	33-85
Alternative 1 -- 60% studs, No FC	72-98	120-136	231	13.0-23.2	233-400	202-363	0

Table 6. Gather likelihood and Typical Trial Populations by Alternative

Year	Proposed Action		Alternative 1		No action
	% of trials with a gather	Typical Trial Population	% of trials with a gather	Typical Trial Population	Typical Trial Population
Year 1 – 2009/10	100%	86	100	90	306
Year 2 - 2011	--	100		107	353
Year 3 - 2012	--	116	40	122	432
Year 4 - 2013	40	129	44	146	542
Year 5 – 2014	38	153	14	91	602
Year 6 – 2015	14	104	14	113	674
Year 7 – 2016	6	106	32	123	811
Year 8 – 2017	16	107	30	149	995
Year 9 – 2018	24	129	22	109	1185
Year 9 – 2019	22	127	16	123	1516
Average 11 year Population	--	124	--	128	705

Table 6. Population Sizes in 11 years - Minimum

Trial	Alternative		
	Proposed Action	Alternative	No Action
Lowest Trial	70	72	152
10th percentile	76	79	231
25th percentile	84	83	231
Median Trial	88	89	231
75th percentile	93	93	231
90th percentile	94	95	231
Highest Trial	100	98	231

Table 8. Population Sizes in 11 years - Average

Trial	Alternative		
	Proposed Action	Alternative	No Action
Lowest Trial	113	120	385
10th percentile	118	122	589
25th percentile	122	126	633
Median Trial	124	128	697
75th percentile	127	131	779
90th percentile	130	133	849
Highest Trial	135	136	992

Table 9. Population Sizes in 11 years - Maximum

Trial	Alternative		
	Proposed Action	Alternative	No Action
Lowest Trial	231	231	775
10th percentile	231	231	1170
25th percentile	231	231	1246
Median Trial	231	231	1482
75th percentile	231	231	1700
90th percentile	231	231	1908
Highest Trial	231	243	2297

Table 10. Average Growth Rate in 11 Years

Trial	Alternative		
	Proposed Action	Alternative	No Action
Lowest Trial	8.0	13.0	12.9
10th percentile	10.3	14.0	17.5
25th percentile	11.7	15.0	18.4
Median Trial	13.6	17.9	20.4
75th percentile	14.9	19.2	22.1
90th percentile	16.1	21.1	23.5
Highest Trial	16.6	23.2	25.8

Table 11. Totals in 11 Years -- Gathered

Trial	Alternative		
	Proposed Action	Alternative	No Action
Lowest Trial	304	233	0

Trial	Alternative		
	Proposed Action	Alternative	No Action
10th percentile	317	281	0
25th percentile	325	288	0
Median Trial	436	299	0
75th percentile	448	313	0
90th percentile	457	361	0
Highest Trial	484	400	0

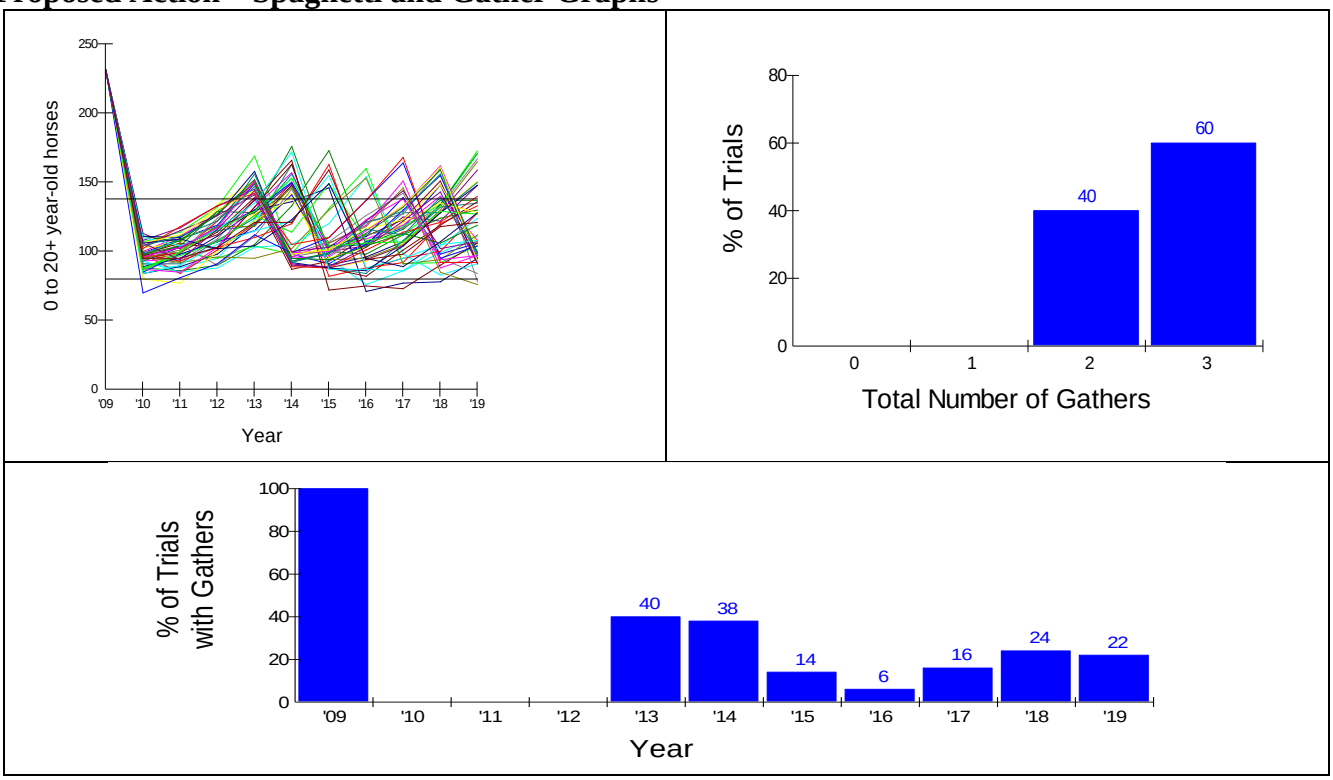
Table 12. Totals in 11 Years -- Removed

Trial	Alternative		
	Proposed Action	Alternative	No Action
Lowest Trial	177	202	0
10th percentile	194	247	0
25th percentile	203	250	0
Median Trial	245	263	0
75th percentile	256	276	0
90th percentile	266	301	0
Highest Trial	292	363	0

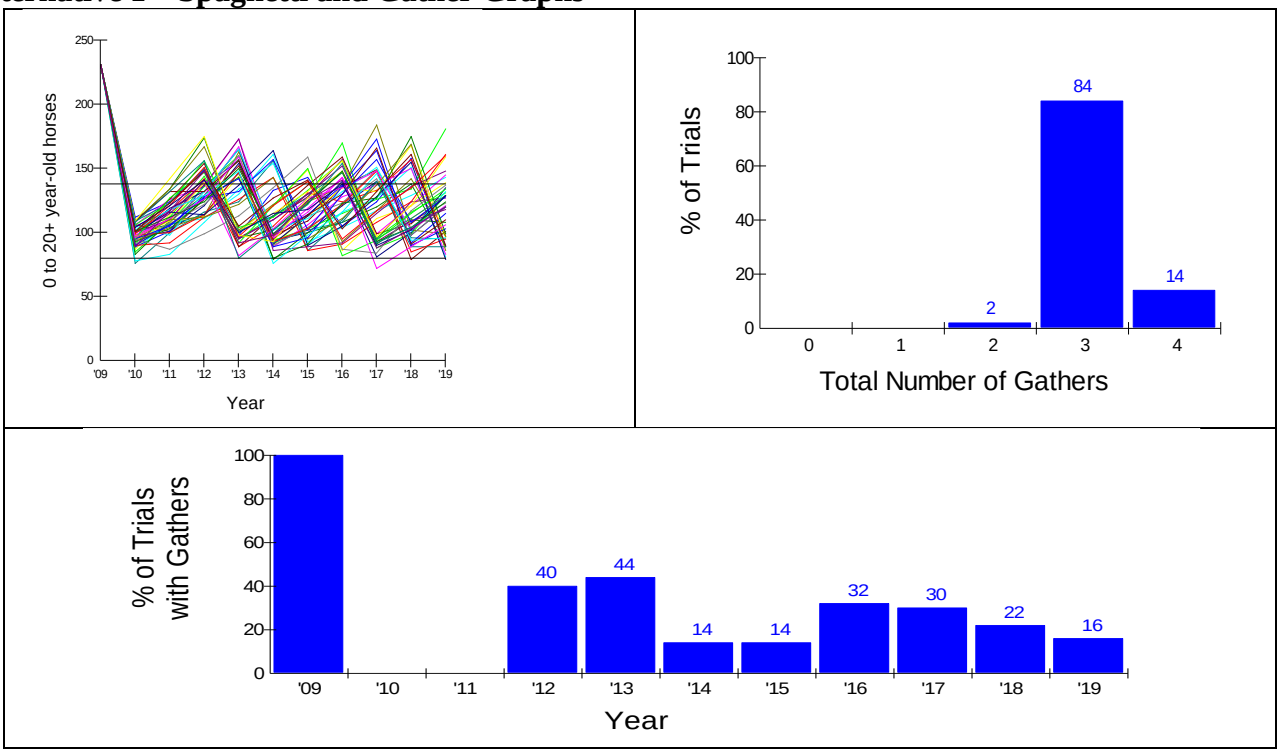
Table 13. Totals in 11 Years -- Treated

Trial	Alternative		
	Proposed Action	Alternative	No Action
Lowest Trial	33	0	0
10th percentile	38	0	0
25th percentile	43	0	0
Median Trial	64	0	0
75th percentile	72	0	0
90th percentile	75	0	0
Highest Trial	85	0	0

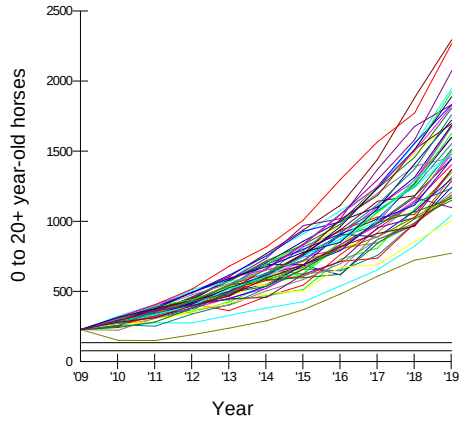
Proposed Action – Spaghetti and Gather Graphs



Alternative 1 – Spaghetti and Gather Graphs



No Action – Spaghetti Graph



Appendix E: Standard Operating Procedures for Population-level Fertility Control Treatments

22-month time-release pelleted porcine zona pellucida (PZP) vaccine:

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

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

Monitoring and Tracking of Treatments:

1. At a minimum, estimation of population growth rates using helicopter or fixed-wing surveys will be conducted before any subsequent gather. During these surveys it is not necessary to identify which foals were born to which mares; only an estimate of population growth is needed (i.e. # of foals to # of adults).
2. Population growth rates of herds selected for intensive monitoring will be estimated every year post-treatment using helicopter or fixed-wing surveys. During these surveys it is not necessary to identify which foals were born to which mares, only an estimate of population growth is needed (i.e. # of foals to # of adults). If, during routine HMA field monitoring (on-the-ground), data describing mare to foal ratios can be collected, these data should also be shared with the NPO for possible analysis by the USGS.
3. A PZP Application Data sheet will be used by field applicators to record all pertinent data relating to identification of the mare (including photographs if mares are not freeze-marked) and date of treatment. Each applicator will submit a PZP Application Report and accompanying narrative and data sheets will be forwarded to the NPO (Reno, Nevada). A copy of the form and data sheets and any photos taken will be maintained at the field office.
4. A tracking system will be maintained by NPO detailing the quantity of PZP issued, the quantity used, disposition of any unused PZP, the number of treated mares by HMA, field office, and State along with the freeze-mark(s) applied by HMA and date.

Preparation of the jab stick used to inject the time release PZP.

Freeze-marking the identifying letters on the left hip of the mare in the working chute.

Injecting the hip of the mare with the jabstick

Photos taken during the New Pass/Ravenswood HMA wild horse gather November 2007 and Callaghan Complex Gather December/January 2009.

Appendix F: Response to Public Scoping Comments

No.	Commenter	Comment	BLM Response
1	Safari Club International and Safari Club International Foundation	The Bureau has analyzed a reasonable range of alternatives.	Comment noted.
2	Safari Club International and Safari Club International Foundation	The disposition of excess horses post-gather was not part of the decision to be made here requiring only consideration of indirect impacts on the horses post-gather.	The EA considered the disposition of excess horses in section 2.1 as well as cumulative impacts in section 4 of the EA. Comment noted.
3	Safari Club International and Safari Club International Foundation	The Reveille Gather EA acknowledges that the ecosystem damage from excess horses harms other wildlife.	Comment noted.
4	Safari Club International and Safari Club International Foundation	The Reveille Gather EA meets all NEPA standards. FLPMA provides additional authority for the gather	Comment noted.
5	Individuals (including mass-generated form letters)	The Tonopah Field Office (TFO) is required to consider the "related social and economic effects of their proposed action."	This comment is outside the scope of this analysis. The BLM has made the determination that excess wild horses are present and require immediate removal consistent with the authority provided in the Wild Free Roaming Horses and Burros Act (WFRHBA).
6	Nevada Dept. of Wildlife (NDOW)	Gathering all horses found outside the HMA is strongly advocated.	Comment noted.
7	Nevada Dept. of Wildlife (NDOW)	Preserving the historical character of the herd by managing for color and conformation suggests a management strategy for adaptability as opposed to the merits of historic herd character.	The BLM also selects for overall animal health. Please refer to Section 2.1 of the EA.
8	Nevada Dept. of Wildlife (NDOW)	Poor range conditions in the Reveille area has been noted for an extended time with no sign of improving trend.	Comment noted.
9	Nevada Dept. of Wildlife (NDOW)	Quality of ferruginous hawks, golden eagle, and prairie falcon breeding ranges is likely the most affected by range conditions within the Reveille region.	Comment noted.
10	Lee Chesterfield	The BLM removes mustangs and burros and gives out more cattle grazing leases.	Removal of excess wild horses will not increase the number of grazing permits, or the number of livestock permitted to use the Reveille Allotment or Reveille HMA. These decisions are made following the completion of Rangeland Health Assessments and through issuance of Final Multiple Use Decisions.
11	Individuals	Postpone the Proposed Action and modify the Reveille FMUD and TFO RMP to reassess and increase the wild horse AML to	To modify the FMUD and RMP requires BLM to follow the decision planning process. The established AML was

No.	Commenter	Comment	BLM Response
		accommodate the wild horses currently in the HMA.	determined based on the analysis of monitoring data. Refer to Section 1.2 and Appendix B of the EA. Also refer to Section 2.3.4, which summarizes an Alternative to reduce livestock in the allotment. Refer to section 1.3 of the EA for details regarding the purpose and need for action and why this gather cannot be postponed.
12	Individuals	Legal settlement agreement does not supersede the agency's ability to utilize its authority to reassess AML.	The AML must be adjusted through a decision planning process. All available information was reviewed which led to the determination that excess wild horses exist within and outside of the Reveille HMA. This was detailed within the EA. The BLM is bound by the provisions within the 1987 Settlement Agreement and the 2001 and 2002 Orders from the Interior Board of Land Appeals (IBLA). To postpone the gather would be in violation with these orders and the WFRHBA. Refer to Section 1.2 and Appendix B.
13	Individuals	The Reveille Allotment encompasses more than 650,000 acres including the 105,500 acre HMA. The TFO allows 184 cattle to graze the HMA in addition to thousands of cattle in the adjacent allotment. The TFO must revise its current allotment of 80-138 wild horses in this 164 sq. mile area.	Under the 1976 Federal Land Policy and Management Act (FLPMA), BLM is required to manage public lands under the principles of multiple use and sustained yield. Managing use by livestock, together with wildlife and WH&B, and a host of other uses is a key part of BLM's multiple-use management mission under FLPMA. Livestock grazing is an authorized use of public lands and the impacts of this use have been analyzed in approved RMPs, Rangeland Health Assessments. , and subsequent FMUDS Since the last gather to remove excess wild horses, livestock have grazed in accordance with permit terms and conditions while wild horse numbers currently exceed AML.
14	Individuals	Given the allocation inequity of resources for wild horses, the TFO must utilize its discretion under 43 CFR 4710.5(a) to close or limit livestock grazing in the Reveille HMA and/or designate this area to be managed principally for wild horse herds under 43 CFR 4710.3-2.	HMAs are areas designated in the land use planning process for the long-term management of wild horses as a multiple use along with many other uses including livestock grazing[12.] The TFO does not administer any congressionally designated wild horse or burro "ranges" which are by definition in the Act "devoted principally but not necessarily exclusively to their welfare in keeping with the multiple-use

12. "The principal goal of this legislation is to provide for the protection of the animals from man and not the single use management of areas for the benefit of wild free-roaming horses and burros". 92nd Congress, Senate Report 92-242, June 25, 1971.

No.	Commenter	Comment	BLM Response
			management concept for the public land."
15	Individuals	As a part of the "human environment" it is imperative that public opposition to the Proposed Action and the negative social impacts be considered, analyzed, and included in the EA.	This comment is outside the scope of this analysis. The BLM has made the determination that excess wild horses are present and require immediate removal consistent with the authority provided in the WFRHBA. The BLM has not identified any significant impacts associated with the proposed gather and removal, and the post-gather estimated wild horse population size will be 80 wild horses. Based on the BLM's analysis, the population will be allowed to grow over the next 3-5 years, before another gather to remove excess wild horses is needed. Interested public will have the opportunity to enjoy the Reveille HMA wild horses now and in the future.
16	Individuals	By removing wild horses and burros from this HMA and failing to conduct on-the-range management to control population, the BLM ignores viable alternatives available.	Refer to section 2.3.2 of the EA for an explanation of why possible on-the-range population control was not feasible for this HMA. Population control through the use of fertility control and sex ratio modification is being implemented to slow population growth rates, reduce gather frequency and reduce the number of animals that must be removed through future gathers.
17	Individuals	The Proposed Action has a negative environmental impact by jeopardizing the long-term genetic viability and well-being of the Reveille herd by reducing the herd number below 150 individuals.	This issue was addressed in paragraphs 3 and 4 in Section 3.2 of the EA. Additional information was added to the EA regarding genetic health of the Reveille HMA and potential impacts of the gather. Refer to Section 3.2 and Appendix B of the EA.
18	Individuals	The agency tactics unnecessarily injure and kill innocent horses each time a round-up is conducted. The round-up stampedes, terrorize, and traumatize wild horses, injuring and killing some in every round up. Wild horse social structures are routinely shattered and family bands are torn apart. And with record low adoption rates, the horses that are captured face a lifetime of confinement in over-crowded shelters or are adopted out to those who would export them brutal slaughter.	The gather will be administered under the National Gather Contract and associated SOPs that prevent and minimize stress, injury, and gather related death. Refer to *Direct and Indirect Impacts* within Section 3 of the EA. Beyond the scope of this analysis.
19	Sherry Oster	Such dramatic action would reduce the herd to below genetic viability and would have negative environmental impact.	See comment 17 above.
20	Sherry Oster	I would ask that you consider alternative methods of herd management and seriously look at "in the wild" management plan.	The EA analyzed adequate alternative methods. Refer to comment 16 above. A healthy population of wild horses will remain within the Reveille HMA following the gather.

No.	Commenter	Comment	BLM Response
21	Sherry Oster	There is a good deal of data to show that these round-ups actually cause the fertility rates to double.	Research is ongoing through various agencies and organizations. This issue was addressed in the *Effects that differ between the Proposed Action and Alternative 1* portion of Section 3.2. Though fertility increases are possible, no credible data exists that suggests fertility rates would double. Future annual inventory flights of the HMA will monitor foaling rates.
22	Camille Sigmund	The BLM allows 184 cattle to graze in t his area designated for wild horses yet says only 80 to 138 can be allowed. Stop using legally designated wild horse areas for cattle grazing.	Refer to comments 13 and 14 above.
23	Irene Lopez	As usual you are letting cattle graze in wild horse areas. ..cattle must stop grazing in wild horse areas.	Refer to comments 13 and 14 above.
24	Irene Lopez	Cattle should be on the ranchers land (unless the cattle are wild) and not on public land! You must stop or reduce cattle grazing in designated wild horse areas and stop wasting tax payer $ by removing them.	Refer to comment 13 and 14 above. Reduction or elimination of cattle grazing within an HMA is determined through the decision planning process if warranted. Tax dollars are beyond the scope of this analysis.
25	Nevada Cattlemen's Association	Degradation to our public land is not acceptable by any user group.	Comment noted.
26	Nevada Cattlemen's Association	The Reveille HMA wild horse gather is needed to: - remove wild horses within the Reveille allotment from areas not designated for wild horse use - remove excess wild horses from within the HMA in accordance with the Stipulated Settlement dated October 1, 1987 and 200112002 IBLA Orders - to achieve a population size consistent with the established AML allowing for up to 3 years of population growth before AML is again exceeded - protect rangeland resources from deterioration associated with an overpopulation of wild horses, and - restore and maintain an thriving natural ecological balance and multiple use relationship on the public land with the provision of Section 3(b) (2) of the Wild Free Roaming Horses and Burros Act of 1971.	These issues were discussed throughout the EA. Comment noted.
29	American Wild Horse Preservation Campaign	Reveille horses should be managed on the range in a cost-effective and humane manner that includes - range improvements sufficient to allow and allow an increase in AML	Due to the arid nature of the habitat and limited resources, few types of improvements would be possible that could allow increases in the AML at this time. Large expanses of the Reveille HMA are in

No.	Commenter	Comment	BLM Response
			a degraded state reflecting limited perennial grasses. Improvement of these areas through seedings or other work would be very costly with little chance of success due to the low rainfall received in the area and the inherent potential of the soils. Range improvements of any sort will not result in increased forage which is the lacking component of this habitat.
		- a decrease in the number of livestock allowed to graze in the federally designated wild horse habitat - conversion of livestock grazing allotment to wild horses - aggressive use immunocontraception to control reproduction.	Refer to comments 13 and 14. Refer to Section 2.3.4 of the EA. The BLM is proposing and has evaluated fertility control within the Reveille HMA in addition to modification of sex ratios to reduce population growth rates. Every effort will be made to apply fertility control to all the mares to be released back to the HMA.
30	American Wild Horse Preservation Campaign	- Census data based on direct observational methods that the agency has acknowledged are inaccurate and being replaced by more accurate methods developed by the USGS.	Direct counts are an acceptable method of completing inventory surveys. Other methods are being developed and evaluated by USGS but are not currently replacing the direct count method.
		- Population estimates rely on a 20 percent population increase; however the agency lacks data to support this estimate. In fact, the National Academy of Sciences (1982) estimated the growth rate to be closer to 10 percent.	Population data specific to the Reveille herd collected by BLM specialists suggests a 20 percent population increase.
		- EA states on p. 23 that "Some mountain lion predation occurs, but it is not believed to be substantial." No documentation of this "belief" is provided.	The Reveille wild horse herd displays an average 20% recruitment rate which implies that natural controls and self regulation do not have a major impact on this growth rate.
		- EA states on p. 22 that the degree of movement of horses between area HMAs is "unknown due to the inability to track individual horse movement," yet concludes that "adequate interchange between HMAs within this "metapopulation" likely occurs to maintain genetic health of the Reveille HMA." No documentation for this supposition is provided.	Trailing, known wild horse movement patterns and documentation from previous gathers indicate movement occurs between Reveille HMA and the Stone Cabin HMA as well as the Nevada Wild Horse Range. Refer to Section 3.2 and Appendix B of the EA.
31	American Wild Horse Preservation Campaign	EA omits discussion of adaptive management strategy.	The WFRHBA requires that the BLM remove excess wild horses immediately thus adaptive management is not appropriate. Future management strategies will be identified during revision of the RMP and

No.	Commenter	Comment	BLM Response
			completion of an HMAP for the Reveille HMA with public input.
32	American Wild Horse Preservation Campaign	EA fails to consider the legal and social factors that affect land use decisions	This comment is outside the scope of this environmental analysis. Refer to the BLM's responses to Comments 5, 15 and 31 above.
33	American Wild Horse Preservation Campaign	Alternative gather methods not adequately analyzed.	The analysis considered a reasonable range of alternatives. See Section 2 of the EA.
34	American Wild Horse Preservation Campaign	Alternative to remove or reduce livestock not adequately analyzed.	Refer to Section 2.3.4 of the EA.
35	American Wild Horse Preservation Campaign	The EA does not adequately analyze the impacts of the proposed decision in regards to: - compensatory reproduction, - impacts to individual horses, and, - the genetic viability of the herd	These issues were addressed in detail in Section 3.2 of the EA.
36	The Cloud Foundation; Individuals	The AML for wild horses are incredibly low given the number of livestock permitted to graze on the Reveille HMA. The assignment of an AML of 138 is clearly based in prejudice rather than science and before any removal takes place it is necessary to re-evaluate AML.	The AML was established based on the analysis of wild horse inventory, precipitation data, and rangeland monitoring data. The AML was adjusted in 2001 based on this analysis due to the availability of forage and the movement of wild horses outside of the HMA. The livestock numbers allocated within the HMA were based on water service areas. Refer to Section 1.2, 3.3, 3.5 and Appendix C of the EA.
37	The Cloud Foundation; Individuals	It is irresponsible to remove over 70% of the Reveille wild horse and additionally applying infertility drugs to mares released back onto the HMA.	The removal is based on the determination of excess wild horses and the need to achieve a population consistent with the established AML. Application of fertility control is consistent with the WFRHBA and current national direction to reduce population growth rates and therefore increase the interval between gathers and reduce the number of horses that must ultimately be removed from the range in future gathers.
38	The Cloud Foundation; Individuals	Counting wild horse foals in the population count is not correct.	The number of foals observed during inventory flights is recorded to document the percent foals represented in the population over time, and provided in the EA for the readers interest.
39	The Cloud Foundation; Individuals	What the proposed action will do is to nearly eliminate a competing species for livestock. Wild horses determined, by this office, to be "excess" and in violation of "AML" if their population increases over 138. This is not multiple use management, this is managing wild horses in a ratio of 1:16 with cattle on a *designated wild horse management area.*	Please refer to comments 13 and 14. The BLM maintains wild horses within HMAs consistent with multiple use and with existing Land Use Plans. Currently, the livestock within the Reveille HMA portion of the Reveille Allotment are permitted for use by 184 head, based on water service areas of which the permittee has the water rights. Neither multiple use, nor the WFRHBA require equal use by wild horses and livestock. These determinations are

No.	Commenter	Comment	BLM Response
			made within LUPs, completed with involvement from the interested public.
40	The Cloud Foundation; Individuals	The range deterioration the range damage referred to in your EA is attributed to livestock….And yet the need to reduce grazing permits within the HMA is dismissed as "inconsistent with the Tonopah RMP Objectives…and multiple use management." The managing for multiple use on public, BLM managed lands must include balancing of resources, not simply reduction of wild horses.	Please refer to Section 1.7 for the list of documents that have contributed to wild horse management in the Reveille HMA. Review Section 1.2 for explanations of range damage attributed to wild horse use and 2.3.4 for analysis of an alternative considered but eliminated from detailed analysis to remove or reduce livestock grazing. Livestock use was addressed within the 2001 Reveille FMUD and the *Stipulation to Revise the Livestock Decision and to Dismiss Appeal,* signed in March 2006. Refer to Section 3.3 for more information.
41	The Cloud Foundation; Individuals	Further, the 1990 Government Accountability Office Report underscored that wild horse removals did not significantly improve range conditions. The report pointed to cattle as the culprit as they vastly outnumber horses on BLM-managed public land.	Monitoring data specific to these HMAs indicates that the excess number of wild horses is a causal factor in not meeting rangeland health standards. See Section 1.6, 3.5 and Appendix C of the EA.
42	The Cloud Foundation; Individuals	We question the legality of removing non-excess wild horses in order to allow for a projected 3-year population increase before reaching the Reveille AML of 138. The determination of maximum AML based on a lawsuit brought by a permittee, a user and guest of the public land's currently maintained in a losing welfare-grazing program, is also suspect.	The 1997 Tonopah Resource Management Plan provides that "*When the AML is exceeded, remove excess wild horses and/or burros to a point which may allow for up to three years of population growth before again reaching AML".* Rather than establishing an AML range, the TFO chose to set a single number as the AML, adhering to this provision in the RMP. The Reveille AML was established in this manner through the FMUD in 2001. The Proposed Action to remove excess wild horses to a post-gather population of 80 wild horses is consistent with the WFRHBA, the Tonopah RMP and the Reveille AML Decisions. The Reveille AML was adjusted in 2001 based upon the review and analysis of monitoring and other related data by the TFO, and was not based on a lawsuit brought on by a permittee.
43	The Cloud Foundation; Individuals	We question the removal of wild horses with the aim of maintaining/restoring rangeland health when 2,210 cattle will continue to damage the range and water sources on these public lands. What improvements will be seen through the removal of 198 horses?	Only 184 livestock are permitted to utilize the Reveille HMA portion of the Reveille Allotment. However, the wild horses from Reveille HMA have moved out of the HMA boundaries to access forage, water and habitat. Inventory flights since 2006 shows that 34-88% of the animals observed where found outside of the HMA boundaries in areas not designated for their use. Expected improvement to Rangeland Health is detailed in Section 3.5 of the EA. Improvement within arid rangelands requires long time periods to detect and quantify

No.	Commenter	Comment	BLM Response
			upward trends. Over time (10-15 years), maintaining the population consistent with AML should result in increased frequency and production of key forage species and improvements to riparian areas. Refer also to Appendix C.
44	The Cloud Foundation; Individuals	Skewing the sex ratio to control the population comes with significant social disruption to the herd and would likely result in compensatory reproduction as the herd works to re-establish a socially functional balance of males and females… By increasing the number of males and decreasing the females, the fabric of wild horses' society will be torn apart. There will be increased competition among the stallions to win and keep a mare; the health of the stallions and mares can decline due to all the excessive fighting and running; more injuries will occur, not only to stallions but to the mares and particularly to foals caught up in the melee. Mares could be raped and passed from stallion to stallion. I saw and filmed this sad scenario in the Marietta Wild Burro Range in Nevada. BLM had intentionally left more jacks and removed the jennies. The females on infertility drugs will be coming into heat monthly during the spring, summer, and fall, They will be bred but will not settle and will come back into heat monthly. They will be eagerly and perhaps brutally fought over and pursued by the over population of males. It is easy to envision an unnaturally violent scenario replacing the relative calm and stability of wild horse society.	Adjusting the sex ratio to 60% studs and 40% mares is not an extreme departure from ratios encountered in wild herds which are normally about 50:50, but may swing 5-10% either way. The impacts are not anticipated to be substantial and are detailed within Section 3.2 of the EA. Burro population dynamics are very different from those of wild horses, and are not comparable. The impacts to social behavior of mares vaccinated with PZP are currently being further researched. Indications of the ongoing research are that there could be minor impacts to mare behavior, but that the benefits of reduced population growth rates outweigh minor impacts to herd dynamics.
45	The Cloud Foundation; Individuals	We regret that you did not set the comment period to end on Sunday, June 27 or Monday, June 28 – thus allowing the public greater time to compose informative and comprehensive comments to this EA. In the future, please give 30 days or more for the public to comment – this EA was released on May 27th and comments due June 25th.	The TFO accepted comments until the close of business Monday, June 28th. Any reference to June 25th was an error in the news release and was corrected.
46	In Defense of Animals	The Proposed Action incorrectly claims that the BLM is "required to immediate remove excess animals once a determination has been made that excess animals are present."	Refer to Section 1.5. The WFRHBA and 43 CFR 4720.1 require the immediate removal of excess wild horses when it is determined that an overpopulation exists. Additionally, federal court order CV-R-85-535-BRT, requires the BLM to remove the horses within 120 days. These provisions exist within the current AML as detailed within the AML decisions and IBLA orders pertaining to this issue. Refer to Section 1.2 and Appendix B of the EA.
47	In Defense of	The TFO has the authority to reassess the	Please review comments 13 and 14. The

No.	Commenter	Comment	BLM Response
	Animals	current Appropriate Management Levels (AMLs) for wild horses and close livestock grazing within the HMA, pursuant to the BLM's discretion under 43 C.F.R. 4710.5(a) and to designate the HMA to be managed principally for wild horse herds under 43 C.F.R. 4710.3-2.	BLM acknowledges the authority to revisit the existing AML as needed. The TFO reviewed all available data to conclude that excess wild horses exist, and need to be removed to a population consistent with the current AML. None of the available vegetation or other data suggests that an increase to the AML is warranted without risking further decline of the habitat and further degradation of the range. Refer to Section 1.2, and 2.3.4 of the EA. The Reveille HMA is not a wild horse "range" under 4710.3-2, which requires congressional designation.
48	In Defense of Animals	The Proposed Action does not adhere to the 1971 Wild Free-Roaming Horses and Burros Act (WFRHBA) Section §1333 (a) which states, "All management activities shall be at the minimal feasible level…" Clearly rounding up and removing wild horses does not fulfill the requirement of "minimal feasible" management when a variety of options of on-the-range management have been dismissed and eliminated by the TFO and the proposed Environmental Assessment (EA).	Under the law, BLM is required to manage wild horses in a thriving natural ecological balance and multiple use relationship on the public lands and to remove excess immediately upon a determination that excess wild horses exist. Minimally feasible level does not refer to gathers specifically, but originally this wording was chosen during early congressional hearings to prevent the wild horses and burros from being managed in "zoolike" settings[13.] The proposed gather and population control alternatives are completely in accordance with the WFRHBA. "A variety of options of on the range management" is general and does not provide enough detail to be considered for an alternative in the EA. The TFO sent scoping letters to the interested persons mailing list for this HMA and did not receive any recommendations for alternatives during the scoping period. The TFO evaluated all reasonable Alternatives in the EA.
49	In Defense of Animals	The need, as outlined in the EA, to "restore a thriving natural ecological balance and prevent degradation of rangeland resources" can be accomplished through appropriate and adequate on-the-range management of wild horses – measures which the TFO has not implemented, continues to not implement and does not project to adequately implement in any documents provided to date.	Please refer to comment 16 and 48. The TFO appreciates the recommendation for "on the range management", but this suggestion does not contain enough detail to be considered in the EA. The TFO is proposing to implement population control measures which will reduce population growth rates, increase gather frequency in the future and reduce the number of excess wild horses that must be removed from the

13. "The committee wishes to emphasize that the management of the wild free-roaming horses and burros be kept to a minimum both from the aspect of reducing costs of such a program as well as to deter the possibility of "zoolike" developments. An intensive management program of breeding, branding and physical care would destroy the very concept that this legislation seeks to preserve." 92nd Congress, Senate Report 92-242, June 25, 1971.

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			range in future gathers..
50	In Defense of Animals	The Proposed Action and alternatives provided in the EA are insufficient and TFO is negligent in fulfilling its mandate to manage wild horses at "minimal feasible level" and therefore the Proposed Action should be postponed until the inadequacies outlined herein are addressed.	Please refer to comment 48.
51	In Defense of Animals	Impacts of Proposed Action on Genetic Viability of Herd Not Evaluated.	Refer to comment 17. Additional information has been added to Section 3.2 and Appendix B of the EA.
52	In Defense of Animals	Rather than basing the Proposed Action on science, the EA bases its Proposed Action on supposition by claiming, "It is not expected [emphasis added] that genetic health would be impacted by the Proposed Action."	Refer to comment 17 and Section 3.2 of the EA for more information about the anticipated genetic health of the Reveille HMA and potential impacts of the proposed gather.
53	In Defense of Animals	The proposal to restock horses after capture with a 60/40 stallion to mare ratio is not based on science and will create social problems among herd members.	Refer to comment 44.
54	In Defense of Animals	… instead of removing horses and rather implementing an aggressive fertility control strategy using the reversible PZP vaccine, would allow all individuals to contribute to the gene pool and would improve, rather than harm, this small population's genetic diversity.	Refer to comments 51 and 52. Additional information has been added to Section 3.2 and Appendix B of the EA pertaining to the genetics and the impacts of the action alternatives in the EA.
55	In Defense of Animals	In addition, the EA states that, "Genetic baseline sampling analysis has not been completed for the Reveille HMA." As such, removal of individuals from such a small herd should be postponed until scientific evidence of genetic baseline sampling confirms the genetic health of the herd.	Genetic baseline samples will be collected and analyzed for the Reveille herd. If results conclude that genetic variability is jeopardized, management strategies will be decided through the decision planning process. To collect baseline data, a gather must take place to allow an adequate sample of animals. Current analysis timeframes are two years or more before the reports are received by BLM. Lack of genetics data on the herd does not justify allowing an overpopulation of excess wild horses to exist within the Reveille HMA and outside of HMA boundaries. Refer to comment 17.
56	In Defense of Animals	The EA and Proposed Action are not in compliance with NEPA which requires the assessment of reasonable alternatives that would avoid or minimize adverse effects of the Proposed Action.	The analysis considered a reasonable range of alternatives. See Section 2 of the EA and previous related comments 16 and 20 and 32.
57	In Defense of Animals	The TFO did not sufficiently provide reasonable alternatives to the Proposed Action. Instead TFO provided one meaningless variation (Alternative 1) which included the same roundup action, same sex ration manipulation and only removed the fertility control component. The No Action alternative is provided as a token alternative	Refer to comment 56.

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		in an effort to seemingly fulfill NEPA requirements. However, this last alternative does not offer a meaningful alternative.	
58	In Defense of Animals	Adaptive Management must be included in the Proposed Action in order to provide meaningful alternatives to mitigate the Proposed Action. Adaptive Management is a decision process that promotes flexible decision making that can be adjusted.	See comment 31 and 57 above. Refer to Section 1.2 of the EA for more details of the Stipulated Settlement ordering a gather when AML is exceeded.
59	In Defense of Animals	Through Adaptive Management the TFO Resource Management Plan (RMP) can be modified. Adaptive Management could and should be utilized to reassess and increase Appropriate Management Levels (AML).	Refer to comment 11, 31 and 57. The Tonopah RMP cannot be modified through adaptive management. An RMP revision would be required and is currently planned for completion within the next 4 years.
60	In Defense of Animals	…the Secretary must make two determinations and has the discretion to consider actions outside of roundup and removal, the EA must analyze reasonable alternatives such as postponement of the roundup in order to revise RMP, reassess and increase AML, conduct range improvements to increase AML, etc.	Refer to comments 57, 58, 59 and other related comments above. Range improvements are outside the scope of this analysis.
61	In Defense of Animals	The 1987 Stipulated Settlement and 2001/2002 IBLA Orders – neither which was provided as appendices in the EA – do not negate the discretion the TFO maintains with regards to management of livestock in this HMA. The lack of serious consideration for removal of livestock, increasing of AML and postponement of the Proposed Action is evidence that TFO has no intention but to proceed with the Proposed Action – despite obvious alternatives available to mitigate the proposed action and tremendous public opposition to the Proposed Action.	Refer to comment 13 regarding the livestock grazing decisions. To revise any grazing authorization must go through the decision planning process. If the gather was postponed, the BLM TFO would be in violation of the court order and WFRHBA. Refer to Section 3.3 for more information about the Livestock grazing in the allotment.
62	In Defense of Animals	The EA claims that decreasing or eliminating livestock grazing in the HMA is "inconsistent with the Tonopah RMP objectives, Reveille Allotment FMUD (2001) and is inconsistent with multiple use management" and "would also violate the 1987 Stipulated Settlement and 2001/2002 IBLA Orders." This claim erroneously alleges that the TFO does not have the discretion to remove or reduce cattle grazing from this HMA and that merely reducing livestock grazing no longer fulfills FLPMA and other requirements.	Refer to comment 13 and 14. The Tonopah RMP includes livestock grazing as part of the multiple use management of public lands within the administrative sphere of TFO. Any changes to resource allocations must undergo the lengthy decision planning process.
63	In Defense of Animals	The Proposed Action does not adequately mitigate the fundamental reason for wild horse removal which is outlined in the EA: "The competition for forage resources between livestock and wild horses puts an increasing demand on the resources because of overlapping diets."	The fundamental reason for this gather is to remove excess wild horses present within and outside of the HMA. Further, once AML is exceeded the wild horses must be gathered as outlined in the court settlement documents and IBLA orders. Refer to comment 46 above and Section 1.3 of the

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			EA.
64	In Defense of Animals	This new data/information of the illegality of the BLM's practice of warehousing wild horses in long-term government holding facilities is one such basis to modify the RMP and Record Of Decision and to incorporate new management approaches…	Beyond the scope of this analysis.
65	In Defense of Animals	The EA's elimination from consideration of the alternative to decrease or eliminate livestock grazing in each of the affected HMA pursuant to 43 C.F.R. 4710.5(a) is inconsistent with analyzing reasonable alternatives that would avoid the Proposed Action.	Refer to comment 13, 14 and 34. To decrease or eliminate livestock grazing is not consistent with the Tonopah RMP, and would not satisfy the BLM's obligations from settlements or the purpose and need identified in Section 1.3 of the EA.
66	In Defense of Animals	The EA inadequately dismissed BLM authority under 43 C.F.R. 4710.5(a) by claiming that "this authority is usually [emphasis added] applied in cases of emergency." This is plain acknowledgement that the BLM has the discretion to utilize this authority in non-emergency situations such as this Proposed Action.	In cases of emergency, the BLM may consider the application of 43 CFR 4710.5. However, outside of emergency situations, the decision has to go through the planning process.
67	In Defense of Animals	A reasonable alternative that should be included: postponement of the roundup to allow the TFO to utilize an Adaptive Management Approach to amend the RMP and increase AML based on the decrease of livestock grazing in the HMA.	Refer to comment 11, 31, 57 and 59 above.
68	In Defense of Animals	A reasonable alternative that should be included: postponement of the roundup to allow the TFO to utilize an Adaptive Management Approach to amend the RMP and increase AML based on the decrease of livestock grazing in the HMA and to use fertility control to control the population.	Refer to comment 11, 31, 57, 59 and 67 above.
69	In Defense of Animals	A reasonable alternative that should be included: Postponement of the roundup to allow the TFO to utilize an Adaptive Management Approach to amend the RMP and increase AML and implement a reduction or ban on predator hunting or "management" on BLM-managed lands in and around the affected HMA to explore the impact on horse population reduction.	Refer to comment 68. With growth rates at 20%, it is clear that current natural predation is not sufficient enough for population control. Predator control is administered by the USDA Wildlife Services and hunting is managed by Nevada Department of Wildlife (NDOW).
70	In Defense of Animals	The EA must document claims and provide copies of cited studies in the appendix. Specifically, below are a few claims included in the EA without any documentation: - "Excessive utilization, trampling, and trailing by wild horses would degrade the vegetation resources and prevent improvement of range." What evidence	Field monitoring indicates that such degradation is not caused *primarily* by wild horses but that wild horses have contributed to the degradation. This was detailed in the documents identified in Section 1.7 of the EA. This experience has been gained through over 39 years of management of wild horses

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		suggests such degradation is caused primarily by horses and not livestock? - "Experience has shown that because wild horses are so resilient that the herds do not show impacts to growth rates, body condition or death rates until the habitat has been severely and potentially irreparably degraded." What evidence or "experience" suggests that horse population growth does not diminish before irreparable degradation to the land occurs?	and burros by the BLM in 10 western states. The Battle Mountain District administers 28 HMAs over 3.6 million acres with a current population of 4,300 wild horses and burros. The Battle Mountain District has experienced many wild horse drought and fire emergencies requiring the removal of horses and burros to prevent death from starvation or dehydration. Through these times, the BLM has learned that population growth rates do not diminish before irreparable degradation to the land occurs.
71	In Defense of Animals	- "Increased trailing and trampling would occur as horses travel longer distances to locate forage from the available water sources. Key forage species would further be lost within the plant communities, along with increases in undesirable species." What scientific evidence supports this claim?	Data collection within the Battle Mountain District since passage of the WFRHBA has documented trailing and trampling as wild horses must travel farther to access water when populations exceed AML. This monitoring has also documented that excess wild horses on the range cause over utilization and loss of key forage species in the plant community. Data collection within the Reveille HMA (refer to Section 1.7) also has documented loss of desirable species and trailing and trampling by wild horses.
72	In Defense of Animals	- "Wild horses were also identified as contributing to the functional at risk ratings of some riparian areas due to trailing." What evidence supports the claim that the Reveille horses contributed to degradation of riparian areas? - "The proposed gather would indirectly impact riparian wetland zones by decreasing utilization, trailing and trampling by wild horses in these sensitive areas, thus allowing for riparian wetland areas to improve through natural processes." What documentation or evidence does TFO have that livestock usage would prohibit riparian wetland areas to improve? - "Deterioration of uplands and riparian areas through an overpopulation of wild horses would not improve habitat for future generations of wild horses, burros and other wildlife." What evidence supports the claim that an overpopulation of wild horses has contributed to the "deterioration of uplands and riparian areas?"	Observations of wild horse use and trailing at riparian areas. This information is available in the documents listed in Section 1.7 of the EA. This statement does not refer to livestock. The statement refers to indirect impacts of conducting a wild horse gather. Refer to the documents identified in Section 1.7 of the EA for information about the contribution by wild horses to degradation of uplands and riparian areas. Also refer to Sections 1.6, 3.5, 3.6 and Appendix C of the EA.
73	In Defense of Animals	-"It is expected that implementation of the proposed wild horse gather and achievement of the established AML would result in improved condition of native rangeland and riparian areas throughout the Reveille HMA.	It is well known in the field of Natural Resources that degraded vegetation communities and riparian areas are more vulnerable to invasion by invasive species. It is also well established that grazing

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		As a result, the risk of spread by noxious weeds and invasive species across the Reveille HMA would be reduced." What evidence is available to support the claim that wild horses contribute to the spread of noxious weeks and invasive species and that removal of horses would reduce the spreading of these plant species? - "Without completion of a wild horse gather, ground disturbing activities would not occur which could encourage the spread of invasive and noxious plant species." What scientific data suggests that only a roundup of wild horses could diminish the spread of invasive and noxious plant species? - "Continued population levels in excess of the AML …could promote spread of invasive or noxious species particularly along trails and near water sources."	animals are able to spread weeds through their manure or by hooves and on the hair coats, depending upon the mode of spread and the palatability of the weeds. Maintaining AML within HMAs promotes healthy rangelands which are less vulnerable to invasive species. The EA does not infer that only a wild horse gather would diminish spread of noxious weeds. The statement summarizes the effects of the No Action Alternative. Refer to comment above.
74	In Defense of Animals	-"An overall lower population and density of wild horses across the landscape would promote recovery of native vegetation currently in a state that is less than the potential or desirable condition." What evidence supports the claim that wild horses contribute to the current state of native vegetation in a "less than the potential or desirable condition?" - "With implementation of the Proposed Action or Alternative 1, excessive use by wild horses would not occur as the AML is maintained. Key forage species would improve in health, abundance and robustness, and would be more likely to set seed and reproduce, which in turn would contribute to their increase within the plant community" What evidence is available that this objective could not be achieved through removal of livestock?	Refer to the documents identified in Section 1.7 of the EA and responses above. This statement pertains to impacts of conducting a wild horse gather and does not pertain to livestock.
75	In Defense of Animals	- "mares would reflect higher body condition which would result in larger, stronger foals more apt to reach their genetic potential and survive adverse conditions." What evidence supports the claim that Reveille foals currently do not "reach their genetic potential?"	The EA does not claim that the Reveille HMA foals do not reach their genetic potential. Experience has shown that limited resources and over population result in reduced body size and condition. Also refer to *Wild Horses of the Great Basin*, by J. Berger[14.]

14. Berger, J. 1986. Wild Horses of the Great Basin, The University of Chicago Press, Chicago. 326 pp.

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			According to research conducted by Joel Berger on the Granite Range of Nevada in the early 1980's, many factors affect wild horse population dynamics, reproductive success, and overall success on the range through harsh winters and drought summers. The research determined that foals raised in better condition ranges suckled longer as foals, matured to puberty faster, and attained "critical body mass" sooner than those raised on poorer quality ranges. Berger states ". . . females that occupied better home-range areas produced more offspring; those offspring then suckled longer and grew faster.
76	In Defense of Animals	The EA must thoroughly analyze and provide: - Wild horse monitoring data (for each of the past five years) - A listing and description of all horses (and bands) living within the HMA - Demographic data on those horses/bands - Comparative resource allocations (and capacity) in the HMA for wildlife, livestock and wild horses - Identification of range improvements made over each of the past five years(description/ year) - Identification and analysis of fencing in and around the affected HMA and how each fencing impacts wild horses - Description and census of predators within the HMA and details outlining any predator control programs and/or the number of hunting permits for predators within and around the HMA - Estimated financial cost to taxpayers for the proposed roundup, removal and short-/long-	 Refer to the EA, Sections 3.2, 3.5, 3.6 and Appendix B and C of the EA. Outside of the scope of this analysis. This information is not required for a wild horse gather EA. Outside of the scope of this analysis. This information is not required for a wild horse gather EA. Estimated sex ratio and age structures are summarized in Section 3.2 and Appendix B of the EA Refer to the documents identified in Section 1.7 for analysis of carrying capacity and allocation of AUMs to wild horses and livestock. Outside of the scope of this analysis. This information is not required for a wild horse gather EA. Outside of the scope of this analysis. This information is not required for a wild horse gather EA. The north, east and south boundaries of the HMA are not fenced. Only the boundary between Stone Cabin and Reveille HMAs is partial fenced. Outside of the scope of this analysis. This information is not required for a wild horse gather EA. Refer to comment 69 above. See BLM's response to Comment #15 above.

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		term holding of wild horses (breakdown of costs should be provided for various components including internal staff costs, contractors, etc)	
		- Provide the locations and conditions of water sources (man-made and naturally-occurring) - identify the location of the wells, livestock watering, indicate proximity to naturally-occurring water sources, etc. (specify if any water sources are not on private lands)	Refer to the documents identified in Section 1.7 of the EA. This comment is outside of the scope of the EA.
		- Identify water improvements made (provide dates and description of each improvement)	Outside of the scope of this analysis. This information is not required for a wild horse gather EA.
77	In Defense of Animals	The TFO and BLM refuse to consider or offer changing the time of year for the roundup as an alternative to the Proposed Action.	Please refer to comment 11, 31, 57 59, and 67.