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In Reply Refer To:
4700
(NV-032)

JUN 25 2003

Dear Interested Public:

Enclosed is the Decision Record/Finding of No Significant Impact (FONSI) for the Pinenut Mountain Herd Management Area (HMA) Gather Plan and Environmental Assessment (EA) issued by the Carson City Field Office. An EA was sent out for public review and comment on March 31, 2003, with the comment period ending on May 4, 2003. Based on the comments received the EA was modified substituting the Pinenut removal data for the Garfield data previously used. In addition an error was found on page 14 of the EA, the AUMs of livestock use is actually 10,042.

The BLM would like to thank the individuals that commented on the Gather Plan/EA. If you have any questions, please contact Jim Gianola at (775) 885-6140.

Sincerely,

Daniel L. Jacquet
Assistant Manager, Renewable resources
Carson City Field Office



United States Department of the Interior

BUREAU OF LAND MANAGEMENT

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In Reply Refer To:
4700
(NV-032)

Department of Conservation and Natural Resources
Commission for the Preservation of Wild Horses
885 Eastlake Boulevard
Carson City, Nevada 89704

JUN 27 2003

Dear Ms. Barcomb:

Thank you for your comments concerning the Pinenut Mountain Capture Plan/Environmental Assessment. Based on your comments a modification of the Capture plan/EA was made. As suggested, the information from the last removal of the Pinenut HMA in 1995 was used as a basis for our population summary. In addition an error was found, the AUMs of domestic livestock use is actually 10,042 not the 15,466 identified in the draft document.

Enclosed is the Decision Record/Finding of No Significant Impact (FONZI) for the Pinenut Mountain Capture Plan and Environmental Assessment issued by our office on March 31, 2003. We have considered all comments received as part of the decision making process. There were a total of five comments received; one supported the proposal, one opposed the proposal, two recommended changes and the remaining one was neutral in nature.

Your comments will be addressed as they appear in your letter dated April 22, 2003:

Page 1, paragraph 2; The Multiple Use Decision finalized in 1995 was implemented to set the overall appropriate stocking rates for the HMA and associated allotments. It was never the intention to either reduce wild horse use or increase livestock use but to set a carrying capacity for all uses based on monitoring which would result in a thriving natural ecological balance within the HMA. As a result of the Decision in 1995 of the 9 allotments involved, 3 had no change in domestic livestock grazing use, 4 had the preference reduced, 1 had the entire preference cancelled and 1 added a Temporary Non Renewable clause. This was partly justified to accommodate the identified level of horse use.

Since the FMUD in 1995 no allotments have been abandoned and no controlled burns have been conducted within the HMA. Current monitoring data has been collected and indicates the number of horses currently present is excessive and is causing resource damage on not only uplands but riparian areas as well. Should you wish to review the current data it is available at the Carson City Field Office.

An AML is set based on an analysis of available monitoring data, including precipitation, and is an effort to allocate forage to all competing uses on a long term basis. Should the situation not change appreciably then the AML would remain as set.

We feel the AML is still accurate and is not obsolete, with current monitoring indicating that the number of horses is in excess of the carrying capacity of the HMA. The AML can best be determined to be accurate when it is actually achieved and the situation on the ground can be assessed.

Page 2, paragraph 1; Prior to 1995 the policy in place was to capture and remove only the number necessary to achieve our designated population level. Horses were not aged in the field and separated by sex only with the resulting population data entered into WHBIS by the holding facility. In 1994 as a result of the selective removal criteria not all gathered horses were removed with a certain number released back into the HMA. At this point, the information for the released horses was gathered in the field. The only requirement as to the type of data collected in the field during a gather was covered by Instruction Memorandum 94-165 dated 4/6/94 which stated that the only information required to be collected pertaining to the horses themselves was species, sex and age. There was no requirement for the documentation of color which many horse groups felt should not be considered in management since it did not directly relate to the ability of the horses to survive. These same groups felt that if the BLM managed for color as one of the primary population characteristics the horses "wild" qualities would be diminished.

Page 2, paragraph 2; The data from the 1995 gather was reviewed and shows that approximately 9% of the horses captured were 15-19 years old and 12% were 20+. During this removal horses with collars were also captured. These horses were collared in conjunction with a study conducted in the late 1970s which would put their ages near 30.

The population model is used primarily to help evaluate various management scenarios and assess the potential impacts based on those scenarios. As stated in the EA at page 38 the population model is only a tool to describe what could happen to a particular population if a given set of assumptions about survival, reproduction etc. and management actions hold true. It is not intended to be the sole basis of management of any population.

As discussed in the EA, the animals returned will be as close to the age and sex ratio of the population captured as allowed by existing policy. It is felt that the population returned, even if the selective removal policy is strictly implemented will, without doubt remain a viable population.

Page 2, paragraph 4;

We have substituted the actual data from the 1995 gather and as stated earlier, have current monitoring data to support our actions. Based on our analysis it is felt that the AML is not only correct and but once achieved will assure a viable long term horse population which will result in a thriving natural ecological balance and multiple use relationship in the Pinenut HMA.

**FINDING OF NO SIGNIFICANT IMPACT
AND
DECISION RECORD**

**Pinenut Mountain Herd Management Area
Capture Plan and Environmental Assessment
NV-030-03-18**

Finding of No Significant Impact

Based on the analysis of Environmental Assessment NV-030-03-20, I have determined that the action will not have a significant effect on the human environment, and therefore, an environmental impact statement will not be required.

Decision

After careful consideration of all comments received it is my decision to authorize the Pinenut Mountain Herd Management Area Plan and Environmental Assessment as described in the Proposed Action of EA-NV-030-03-20. This document as well as the associated AML will remain in effect until an analysis of monitoring information indicates they are no longer valid.

Rationale

The Proposed Action meets the criteria described in the Federal Management and Policy Act of 1976 to prevent undue and unnecessary degradation of public land and the 43 CFR 4700 Wild Horse and Burro Regulations. The Proposed Action is in conformance with the Carson City Field Office Consolidated Resource Management Plan (2001) which states that we shall remove excess wild horses and burros to preserve and maintain a thriving natural ecological balance and multiple use relationship. The Proposed Action is also in compliance with all federal, state and local laws regulations and associated planning documents.

After careful consideration of all comments received from the public and a review of potential impacts of the alternatives analyzed in the EA, the selection and implementation of the Proposed Action would result in achieving a thriving natural ecological balance and multiple use relationship within the Pinenut HMA.

Authority

The authority for this decision is contained in Sec. 3(a) and (b) of the Wild-Free Roaming Horse and Burro Act (P.L. 92-195) as amended and Title 43 Code of Federal Regulations (CFR), which states in pertinent parts:

4700.0-6(a): "Wild horses and burros shall be managed as self-sustaining populations of healthy animals in balance with other uses and the productivity of their habitat."

4710.3-1: States in part that "Herd management areas shall be established for a the maintenance of wild horses and burros herds. In delineating each herd management area, the authorized

officer shall consider the appropriate management level of the herd, the habitat requirements of the animals, the relationships with other uses of the public lands and adjacent private lands and the constraints contained in 4710.4.”

4710.4. “Management of wild horses and burros shall be undertaken with the objective of limiting the animals’ distribution to herd areas. Management shall be at the minimum level necessary to attain the objectives identified in approved land use plans and herd management area plans.”

4720.1 States in part that, “Upon examination of current information and a determination by the authorized officer that an excess of wild horses or burros exist the authorized shall remove the excess animals immediately...”

4720.2-1. States in part that, “Upon written request from the private landowner to any representative of the Bureau of Land Management, the authorized officer shall remove stray wild horses and burros from private lands as soon as possible.”

Appeal Procedures

The Record of Decision for a the Pinenut Mountain Capture Plan and Environmental assessment is placed in Full Force and Effect in accordance with Title 43 of the Code of Federal Regulation at 4770.3(c).

Within 30 days of receipt of this decision you have the right of appeal to the Board of Land Appeals, Office of the Secretary, in accordance with the regulations at 43 CFR 4.400. If an appeal is taken you must follow the procedures outlined in the enclosed Form 1842-1, Information on Taking Appeals to the Board of Lands Appeals. Within 30 days after you appeal, you are required to provide a Statement of Reasons to the Board of Land Appeals and a copy to the Regional Solicitor’s Office listed in item 3 on the form. Please provide this office with a copy of your Statement of Reasons. Copies of you appeal and the Statement of Reasons must be also served upon any parties adversely affected by this decision. The appellant has the burden of proof of showing that the decision is in error.

In addition, within 30 days of receipt of this decision you have the right to file a petition for a stay (suspension) of the decision **together** with your appeal in accordance with the regulations at 43 CFR 4.21. The petition must be served upon the same parties specified above. The appellant has the burden of proof to demonstrate that a stay should be granted.

Date

Daniel L. Jacquet
Assistant Manager
Renewable Resources

Pinenut Mountain

Herd Management Area

Capture Plan/Environmental Assessment

Update Final

NV-030-03-20

June 24, 2003

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I. BACKGROUND INFORMATION

A. Introduction

With passage of the Wild Free-Roaming Horse and Burro Act of 1971 (Public Law 92-195), Congress found that: "Wild free-roaming horses and burros are living symbols of the historic and pioneer spirit of the West". The Act states that wild free-roaming horses are to be considered in the area where presently found, as an integral part of the natural ecosystem of the public lands. The Secretary was ordered to "manage wild free-roaming horses and burros in a manner that is designed to achieve and maintain a thriving natural ecological balance on the public lands".

The BLM National Wild Horse and Burro Strategy involves establishing and achieving Appropriate Management Levels (AML) on all herd established management areas (HMA's) managed by the BLM, and to achieve and maintain AML on all HMA's following a four-year gather cycle. The numbers of animals projected to be removed, based on this four year rotation, were estimated based on the use of the wild horse population model developed by Dr. Stephen Jenkins of the University of Nevada Reno.

This Environmental Assessment and Gather Plan for the Pinenut Mountain HMA analyzed the impacts associated with the Proposed Action and the Alternatives, including the No Action Alternative. Neither a Population Management Plan (PMP) nor Herd Management Area Plan (HMAP) has been completed for the Pinenut Mountain HMA.

B. Purpose of and Need for Action

The purpose of the action is to achieve and maintain the AML for wild horses in the Pinenut Mountain HMA, collect information on herd characteristics and determine herd health. By achieving and maintaining AML in the Pinenut Mountain HMA, BLM would also meet it's objectives in the HMA and be in compliance with applicable laws and regulations. These objectives include:

- *Manage the Pinenut Mountain HMA to achieve and maintain a thriving natural ecological balance, and multiple-use relationship.*
- *Manage the Pinenut Mountain HMA wild horse population to preserve and enhance the historic physical and biological characteristics of the herd.*
- *Preserve and maintain a healthy and viable wild horse population within the HMA.*

- *Manage the Pinenut Mountain HMA wild horse herd as a self-sustaining population of healthy animals in balance with other uses and the productive capacity of their habitat.*

Wild horses were last gathered in the Pinenut Mountain HMA in December of 1995. Upon completion of the gather, the population was estimated to be 265 wild horses. Since that time the population has grown to an estimated 439 wild horses, which exceeds the lower end of the AML of 118 by 321 head or 272 %. Due to constraints set by BLM policies in place at that time, the AML was never achieved. The current action is needed to reduce the wild horse population to the lower end of the AML or 118 head.

The AML was established in the Final Multiple Use Decision's (FMUDs) 1995, for the Buckeye, Churchill Canyon, Clifton, Eldorado, Hackett Canyon, Mill Canyon, Rawe Peak, Sand Canyon and Sunrise grazing Allotments. All of the FMUDs went through the required public participation processes. Removal of excess wild horses to the levels in the FMUDs would achieve and maintain a thriving natural ecological balance and multiple-use relationship in the Pinenut Mountain HMA.

C. Conformance with Existing Land Use Plans

The proposed action and alternatives described below are tiered to and in conformance with the Carson City Field Office Consolidated Resource Management Plan of 2001, page WHB-1-2. This analysis was conducted under an intensive monitoring program addressing the impacts of wild horses and livestock. This EA is a project specific refinement of the EIS focused on the management of wild horses in the Pinenut Mountain HMA. The Appropriate Management Level (AML) for the Pinenut Mountain HMA was established through the allotment evaluation and FMUD process in August of 1995. All AMLs were set as a range.

Additional environmental analysis (EAs) have been conducted in past years which analyzed the impacts of various gather methods on wild horses, and other critical elements of the human environment. These documents include:

1. Gather Plan Environmental Assessment, EA # NV-030-4-62, August 23, 1984.
2. Gather Plan Environmental Assessment, EA # NV-030-6-69, October 20, 1986.
3. Gather Plan Environmental Assessment, EA # NV-030-4-62, August 23, 1995.

D. Relationship to Other Environmental Documents, Statutes, Regulations

The proposed action and alternatives are in conformance with the Wild Free-Roaming Horse and Burro Act of 1971 (PL 92-195 as amended); all applicable regulations at 43 CFR 4700 and policies; the Strategic Plan for the Management of Wild Horses and Burros on the Public Lands; and the Nevada BLM Revised Tactical Plan – Wild Free-Roaming Horses and Burros, Ensuring the Legend Lives Free.

These documents are available for public review at the Carson City Field Office.

II PROPOSED ACTIONS AND ALTERNATIVES

The Proposed Action and four alternatives, one of which is the No Action Alternative, are analyzed within this document and impacts identified. The description of all the alternatives is given below.

Actions common to all Alternatives except the No Action Alternative

Regardless of which alternative is selected, the Carson City Field Office Wild Horse and Burro (WH&B) Specialists would determine sex, age, historic characteristics and assess herd health (pregnancy, parasite loading, physical condition, etc), sort individuals as to age, size, sex, temperament and/or physical condition, and select animals to be returned the range. Data would be collected, including biological samples, for analysis and inclusion into future planning documents. Excess wild horses would be transported to a BLM adoption preparation/holding facility.

A. HMA Objectives

The following HMA objectives would be common to the Proposed Action and Alternatives, except the No Action Alternative.

1. Wild horses would continue to have access to the entire HMA. Management would not be fragmented by allotment.
2. Selective Removal Criteria would be implemented.

Determination of which horses would be returned to the range would be based on an analysis of existing population characteristics and HMA objectives. Wild horses would be selected and released back into the HMA, based on historic characteristics of the Pinenut Mountain HMA. Objectives for the herd were detailed previously under the Purpose Of and Need for Action section. To the extent possible, wild horses selected for release back into the HMA would adhere to the BLMs National Selective Removal Policy. The *Gather Policy and Selective Removal Criteria for Wild Horses, Washington Office IM 2002-095* details the priorities to be followed as:

a. Age Class Five Years and Younger: Wild horses five years of age and younger may be removed and placed into the national adoption program.

b. Age Class Ten Years and Older: Wild horses ten years of age and older may be removed and placed into long-term holding. Any animals within this age class that are in the Henneke category of 2 or less and have no chance of improvement would be evaluated for euthanasia. Any euthanasia would be in accordance with Washington Office Instruction Memorandum 2001-165. Older horses that, in the opinion of the Authorized Officer, may survive if released but probably would not tolerate the stress of removal, preparation, and holding would be evaluated for return to the HMA.

c. Age Class Six to Nine Years: Wild horses aged six to nine years old would be removed last and only if the HMA cannot achieve AML without their removal.

The National Selective Removal Criteria would be followed to the extent possible. Since no population data is available for this particular herd the number of horses in each age class to be removed would not be determined until the removal is completed. If additional animals from the younger and/or older categories need to be released to meet the objective of the proposed action or alternatives animals older than 9 years of age would be preferred for several reasons; (1) there is little or no adoption demand for older animals, (2) a vast majority of the older horses would be placed in long-term holding facilities. Exceptional animals that represent historic colors, size and/or confirmation may be chosen for release outside of the selective removal priorities. Weak and unhealthy animals would not be selected for release back onto the HMA.

B. Gather Operations

The gather would be conducted either through use of the BLM Great Basin Wild Horse and Burro Gather Contract or by BLM crews. Multiple gather sites (traps) would be used to gather wild horses from within and outside the HMA. To the maximum extent possible, gather sites would be located in previously disturbed areas. All gather and handling activities (including gather site selections) would be conducted in accordance with the Standard Operating Procedures (SOPs) described in Attachment 1. The helicopter drive trap gather technique would be utilized for this gather. It is estimated that four to six trap sites would be required to complete the gather. When animals are released, every effort would be made to release them back into the same general area from which they were gathered.

As needed, an APHIS Veterinarian may be on-site during gather operations to examine animals and make recommendations to the Carson City Field Office WH&B Specialists for care and treatment of the wild horses. Consultation with a veterinarian would take place prior to euthanasia in accordance with Washington Office Instruction Memorandum 2001-165.

C. Data Collection

The following data would be collected during the gather, to assure an adequate database to prepare a Population Management Plan (PMP):

Blood Samples. Blood samples would be collected from released animals and analyzed to establish baseline genetic data (genetic diversity, historical origins of the herd, unique markers, plus norms for the herd) for the HMA in accordance with the *Gather Policy and Selective Removal Criteria for Wild Horses, Washington Office IM 2002-095*. The minimum sample size is 25 per cent of the upper end of the management range or a minimum of 25 samples and not more than 100 per population. Blood would be drawn from both mares and studs in a ratio similar to the sex ratio released. The blood sample analysis would provide for a comparison with domestic breeds and other wild populations that have been tested. A Veterinarian or other trained personnel would collect the blood samples.

Sex Ratio/Age Structure. The sex, age, and disposition (remove or release) for each animal gathered would be recorded. This data would be used to develop a pre-gather and post release sex ratio/age structure summary for the HMA.

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

Characteristics. Color and size of the animals would be recorded. The type of horse would be noted if it can be determined, or a general impression of the type of horses gathered within the HMA. Incidence of albinism, parrot mouth, club feet, severely crooked legs or any other negative trait believed to be genetic, would be recorded along with the disposition of that animal.

Condition Class. Condition class would be recorded using the Henneke System for those animals that are exceptions to average, such as noticeably thin, or fat wild horses.

Other data. All other data believed to be essential to the Population Management Planning effort would be collected during the gather. This may include parasite load, disease (from blood samples), percentage and age of pregnant mares, or other data.

D. Strangles Research Data Collection

As part of the ongoing strangles research conducted by Colorado State University (CSU), biological samples may be collected from wild horses captured during gather operations. BLM field personnel would be responsible for identifying animals showing clinical signs of *Streptococcus equi* and/or

Streptococcus zoo infection, and for collecting and forwarding a nasal swab sample for each animal showing signs of respiratory disease to CSU-Center of Veterinary Epidemiology and Animal Disease Surveillance Systems. Animals would be sampled if they meet the following criteria:

1. Nasal discharge from one or both nostrils that is white/green or cloudy white.
2. Abscesses under or behind the jaw, whether they are broken open or not.

PROPOSED ACTION

Achieve and Maintain the Lower Limit of the Management Range without Fertility Control

The Proposed Action is to gather approximately 439 wild horses and remove approximately 321. Depending on the number of horses captured, no more than 118 would be returned to the HMA. This represents the lower limit of the management range. Data derived from the Wild Horse and Burro Information System documents 7,397 wild horses have been removed Field Office wide, with 3,665 (49.5%) being mares and 3,762 (50.5%) being studs. This information includes the data from the last Pinenut removal. Approximately 118 wild horses would be returned to the HMA, 59 mares and 59 studs. A fertility control research project would not be implemented. Within the parameters set by the Selective Removal Strategy, the age structure of the released animals would be as close as possible to the age structure of the total herd captured.

ALTERNATIVE I

Achieve and Maintain the Lower Limit of the Management Range with Fertility Control

Alternative I is to gather approximately 439 wild horses and remove approximately 321 wild horses and to implement an immunocontraceptive research project on 100% of the mares released, monitoring the results as appropriate. Approximately 118 wild horses would be returned to the HMA, 59 mares and 59 studs. Within the parameters set by the Selective Removal Strategy the age structure of the released animals would be as close as possible to the age structure of the total herd captured.

All of the mares to be released back to the HMA would be treated with an immunocontraceptive vaccine, Porcine zona pellucidae (PZP), administered by researchers connected with the National Fertility Control Field Trial Plan, or trained BLM personnel. The inoculation of mares would consist of a liquid dose of PZP vaccine and a time released portion of the drug in the form of pellets. The approach incorporates the PZP into a non-toxic, bio-degradable material which can be formed into small pellets. The pellets are injected with the liquid

and are designed to release PZP at several points in time much the way time-release cold pills work. This formulation would be delivered as an intramuscular injection by a jabstick syringe, while mares are restrained in the working chute. Upon impact the liquid in the chamber would be propelled into the muscle along with the pellets. This delivery method has been used previously to deliver immunocontraception vaccine with acceptable results. Such a vaccine would permit a single injection to cause up to two years of contraception at approximately 95% effectiveness in year one, and 85% effectiveness in year two.

Delivery of the vaccine would be by means of syringe or dart with a 12 gauge needle or 1.5" barbless needle respectfully. 0.5 cc of the PZP vaccine would be emulsified with 0.5 cc of adjuvant (a compound that stimulates antibody production) and loaded into the delivery system. The pellets would be placed in the barrel of the syringe or dart needle and would be injected with the liquid.

All treated mares would be identified and freezemarked with a Nevada State approved identification (such as a letter or a number) on the left hip to enable positive identification for future tracking and data collection. Researchers associated with the National Fertility Control Field Trial Plan would collect data over the next three years to determine the effectiveness of the vaccine.

ALTERNATIVE II

Achieve and Maintain the Upper Limit of the Management Range Without Fertility Control

Alternative II is to gather approximately 439 horses and remove approximately 260 head. Approximately 89 studs and 90 mares would be returned to the HMA. A fertility control project would not be implemented.

ALTERNATIVE III

Achieve and Maintain the Upper Limit of the Management Range With Fertility Control

Alternative II is to gather approximately 439 horses and remove approximately 260 head. Approximately 89 studs and 90 mares would be returned to the HMA. A fertility control project would be implemented.

NO ACTION ALTERNATIVE

Do not remove any wild horses

This alternative consists of no direct management of the wild horse population in the Pinenut HMA. The horse population would not be maintained at a level compatible with the environment, and would continue to increase until severe

resource or physical conditions of the horses necessitated a removal or a major die off occurred.

III. AFFECTED ENVIRONMENT

Critical Elements

The following critical elements of the human environment are not present or are not affected by the proposed action or alternatives in this EA: air quality, areas of critical environmental concern, cultural resources, environmental justice, flood plains, Native American religious concerns, prime or unique farmlands, hazardous materials, palaeontology, water quality (surface and ground), wild and scenic rivers and wilderness.

No impacts would occur to cultural resources, as proposed trap sites and holding facilities would be inventoried prior to construction in order to avoid those areas where cultural resources exist.

Bureau specialists have further determined that the following resources, although present in the project area are not affected by the Proposed Action: forestry, geologic resources, lands, visual resources, recreation, Socio-economics and water rights.

Resources Present and Brought Forward for Analysis

A. Wild Horses

1. Project Area Description

The Pinenut Mountain HMA is located immediately east of Carson City, Nevada. The area is approximately 98,580 acres in size, with 90,900 acres of public lands and 7,680 acres of private land. Terrain varies from level valleys to steep, rugged mountains, with elevations ranging from 4,000 feet at the valley floor to approximately 8300 feet at the highest point. The area is bordered on the west by Carson City, on the east by U.S. Alternate 95, on the north by the Carson River and on the south by private lands owned by a variety of individuals. Refer to the attached Pinenut Mountain HMA map. Due to the location of horses outside of the HMA, the project area would also include lands outside of the HMA.

2. Gather History and Population Characteristics

Large scale gathers were conducted in 1977, 1980, 1984, 1985, 1986 and 1995. In addition, numerous small removals have also been conducted over the past 17 years. All of the horses removed by small gathers were the result of wild horses becoming established on private lands, most of which were in subdivisions, located outside of the HMA. The 1977, 1980, 1984, 1985 and 1986 gathers were

gate cuts (all gathered horses removed), while the 1995 gather was age selective. Removal criteria during the 1995 gather dictated that only horses 5 years of age and younger could be removed from inside the HMA with horses 10 and older removed from outside the HMA.

The following chart shows the number of wild horses that were gathered and the number removed during the 1977,1980,1984,1985,1989, 1994 and 1997 gathers.

Number of Wild Horses Gathered and Removed

<u>Year</u>	<u>Gathered</u>	<u>Removed</u>
1977	186	186
1980	140	140
1984	235	235
1985	325	325
1989	208	208
1995	629	410

The last census prior to the 1995 removal documented 735 horses, both in and out of the HMA. Due to the nature of the terrain, thickly wooded, it was felt that a maximum of 80% of the horse were actually counted. This coupled with the fact that only 56% of the documented total were removed and 7 years has elapsed since the last removal, it is felt there is a reasonable representation of all age classes in the HMA.

3. Genetic Diversity and Viability

Maintaining genetic diversity is generally accepted to be important for most populations of vertebrates. Many species of vertebrates suffer from the deleterious effects of inbreeding depression if the population size is small or isolated. Some conservation biologists believe that as a general rule an effective population size of 5,000 individuals is needed to maintain genetic diversity and avoid the deleterious affects of inbreeding. In harem breeding animals such as horses, an "effective" population may be much smaller than the census population. Since matings are not random, a relatively few dominant males are responsible for the majority of matings. However, free roaming horses generally exhibit greater genetic diversity than most domestic horse breeds. Through the domestication process many deleterious alleles may have been flushed, thus allowing for greater inbreeding without the resulting negative effects of inbreeding depression. There is little imminent risk of inbreeding since most wild horse herds sampled have large amounts of genetic heterozygosity. Genetic resources are lost slowly over periods of many generations, wild horses are long lived with long generation intervals, therefore there is little imminent risk of in breeding or population extinction. In the unlikely event that any problems manifest themselves, animals from other HMAs within this field office may be released into

the HMA to allow for gene flow thereby further assuring the negative effects of inbreeding do not occur.

The following summarizes what is known about the Pinenut Mountain HMA as it pertains to genetic diversity:

The current estimated population for the Pinenut HMA is 439 head. This is based on a November 2000 census and then using a 10% rate of annual increase.

The herd, on occasion, has interchange with horses entering the HMA from a State managed horse herd nearby.

N_e (genetic effective population size) for the Pinenut Mountain HMA has not been established.

B. Vegetation

Vegetation varies from salt desert shrub communities at lower elevations, to low and big sagebrush/grass communities at higher elevations. The lower elevations are comprised of salt tolerant plants such as bud sagebrush (*Artemisia spinescens*), shadscale (*Atriplex confertifolia*) and, baileys and black greasewood (*Sarcobatus spp.*). Mid-elevations and alluvial fans consist of Wyoming big sagebrush (*Artemisia tridentata wyomingensis*) or low sagebrush (*Artemisia arbuscula*), with an understory of Sandberg's bluegrass (*Poa secunda*), bottlebrush squirreltail (*Sitanion hystrix*), and Thurber's needlegrass (*Stipa thurberiana*). Within the mid and higher elevations, there is an occurrence of Pinyon pine (*Pinus monophylla*). The higher elevation sites are comprised of mountain big sagebrush (*Artemisia tridentata vaseyana*), Idaho fescue (*Festuca idahoensis*), and also support mountain browse species that include serviceberry (*Amelanchier alnifolia*), snowberry (*Symphoricarpos spp.*), and currant (*Ribes spp.*). Riparian areas at mid to higher elevations support quaking aspen (*Populus tremuloides*), cottonwood (*Populus sp.*), and willows (*Salix spp.*).

C. Range

There are 9 grazing allotments within the project area with permittees running both sheep and cattle for a total of 10,042 AUMs. Much of the grazing takes place outside of or adjacent to the HMA. Numerous range improvements are present, mainly fences and water developments.

D. Invasive, Non-Native Species Noxious Weeds

Noxious weed surveys, including invasive and non-native species, have been completed in the area contained within the Pinenut Mountain HMA, and along

roadways in and adjacent to the HMA. These surveys indicate that the following state listed noxious weeds occur:

Scientific Name	Common Name	Plant Symbol
<i>Acroptilon repens</i>	Russian Knapweed	ACRREP
<i>Lepidium latifolium</i>	Perennial pepperweed	LEPID
<i>Cirsium arvense</i>	Canada thistle	CIAR
<i>Carduus nutans</i>	Musk thistle	CANU

These weeds occur in a variety of habitats including road side areas, rights-of-way, wetland meadows, riparian areas, as well as undisturbed upland range sites.

E. Migratory Birds

Common migratory birds which may use the area as habitat include various songbirds, blue birds, night hawks, swallows, swifts, fly catchers, kingbirds, dippers, crows, raptors, various waterfowl and shorebirds, snipe, sandpipers, wading birds, hummingbirds, warblers, finches, doves, juncos, wrens, sparrows, killdeer, robins, and meadowlarks.

F. Special Status Species

Threatened species and species of concern that may occur in the Pinenut Mountain HMA are listed below:

Listed and Candidate Species

Bald eagle	<i>Haliaeetus leucocephalus</i>
Mountain plover	<i>Charadrius montanus</i>
Weber ivesia	<i>Ivesia webberi</i>
Williams combleaf	<i>Polystichum williamsiae</i>

Species of Concern

Sage grouse	<i>Centrocercus urophasianus</i>
Mountain quail	<i>Oreortyx pictus</i>

G. Wetlands and Riparian Zones

Riparian areas are scattered throughout the Pinenut Mountains and are generally associated with isolated springs. Severe resource degradation caused by wild horses is currently occurring at some springs within the HMA depriving all other species of critical habitat. The only area Williams combleaf, a USFWS candidate category one species, occur in the HMA is in the lek area T15N R23E Section 4.

H. Wildlife

Wildlife habitat is comprised largely of three generalized plant communities: the salt desert shrub community, found at lower elevations, the Wyoming sagebrush community that occupies middle elevations, and a mountain brush community at higher elevations. Wildlife species found in these habitats vary in abundance and diversity depending on the type and condition of the vegetation.

Within the proposed project area, numerous species of wildlife occur. Mule deer (*Odocoileus hemionus*), pronghorn antelope (*Antilocapra americana*), mountain lions (*Felis concolor*), coyotes (*Canis latrans*), and bobcats (*Lynx rufus*) are the main game and fur bearing species present. Sage grouse (*Centrocercus urophasianus*), chukar (*Alectoris chukar*), morning doves (*Zenaida macroura*), and cottontail rabbits (*Sylvilagus sp*) constitute the major upland game species. In addition, a variety of non-game mammals, birds, and reptiles occur in the project area.

The description of the affected environment for the No action or other alternatives would be the same as that for the proposed action.

IV. ENVIRONMENTAL CONSEQUENCES

Scoping and Issue Identification

A scoping letter was sent to all parties who expressed an interest in wild horse and burro actions in the Carson City Field Office. As a procedural requirement, the Nevada State Clearinghouse will receive ten (10) copies of this document. Native American consultation would be ongoing.

Bureau personnel, identified by the Environmental Coordinator to have an interest or whose programs could be potentially affected by the proposed actions reviewed the EA.

PROPOSED ACTION

a. Wild Horses

1. Achieve and Maintain a Management Range in the Pinenut Mountain HMA of 118 to 179 wild horses.

The Wild Free and Roaming Horse and Burro Act of 1971 (Public Law 92-195 as amended) states, all management activities shall be at the minimum feasible level. This would require that removals and other management actions that directly impact the population occur as infrequently as possible. Achieving and maintaining the identified population range would allow for a self sustaining population of animals, achieve and maintain a thriving natural ecological balance and the have the least impact on the horses themselves.

The allotment evaluation and multiple use decision process for the allotments located within the Pinenut Mountain HMA established the number of horses that would result in maintaining a thriving natural ecological balance and meet the minimum feasible level of management as required by law. This level was expressed as a range, 118 -179 head.

Using the program created by Dr. Stephen Jenkins at the University of Nevada Reno, designed to provide individuals interested in population dynamics an understanding of possible population responses to various management strategies was run using data for the targeted population levels of this HMA. Several scenarios: removals only, removals and fertility control and no management were analysed. Dr. Jenkins does make the disclaimer that this model should not be used to make management decisions, the intended use is to convey a range of possible population responses to certain perturbations.

Under the removal only scenario, and reducing the population to the lower limit of the range (118 head), the median average population size over 20 years would be 192, using the removal to the lower end of the population range (118 head) and fertility control scenario the median population size over 20 years would be 181 and under the no management scenario the median population size would be 1829. It is obvious the HMA could not sustain a population of 1829 horses. Before the population reached these levels the HMA would have been converted to a veritable desert with noxious weeds and pine and juniper trees the only remaining vegetation, most species of native wildlife would have disappeared and the allotments involved would no longer be capable of supporting livestock. During this time period massive die offs of wild horses and wildlife would occur.

The following positive impacts for wild horses and their habitat would occur should the management range be achieved and maintained:

A thriving natural ecological balance would be achieved and maintained. Stress on the vegetative community would be reduced as utilization levels would be not be exceeded. Vigor and reproduction of plants would increase substantially.

The CCFO/BLM would be in compliance with all applicable laws and regulations.

Managing horses at the identified levels would provide forage for grazing by livestock and wildlife species which would help meet RMP objectives and would allow a thriving natural ecological balance to be obtained and maintained between the vegetative community, wildlife, horses and livestock. This would result in positive impacts. The vegetative community, horse populations and wildlife populations would be stabilized. It is anticipated that after the reduction the utilization would decrease to 55% on key species. Horses that are removed would be placed into private maintenance through the Bureau's Adopt a Horse Program, or shipped to sanctuaries.

Managing horses between 118 and 179, a level that can be maintained by the

vegetative community with other uses, would minimize the stresses to the individual horses associated with limited food, water and space resources. Minimizing the stresses would be especially important to both the young and old animals.

Managing the population in a way that maximizes the intervals between removals minimizes the stresses, injuries and disruption of bands associated with removals. Managing horses in harmony with their habitat and maximizing intervals between removals would result in only positive benefits, i.e. reduced stress and injuries to the animals and a healthy vegetative community.

Reducing horses below the maximum number (AML) that the habitat can support in concert with the other uses (i.e. wildlife and livestock grazing) would reduce the stress of gathers by allowing a minimum interval of approximately 3 to 4 years between gathers.

Based on population modelling a healthy viable population would be maintained.

A combination of removing younger and older animals would result in removing only readily adoptable animals (young) or animals (older) that may be placed in sanctuaries. Once AML is reached and removals occur approximately every 3 - 4 years a minimal number of animals would need to be placed into the adoption program or placed in sanctuaries and the interval between gathers could be maximized. Leaving some of the older horses (10 years and older) in the population would preserve the genotypes that have proved most adapted to this HMA. The exact method or combination of methods will be determined prior to each gather and would be influenced by adoption demand, current rate of population increase and range condition.

Improved condition of the mares and foals would aid in the long-term health and viability of the Pinenut Mountain HMA wild horse population. Reduced growth rates that would occur with the implementation of fertility control would influence herd size at any one point in time, reducing competition for resources and utilization levels of those resources. Reduced growth rates would increase the interval between gathers, having overall beneficial impacts to the entire wild horse population, wildlife, and domestic livestock, while contributing to the achievement and maintenance of a thriving natural ecological balance.

If the management range is not achieved and maintained then the following negative impacts would occur:

A thriving natural ecological balance would not occur without yearly gathers. Based on past history, it is not physically nor fiscally possible to capture horses in the same HMA every year.

If horses were allowed to increase above the AML then a thriving natural ecological balance would not be achieved and resource damage would occur adversely affecting the vegetative community, wildlife community, the horse

population, livestock producers and other members of the public.

Annual gathers would have more severe impacts to herd stability and band integrity.

The wild horse population would be subjected to increased stress associated with gathering and handling on an annual basis.

As the horse population increases the number of incidents involving horses and private land owners would also increase. In addition, the number of accidents involving vehicle and horses would also rise.

2. Population Information

Population modelling using was completed for the Proposed Action and Alternatives. One of the objectives of the modelling was to identify if any of the alternatives “crash” the population or cause extremely low population numbers or growth rates. Population modelling does not indicate that a crash is likely to occur to under the Proposed Action or Alternatives. Minimum population levels and growth rates were found to be within reasonable levels, and adverse impacts to the population are not likely. It is expected that implementation of the Proposed Action or Alternative I, II and III would not significantly impact the genetic viability or genetic health of the herd. At this time, there is no evidence to indicate that the Pinenut HMA suffers from reduced genetic fitness in any way.

The following table displays the basic differences between the Proposed Action, Alternative I, II, III and the No Action Alternative identified through population modelling. This table shows the average median population and average growth rate over 20 years.

Population Modelling: Average Population and Growth Rates

<u>Alternative</u>	<u>Median Population Size</u>	<u>Median Growth Rate</u>
Proposed Action	192	19.7%
Alternative I	181	16.8%
Alternative II	287	19.8%
Alternative III	261	16.4%
No Action	1829	19.1%

Direct impacts associated with the Proposed Action and Alternatives I, II and III include potential changes to herd demographics, and stress associated with gathering. The effect on herd demographics was discussed in the Selective Removal Criteria section (refer to Section IV.a, 3), and the stress associated with gathering would be the same as those discussed under Gather Operations (refer to Section IV.a.4.).

Implementation of the Proposed Action would prevent the population from increasing beyond the upper limit of the management range (179 animals) until the third year. Gathering to the lower limit of the management range (118 head) would allow the wild horse population to increase over time to the upper limit of the management range (179 head). When this level is met or exceeded, a gather would be scheduled. Because the HMA would be gathered when the upper limit of the management range is met or exceeded, resource degradation associated with wild horses would be minimized. More forage would be available to wild horses during drought or extreme winters than would be under Alternative II, III and the No Action Alternative. This would ensure a vigorous and viable breeding population, reduce stress on vegetative communities, livestock and wildlife, would be in compliance with the Wild Free Roaming Horse and Burro Act, the Land Use Plan, and the multiple use management objectives established through the Allotment Evaluation and Multiple Use Decision process. By managing within the identified range the likelihood of an emergency removal would be extremely remote. This alternative would also assure that the area would be in a thriving natural ecological balance.

3. Selective Removal Criteria

Direct impacts associated with the Proposed Action and Alternatives would consist of selecting wild horses for release that possess the historic characteristics and age structure that are typical of the herd demographics of the Pinenut Mountain HMA. The National Selective Removal Policy (described in Section II.A.2.) would be followed to the extent possible. Animals selected for release would be the most capable of surviving environmental extremes, thus ensuring a viable population is present in the HMA. As a result of the age selective removal in 1995, there may be horses in the five years and younger age class and the age class ten years and older, selected for release which will ensure a more normal age structure population than may result from strict adherence to the National Selective Removal Policy. Utilizing the selective removal criteria would result in a positive impact for the long term health and stability of the population.

The effect of removal of horses from the population is not expected to have significant impact on herd population dynamics, age structure or sex ratio. The selective removal strategy for the Pinenut Mountain HMA would, to the extent possible, maintain the age structure, the sex ratio and the historic range of characteristics currently exhibited within the herd.

The effects of successive removals on populations causing shifts in herd demographics favouring 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.

4. Gather Operations

The direct impacts include: handling stress associated with the gathering, processing, and transportation of animals from gather sites to temporary holding facilities, and from the temporary holding facilities to an adoption preparation facility. The intensity of these impacts varies by individual, and is indicated by behaviours ranging from nervous agitation to physical distress. Mortality does occur during a gather, however it is infrequent and typically is no more than one half to one percent of the total animals gathered.

Population wide impacts can occur during or immediately following implementation of the Proposed Action or Alternative I, II or III. They include the displacement of bands during capture and the associated re-dispersal, temporary separation of members from individual bands of horses, re-establishment of bands following release, and the removal of animals from the population. With the exception of the changes to herd demographics, direct population wide impacts have proven to be temporary in nature with most if not all impacts disappearing within hours to several days of release. No observable effects associated with these impacts would be expected within one month of release. Observations of animals following release have shown horses relocate themselves back to their home ranges within 12 to 24 hours of release.

All activities would be carried out in accordance with current BLM policy, with the intent of conducting as safe and humane a gather as possible. Recommended actions incorporate proven Standard Operation Procedures (SOPs, Attachment 1), which have been developed over time. Potential injuries and fatalities can be limited through strict enforcement of contract specifications (Appendix 1) for safe and humane treatment of animals. BLM representatives would be monitoring the contractor's activities at all times during removal to ensure compliance with specifications and humane treatment of animals

5. Data Collection

Direct impacts associated with data collection involve a minor increase in stress levels to the animals as they are restrained in the portable aging chute. Once the animal is released from the chute, stress levels decrease rapidly. The collection of data is a positive impact to the long term management of the population. This data will be used to develop population specific objectives that will help to ensure the long term viability of the population. This procedure is within the intent of Public Law 92-195, as amended, as it relates to managing populations at the minimum feasible level.

6. Strangles Research Data Collection

Direct impacts would be the same as described above in Data Collection

b. Vegetation

Managing horses between 118 to 179, a level which can be maintained by the Vegetation, ($\leq 55\%$ total vegetation utilization) compatible with other uses would result in the vegetative community, being, at the least, maintained and in all likelihood improved. Utilization levels by horses would be reduced resulting in improved forage availability, vegetation density, increased plant vigor, seed production, seedling establishment and forage production over the current situation.

c. Range

By managing horses at the identified levels adequate forage would be available for grazing by domestic livestock which would achieve or move towards meeting all of the appropriate Standards and Guidelines, RMP and other associated objectives.

d. Invasive/Non-Native Species

Implementation of the Proposed Action would result in a positive impact by limiting overgrazing which provides the needed environment for establishment of noxious/non-native species. Achieving and maintaining the AML would prevent overgrazing and the corresponding loss of native forage species thus limit the areas in which noxious/non-native species could become established.

e. Migratory Birds

The Proposed Action would not directly impact migratory bird populations, with the only effect being the possible displacement from small areas of their habitat. This impact would be short lived with the birds returning to their original areas once activities end. Achieving and maintaining the AML would create a diverse vegetative structure through improvement and maintenance of healthy populations of native perennial plant communities.

f. Special Status Species

The Proposed Action would have no impact on any of the listed or candidate species present. The Proposed Action or Alternative I, II or III would not occur during the strutting, nesting or brooding period for sage grouse. All impacts associated with the removal would be temporary in the form of minor disturbance during the actual gather operations. Temporary gather sites and temporary holding facilities would be located appropriate distances from key sage grouse habitat.

Williams combleaf has been identified as occurring within the HMA. As with this and all other listed or candidate species these areas would be avoided.

g. Wetlands/Riparian

By reducing and limiting the horse population most riparian areas would recover naturally, however, some would require protection in the form of enclosures to recover and maintain the vegetative diversity associated with them and required by a variety of animal species. Water would either flow under the enclosures or be piped to a nearby trough. Some may view an enclosure as an unnatural addition to the range. However, the overall benefits would outweigh any negative impacts since spring flow would be maintained or increased and riparian vegetation and habitat would be available to wildlife.

h. Wildlife

Managing horses within a range of 117 to 179 (total vegetation utilization \leq 55%) would have positive impacts on wildlife by insuring adequate forage and space for wildlife species. This horse level would help in providing habitat requirements for wildlife.

ALTERNATIVE I

Other than the effects of administering the immunocontraceptive drugs impacts associated with Alternative I are identical to the Proposed Action with the exception of a slight slowing in the population growth of the herd, 11 head over a 20 year period.

Each mare to be released would receive a single-dose of the two-year PZP contraceptive vaccine, as described in Section II. When injected, PZP (antigen) causes the mare's immune system to produce antibodies that bind to her eggs, effectively blocking sperm penetration 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. Also, among mares, PZP contraception appears to be completely reversible, and to have no ill effects on ovarian function if the mare is not treated for more than 3 consecutive years. PZP will 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). Turner (1997) also found that the vaccine has proven to have no apparent effects on pregnancies in progress, the health of offspring, or the behavior of treated mares. The PZP two-year vaccine has proven 90% effective for up to two years if mares are inoculated during the winter months. Inoculated mares would foal normally in 2003, and the contraceptive would limit foal production in 2004 and 2005. Near normal foaling rates would be expected to resume in 2006.

Mares receiving the vaccine would experience slightly increased stress levels from additional handling while being inoculated and freeze marked. There may be some swelling at the injection site following the administration of the fertility control vaccine, but this would be a temporary, short term impact. Injection site injury associated with fertility control treatments is extremely rare in treated

mares, and may be related to experience of the person administering the vaccine. Injection of the vaccine would be controlled, handled and administered by a trained BLM employee, researcher or veterinarian. Any direct impacts associated with fertility control are expected to be minor in nature and of short duration. The mares would quickly recover once released back to the HMA.

Population-wide indirect impacts would not appear immediately as a tangible effect and are more difficult to quantify. Impacts involve reductions in short term fecundity of initially a large percentage of mares in a population, increasing herd health as AMLs are achieved, and potential genetic issues regarding controlling contributions of mares to the gene pool, especially in small populations. The implementation of fertility control would result in an opportunity to allow increased fitness and condition of the mares released following the gather. The potential reprieve from foaling would greatly increase the overall health and fitness of mares.

Population modelling found that the Proposed Action and Alternative I varied by only 11 head with the Average Population for the Proposed Action at 192 and the Average Population for Alternative I being 181, however, the average growth rate for Alternative I was 2.9% less than the Proposed Action. This would indicate that the mares that did not have a foal for the year of immunization improved in health as a result of the absence of a colt and were able to not only reproduce the following year but also raise it's offspring.

Implementation of Alternative I would prevent the population from increasing beyond the upper limit of the management range (179 animals) until the third year, 2006 but with a population difference of only 14 head. Gathering to the lower limit of the management range (118 head) would allow the wild horse population to increase over time to the upper limit of the management range. When this level is exceeded, a gather would be scheduled. Because the HMA would be gathered again when the upper limit of the management range is exceeded, resource degradation associated with wild horses would be minimized. More forage would be available to the wild horses during drought or extreme winters than would be under the Alternatives that gather to the upper limit of the management range. This would ensure a vigorous and viable breeding population, reduce stress on vegetative communities and wildlife, and be in compliance with the Wild Free Roaming Horse and Burro Act, the Land Use Plan, and the multiple use management objectives established through the Allotment Evaluation and Multiple Use Decision process. By managing within the identified range the likelihood of an emergency removal would be extremely remote. This alternative would assure that the area would be in a thriving natural ecological balance.

The use of fertility control is not expected to have any long term significant impacts (direct, or indirect) to the Pinenut Mountain HMA genetic health, long term viability or future reproductive success of mares within the herd. Implementation of fertility control is expected to improve the health of the mares.

ALTERNATIVES II & III

No drugs would be used in Alternative II.

The effect of administering the immunocontraceptive drugs in Alternative III are identical to those already addressed in Alternative I.

As soon as the gather is completed, and mares foal, the upper limit of the management range would be exceeded and resource degradation would once again resume. We would not be in compliance with applicable laws and regulations. The population would increase each year until the next gather is scheduled, in approximately three to four years. **A thriving natural ecological balance would not be achieved or maintained.** Resource degradation would occur both inside and outside of the HMA – both upland and riparian. Wild horses would also degrade some mule deer and other associated wildlife forage species, including sage grouse and mountain quail. Degradation to resources would increase as wild horse numbers increase. This degradation would be worsened during years affected by drought or other environmental extremes that cause additional stress to resources or shortages of resources to rangeland users.

As the horse population increases the number of animals establishing themselves on private lands outside of the HMA also rises, necessitating their removal upon request by the private landowners. In addition, vehicle accidents involving horses would also rise.

Should horses be reduced just to the upper end of the AML range, 179 head, gathers would need to be conducted on a yearly basis which would lead to frequent band disturbances, increased chance of injury or death to the horses and increased stress during removal operations. Furthermore, yearly gathers are not physically nor fiscally feasible.

The outcome of these alternatives would not ensure the Pinenut Mountain HMA would have successful self-sustaining population of healthy animals in balance with other uses and the productive capacity of the habitat. The herd would also be at a higher risk of sickness and disease and would not be in a thriving natural ecological balance within the HMA, and improved health of the foals born to those mares in the future.

NO ACTION

The horse population is currently at a level that is not compatible with the environment, and would continue to increase. As horse numbers increase the degradation of vegetation would be accelerated. Eventually most of the desirable plants would be lost from the HMA and surrounding area. This action would directly affect wildlife and livestock by removing habitat and forage.

The vegetation diversity would eventually decrease to a point which could no longer support the horse population, at this point a large proportion of the horse population would die, along with wildlife and livestock. However, prior to the population decline the habitat would have deteriorated, and undesirable exotic invader species such as halogeton (Halogeton glomeratus), cheatgrass (Bromus tectorum) and Russian thistle (Salsola kali) would have established themselves over large areas. Thus, the HMA's capacity to support horses would now be only a small fraction of its current potential capacity and it would take many decades of low or no grazing pressure and tremendous vegetative manipulation at a huge cost to the taxpayer for the HMA to recover to its former potential carrying capacity. The no action alternative would also preclude attainment of wildlife, soil, water and livestock objectives in the RMP and possibly increase the need to list the sage grouse and mountain quail as a threatened or endangered species under the Endangered Species Act.

Habitat improvement would not be realized with this alternative. The frequency of key species would decline. The animals would continue to search for food and further degrade their habitat, thereby reducing the carrying capacity of the area, which would eventually lead to unacceptable adverse physiological stress to the horses and degraded vegetation condition.

Over-utilization within and outside of the HMA would continue to occur and as the range becomes further deteriorated the carrying capacity of the HMA and allotments would be reduced. The objective of limiting utilization to 55 percent or less would never be met. Downward trend would occur, and ecological condition would decline. In the long-term, the excessive utilization would eliminate nearly all the forage plant species. Attainment of RMP objectives would not be met.

Further deterioration of the range would occur and the area would not be in a state of thriving natural ecological balance between wild horses, wildlife, vegetation and livestock.

As the horse population increases the number of animals establishing themselves on private lands outside of the HMA also rises, necessitating their removal upon request by the private landowners. In addition, vehicle accidents involving horses and members of the public would also rise.

This alternative would not be acceptable to the BLM nor most members of the public. 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, would clearly indicate that an overpopulation of wild horses existed in the HMA, and would be in direct violation of existing laws and regulations. The Wild Free-Roaming Horse and Burro Act of 1971, as amended, mandates the Bureau to "*prevent the range from deterioration associated with overpopulation*", and "*remove excess horses in order to preserve and maintain a thriving natural ecological balance and multiple use relationships in that area*". Additionally, Promulgated Federal Regulations at Title 43 CFR 4700.0-6 (a) state "*Wild horses shall be managed as self-*

sustaining populations of healthy animals in balance with other uses and the productive capacity of their habitat". (emphasis added).

CUMULATIVE IMPACTS

Cumulative impacts are impacts on the environment, which result from the incremental impact of the 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 major or problematic actions taking place over a period of time.

Past actions that may have similar effects to the Pinenut Mountain HMA wild horse population would include wild horse gathers already completed. Six major gathers have been completed in the past removing a total of 1504 horses. Future gathers would be scheduled according to a 3-4 year gather cycle. Should the Proposed Action or Alternative I be implemented and AML levels achieved and subsequently maintained, a thriving natural ecological balance would be achieved and a continued improvement of the range vegetative and riparian-wetland conditions would occur. Vegetative density, plant vigor, seed production, seedling establishment, and forage production would increase. This would ultimately result in improvement of the ecological status of plant communities. Cumulative beneficial effects from implementation of the Proposed Action or Alternative I to wildlife, the wild horse population and domestic livestock would occur as forage availability and quality is maintained and improved. Water quality and quantity would also continually improve. These impacts would occur not only within the HMA but to the entire Pinenut Mountain Range as a whole.

Adverse cumulative impacts, should the No Action Alternative or Alternative II or III, be implemented would include continual over-utilization of vegetative resources, which would result in decreased vegetative density, plant vigor, seed production, seedling establishment, and forage production. This would ultimately result in decreases of the ecological status of plant communities and decreased health and productivity of not only wild horses but associated wildlife species as well.

There would be no known adverse cumulative impacts to any of the resources analysed in this document as a result of the Proposed Action or Alternative I, II or III.

With continued overuse on upland sage grouse habitat a negative adverse cumulative impact to this species would occur. Wildlife, migratory birds, and wild horses would all be negatively affected by these adverse cumulative impacts to natural resources.

Wild horses would continue to expand onto private lands negatively impacting private property and eventually would result in dangerous confrontations between the individuals living in the areas and the wild horses. Several vehicle and wild

horse accidents have occurred in the past with this increasing as both the human and wild horse populations increase.

The No Action would cause a major impact to the environment.

In order to assess present and future impacts on the environment, monitoring would occur as outlined in the individual Evaluations completed prior to the FMUD issued in 1995.

MONITORING

To assess the affect of the Proposed Action or other Alternatives on the vegetative resource the following monitoring information will be collected:

- (1) utilization, both key area and HMA wide
- (2) frequency
- (3) photo trend plots
- (4) precipitation

Utilization would be completed at least once every three years HMA wide with the frequency and photo trend plots read at intervals of no less than 5 years. Precipitation data would also be collected yearly.

Census flights would be conducted no less than every 3 years and more frequently if funding is available. Condition of the animals would be observed and documented each time horses are sighted in the field.

The wild horse and burro specialist would be the primary individual collecting and summarizing the information with assistance from the appropriate range management specialist, hydrologist and wildlife biologist.

V. CONSULTATION AND COORDINATION

This Gather Plan and Environmental Assessment was made available or sent to all individuals or organizations on the interested public mailing list.

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ATTACHMENT 1 - STANDARD OPERATING PROCEDURES

A. Methods for Humane Capture Wild Horses or Burros - Helicopter Removals with Contract

The helicopter drive trapping method employed for capture operations requires that horses be herded to a trap of portable panels and on extremely rare occasions to ropers who, after roping the animal, will bring it to the trap. Gathering would be conducted by using a contractor experienced in the humane capture and handling of wild horses. The following stipulations and procedures will be followed during the contract period to ensure the welfare, safety and humane treatment of the wild horses in accordance with the provisions of 43 CFR 4700 and the Great Basin Wild Horse Gathers Capture contract.

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

a. Helicopter Drive Trapping

This capture method will involve driving horses into a pre-constructed trap using a helicopter. The trap is constructed of portable steel panels consisting of round pipe. Wings are constructed off the ends of the panel trap to aid in funneling horses into the trap. The wings are constructed of natural jute, (or similar netting which will not injure a horse), which is hung on either trees or long steel posts. This kind of wing forms a very effective visual barrier to the horses that they typically will not run through. When the trap is ready for use, a helicopter will start moving one band of horses at a time toward the trap and into the wings.

In heavily wooded areas, it may be necessary to use wranglers in support of the helicopter to move the horses. The helicopter will act more as a spotter for the ground crew in this situation.

The contractor shall attempt to keep bands intact except where animal health and safety become considerations, which would prevent such procedures. The contractor shall ensure that foals shall not be left behind.

At least one saddle horse should be immediately available at the trap site to perform roping if necessary. Roping shall be done as determined by the Contracting Officer's Representative (COR) or Project Inspector (PI). Under no circumstances shall animals be tied down for more than one hour.

Domestic saddle horses may also be used to assist the helicopter pilot (on the ground) during the gather operation, by having the domestic horse act as a pilot (or "Judas") horse on the ground, leading the wild horses into the trap site. Individual ground hazers and individuals on horseback may also be used to assist in the gather.

b. Helicopter Assisted Roping

Capture attempts may be accomplished by utilizing a helicopter to drive animals to ropers. Under no circumstances shall horses be tied down for more than one hour.

Roping shall be performed in such a manner that bands will remain together. Foals shall not be left behind.

2. Stipulations for Portable Corral Traps/Exclosures

Capture traps would be constructed in a fashion to minimize the potential for injury to wild horses and BLM personnel. Gates would be wired open at all unmanned trap sites, and would be left closed only when needed to hold horses inside. Trapped horses would not be held inside the traps for a period exceeding 10 hours, unless provided with feed (weed free hay) and water.

3. Contract Helicopter, Pilot and Communications

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.

The COR/PI shall have the means to communicate with the contractor's pilot at all times. If communications cannot be established, the Government will take steps as necessary to protect the welfare of the animals. The frequency(ies) used for this contract will be assigned by the COR/PI when the radio is used. The contractor shall obtain the necessary FCC licenses for the radio system.

The proper operation, service and maintenance of all contractor furnished helicopters is the responsibility of the contractor. The BLM reserves the right to remove from service pilots and helicopters which, in the opinion of the Contracting Officer or COR/PI, violate contract and FAA rules, are unsafe or otherwise unsatisfactory. In this event, the contractor will be notified in writing to furnish replacement pilots or helicopters within 48 hours of notification. The Contracting Officer or his/her representative must approve all such replacements in advance of operation.

4. Animal Handling and Care

Prior to any gathering operations, the COR/PI will provide for a pre-capture evaluation of existing conditions in the gather areas. The evaluation will include animal condition, prevailing temperatures, drought conditions, soil conditions, road conditions, and a topographic map with location of fences, other physical barriers, and acceptable trap locations in relation to animal distribution. The evaluation will determine whether the proposed activities will necessitate the presence of a veterinarian during operations. If it is determined that capture

efforts necessitate the services of a veterinarian, one would be obtained before capture would proceed.

The contractor will be apprized of the all conditions and will be given instructions regarding the capture and handling of animals to ensure their health and welfare is protected.

The Authorize Officer and pilot may take a familiarization flight identifying all natural hazards (rims, canyons, winds) and man-made hazards in the area so that helicopter flight crew, ground personnel, and wild horse safety will be maximized. Aerial hazards will be recorded on the project map. No fence modifications will be made without authorization from the Authorized Officer. The contractor shall be responsible for restoration of any fence modification, which has been made.

If the route the contractor proposes to herd animals passes through a fence, opening should be large enough to allow free and safe passage. Fence material shall be rolled up and fence posts will be removed or sufficiently marked to ensure safety of the animals. The standing fence on each side of the gap will be well-flagged or covered with jute or like material.

Wings shall not be constructed out of materials injurious to animals and must be approved by the Authorized Officer.

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

Animals shall not be allowed to remain standing on trucks while not in transport for a combined period of greater than three (3) hours. Animals that are to be released back into the capture area may need to be transported back to the original trap site. This determination will be at the discretion of the COR.

Branded or privately owned animals captured during gather operations will be handled in accordance with state estray laws and existing BLM policy.

All capture activities shall incorporate the following:

a. Trap Site Selection

The Authorized Officer will insure that the pilot is fully aware of all natural and man made barriers which might restrict free movement of horses. Topography, distance, and current condition of the horses are factors that will be considered to set limits to minimize stress on horses.

Gather operations will be monitored and restricted (if necessary) to assure the body condition of the horses is compatible with the distances and the terrain over which they must travel. Pregnant mares, mares with small colts, and other

horses would be allowed to drop out of bands which are being gathered if required to protect the safety and health of the animals.

All trap and holding facility locations must be approved by the Authorized Officer prior to construction. The situation may require moving of the trap. Trap sites will be located to cause as little injury and stress to the animals, and as little damage to the natural resources of the area, as possible. Sites will be located on or near existing roads. Additional trap sites may be required, as determined by the Authorized Officer, to relieve stress to the animals caused by specific conditions at the time of the gather (i.e. dust, rocky terrain, temperatures, etc.).

b. Trap/Facility Requirements

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

1. Traps and holding facilities shall be constructed of portable panels, the top of which shall not be less than 72 inches high for horses, and the bottom rail of which shall not be more than 12 inches from ground level.
2. All loading chute sides shall be fully covered with plywood (without holes) or like material. The loading chute shall also be a minimum of 6 feet high.
3. All runways shall be of sufficient length and height to ensure animal and wrangler safety, and may be covered with plywood, burlap, plastic snow fence or like material a minimum 1 foot to 6 feet for horses.
4. If a government furnished portable chute is used to restrain, age, or to provide additional care for animals, it shall be placed in the runway in a manner as instructed by or in concurrence with the Authorized Officer.
5. All crowding pens including the gates leading to the runways may, if necessary to prevent injuries from escape attempts, be covered with a material which prevents the animals from seeing out (plywood, burlap, snow fence etc.) and should be covered a minimum of 2 feet to 6 feet for horses.
6. When holding facilities are used, and alternate pens are necessary to separate mares with small foals, animals which will be released, sick and injured animals, and estrays from the other animals, or to facilitate sorting as to age, number, size, temperament, sex, and condition they will be constructed to minimize injury due to fighting and trampling. In some cases, the Government will require that animals be restrained for determining an animal's age or for other purposes. In these instances, the Government will provide a portable restraining chute. Either segregation or temporary marking and later segregation will be at the discretion of the COR.
7. If animals are held in the traps and/or holding facilities, a continuous supply of fresh clean water at a minimum rate of 10 gallons per animal per day will be

supplied. Animals held for 10 hours or more in the traps or holding facilities shall be provided good quality hay at the rate of not less than two pounds of hay per 100 pounds of estimated body weight per day.

8. Separate water troughs shall be provided at each pen where animals are being held. Water troughs shall be constructed of such material (e.g. rubber, rubber over metal) so as to avoid injury to animals.
9. 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.

5. Treatment of Injured or Sick; Disposition of Terminal Animals

The contractor shall restrain sick or injured animals if treatment is necessary. A veterinarian may be called to make a diagnosis and final determination. Destruction shall be done by the most humane method available. Authority for humane destruction of wild horses (or burros) is provided by the Wild Free-Roaming Horse and Burro Act of 1971, Section 3(b)(2)(A), 43 CFR 4730.1, BLM Manual 4730 - Destruction of Wild Horses and Burros and Disposal of Remains, and is in accordance with BLM policy as expressed in Washington Office Instruction Memorandum 2001-165.

Any captured horses that are found to have the following conditions may be humanely destroyed:

- a. The animal shows a hopeless prognosis for life.
- b. Suffers from a chronic or incurable disease, or serious congenital defect.
- c. Requires continuous care for the relief of pain and suffering.
- d. Not capable of maintaining a body condition rating of two in a normal rangeland environment.

The Authorized Officer will determine if injured animals must be destroyed and provide for destruction of such animals. The contractor may be required to dispose of the carcasses as directed by the Authorized Officer.

The carcasses of the animals that die or must be destroyed as a result of any infectious, contagious, or parasitic disease will be disposed of by burial to a depth of at least 3 feet.

The carcasses of the animals that must be destroyed as a result of age, injury, lameness, or non-contagious disease or illness will be disposed of by removing them from the capture site or holding corral and placing them in an inconspicuous location to minimize visual impacts. Carcasses will not be placed in drainages regardless of drainage size or downstream destination.

6. Motorized Equipment

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 Authorized Officer with a current safety inspection (less than one year old) of all tractor/stock trailers used to transport animals to final destination.

Vehicles 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.

Floors of vehicles, trailers, and the loading chute shall be covered and maintained with materials sufficient to prevent the animals from slipping.

Animals to be loaded and transported in any vehicle or trailer shall be as directed by the Authorized Officer and may include limitations on numbers according to age, size, sex, temperament, and animal condition.

The Authorized Officer shall consider the condition of the animals, weather conditions, type of vehicles, distance to be transported, or other factors when planning for the movement of captured animals. The Authorized Officer shall provide for any brand and/or inspection services required for the captured animals.

Communication lines will be established with personnel involved in off-loading the animals to receive feedback on how the animals arrive (condition/injury etc.). Should problems arise, gathering methods, shipping methods and/or separation of the animals will be changed in an attempt to alleviate the problems.

If the Authorized Officer determines that dust conditions are such that animals could be endangered during transportation, the contractor will be instructed to adjust speed and/or use alternate routes.

Periodic checks by the Authorized Officer will be made as animals are transported along dirt roads. If speed restrictions are in effect the Authorized Officer will at times follow and/or time trips to ensure compliance.

7. Special Stipulations

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

Traps would not be constructed so that riparian vegetation or live water is contained within them. No vehicles would be operated on riparian vegetation or on saturated soils associated with riparian/wetland areas.

Gathering would be conducted when soils are dry or frozen and conditions are optimal for safety and protection of the horses and wranglers.

Gathers would not be conducted during peak foaling season which for this gather is March 1 through June 30, to reduce the chance of injury or stress to pregnant mares or mares with young foals.

Standard operating procedures in the selection and construction of traps would avoid adverse impacts from trap selection, construction, or operation to wildlife species, including threatened, endangered, or sensitive species.

Appendix 2

Population Modeling

Population Model Overview

Objectives of Population Modeling

A program developed by Stephen Jenkins (Win Equus, version 1.40, April 2002) was used to compare possible outcomes of various management scenarios. Jenkins cautions that the best use of his model is to give people an idea of possible population responses to various management strategies. Therefore, we ran 3 different simulations, no management, removals only and a combination of removals and contraception. These different scenarios provide a forecast regarding the number of expected excess horses in the future, which will be considered when selecting the preferred alternative. Removal data from the 1995 Pinenut removal was used as the basis for the population analysis with the addition of the Garfield Flat survival and reproduction information.

Population Data and Parameters:

Discussion has occurred regarding the appropriate sex ratio for free ranging populations of horses. In any "natural" population of feral horses the majority of males will not control harem bands, they will be found either singularly or in small loosely knit bands. Biasing a population to favor males would result in smaller harem bands and more and or larger bachelor bands, which would not adversely impact the social structure of the population, with the only effects being positive. As a result, fewer animals would need to be removed and placed into the adoption program and the duration between gathers may be increased.

Within the Carson City Field Office 3,665 (49.5%) female wild horses have been removed and 3,732 (50.5%) male horses have been removed (Wild Horse and Burro data base). Thus, the gather data suggests a slight bias favoring males.

This bias is in all likelihood a result of several factors. (1) A greater number of females dying after birth due to the increased stress of reproduction and nursing a foal to a weanable age. A mare must divert a substantial amount of energy to produce a foal and to nurse the foal for the next year or more, increasing her susceptibility to adverse environmental conditions, decreased overall health and predation by mountain lions.

(2) Male horses, while they control a band, also undergo increased stresses compared to their bachelor cohorts. However, due to the keen competition for females, harem controlling males will generally lose control of harems long before their physical condition is compromised to dangerous levels.

(3) The ease of capturing harem or family bands in comparison to capturing bachelor bands or lone males would further contribute to the skewing of the sex ratio in favor of males. Thus, the sex ratio is not at parity and males tend to accumulate in the population.

Therefore, the biasing of the sex ratio to favor males would not be "unnatural" and have only positive effects for the population and the tax payer.

Population Data, Criteria, and Parameters utilized for Population Modeling

During the Pinenut HMA removal of 1995 a large number of the horses were located outside of the HMA and therefore horses of all age classes were removed thus resembling a gate cut removal. Based on this and the fact that a complete removal was not accomplished and it has been seven years since the last removal the data displayed should closely reflect the current situation in the Pinenut Mountain HMA.

Initial Age Structure.

<u>Age Class</u>	<u>Studs</u>	<u>Mares</u>
Foal	32	30
1	4	6
2	25	32
3	13	25
4	39	27
5	28	26
6	27	30
7	25	13
8	5	2
9	1	1
10-14	41	33
15-19	21	27
20+	<u>38</u>	<u>35</u>
Total	299	287

The data above show not only the age structure but the ratio of male to female animals, which was 51% studs and 49% female at the time of removal. It is our intent to release animals to duplicate as closely as possible the above age

structure and sex ratio within the parameters set in the Selective Removal Strategy discussed previously. One days data was not found, which accounts for the difference between the 629 gathered and the 586 number above. All simulations used the survival probabilities and foaling rates supplied with the WinEquus population model for the Garfield Flat HMA as analyzed by Dr. Stephen Jenkins from 1993 through 1997. This information is the most comprehensive and complete type of data for the Field Office. It accurately reflects the situation in the Pinenut HMA.

Survival probabilities are utilized in the population model for the Proposed Action and Alternatives are displayed in the following:

Survival Probabilities

<u>Age</u>	<u>Mares</u>	<u>Studs</u>
0	.919	.877
1	.996	.950
2	.994	.949
3	.993	.947
4	.990	.945
5	.988	.942
6	.985	.939
7	.981	.936
8	.976	.931
9	.971	.926
10 - 14	.947	.903
15 - 19	.870	.830
20+	.591	.564

The following table displays the removal criteria utilized in the population model for the Proposed Action and Alternative I.

Removal Criteria

<u>Age</u>	<u>Percentage for Removals</u> <u>Females/Males</u>
Foal	100% / 100%
1	100% / 100%
2	90% / 90%
3	90% / 90%
4	90% / 90%
5	90% / 90%
6	0
7	0

8	0
9	0
10-14	90% /90%
15-19	90% / 90%
20+	90% / 90%

Population Modeling Criteria

The following summarizes the population modeling criteria that are common to the Proposed Action and Alternatives I, II, and III:

- Starting Year: 2002
- Initial gather year: 2002
- Gather interval: minimum interval of four years
- Sex ratio at birth: 50% male
- Percent of the population that can be gathered: 85-90%
- Minimum age for long term holding facility horses: 10 years old
- Foals are included in the AML
- Simulations were run for 20 years with 100 trials each

The following summarizes the population modeling criteria for Alternative IV, No Action:

- Starting Year: 2002
- Sex ratio at birth: 50% male
- Simulations were run for 20 years with 100 trials each

Population Modeling Parameters

<u>Modeling Parameter</u>	<u>Proposed Action</u>	<u>Alternative I</u>	<u>Alternative II</u>	<u>Alternative III</u>
Removal only	Yes	No	Yes	No
Removal and Fertility Control	No	Yes	No	Yes
Threshold Population	179	179	179	179
Target Population Following Gathers	118	118	179	179
Gather for Fertility Control regardless of Population Size	No	Yes	No	Yes
Effectiveness of Fertility Control: Year 1	N/A	95%	N/A	95%
Effectiveness of Fertility Control: Year 2	N/A	95%	N/A	85%

POPULATION MODELING RESULTS

Population size in 20 years

Out of 100 trials in each simulation, the model tabulated minimum, average and maximum population sizes. The model was run from 2002 to 2022 to determine what the potential effects would be on population size for the proposed action and alternatives. According to the creator of the modeling program, this output is probably the most important representation of the results of the program in terms of

assessing the effects of proposed management, because it shows not only expected average results but also extreme results that might be possible.

Population Sizes in 20 years - Minimum

Trials	<u>Proposed Action</u>	<u>Alternative I</u>	<u>Alternative II</u>	<u>Alternative III</u>	<u>No Action</u>
Lowest Trial	103	102	133	136	181
10th Percentile	115	114	180	176	183
25th Percentile	121	122	184	183	188
Median Trial	128	127	190	188	194
75th Percentile	135	135	196	198	203
90th Percentile	142	139	206	206	217
Highest Trial	150	150	228	213	250

This table shows that over 20 years and 100 trials for each alternative, the number of 0-20+ year old horses obtained under the Proposed Action was 103, which was only one more horse than the lowest or Alternative I. Half of the trials were greater than the median and half were less than the median. Additional interpretation may be made by comparing the various percentile points. For example, for the Proposed Action, only 10% of the trials resulted in fewer than 115 wild horses as the minimum population, and 10% of the trials resulted in a minimum population equal or larger than 150 wild horses. In other words, 80% of the time, one could expect a minimum population between these two values for the Proposed Action, given the assumptions about survival probabilities, foaling rates, initial age-sex distribution, and management options made for this simulation.

Alternative I (lower limit of the management range with fertility control) reflects the lowest minimum population of all alternatives. The population size for the Proposed Action is essentially the same as the Proposed Action (1 less horse). The No Action Alternative reflects the highest minimum population levels of all of the trials.

None of the results obtained for any of the alternatives indicate that a crash of the population would occur if the alternative were implemented. The level to which the population is gathered (lower or upper limit of the management range) appears to be more of an influence to the population size than fertility control. Fertility control in conjunction with a gather to the low limit of the management range would produce the lowest minimum population, however, the difference is negligible, while the No Action Alternative results in the highest minimum population.

The lowest population size obtained using the Proposed Action of 103 head was less than the lower level of the management range of 118 wild horses. However, for 75% of the time the simulation indicates that the population will be 121 head or more, which is higher than the lower level of the management range. This occurs due to the assumptions made by the model, which include census accuracy, effectiveness of the gather, and mares that foal following the gather. These are all realistic assumptions and result in simulations that are closer to real world situations rather than predictions based on finite numbers.

Population Sizes in 20 years - Average

<u>Trials</u>	<u>Proposed Action</u>	<u>Alternative I</u>	<u>Alternative II</u>	<u>Alternative III</u>	<u>No Action</u>
Lowest Trial	171	168	265	234	1055
10th Percentile	179	171	271	249	1428
25th Percentile	187	176	278	255	1641
Median Trial	192	181	287	261	1829
75th Percentile	198	187	296	269	2100
90th Percentile	204	191	305	273	2373
Highest Trial	209	204	315	293	3369

This table displays the average population sizes obtained for the 100 trials ran for each alternative. The average population size across 20 years ranged from a low of 168 wild horses under Alternative I to a high of 3369 wild horses under the No Action Alternative. Again, throughout all trials, there is very little difference between the Proposed Action and Alternative I, varying from a high of 6% to a low of 2%, with an average of 4%. The No Action Alternative has the highest average population size by a substantial margin. In comparing the Proposed Action and Alternative I, based on the Median trial, the population is 6% greater with the Proposed Action.

Population Sizes in 20 years - Maximum

<u>Trials</u>	<u>Proposed Action</u>	<u>Alternative I</u>	<u>Alternative II</u>	<u>Alternative III</u>	<u>No Action</u>
Lowest Trial	220	188	366	330	4116
10th Percentile	244	216	386	350	5528
25th Percentile	252	232	400	361	5820
Median Trial	271	254	426	380	6959
75th Percentile	286	286	446	398	8586
90th Percentile	307	308	475	415	9538
Highest Trial	337	375	536	434	13012

This table displays the largest populations that could be expected out of 100 trials for each alternative. Figures for the Lowest Trial represent what the population is likely to be in 2022. All figures for the Proposed Action and Alternative I are quite similar because under all of the alternatives, the same starting population, and gather efficiency etc., is assumed. The numbers vary due to randomness and assumptions inherent to the modeling program.

Average Growth Rates over 20 years

Average growth rates were obtained by running the model for 100 trials from 2002 to 2022 for the proposed action and each alternative.

The following table displays the results obtained from the model:

Average Growth Rate over 20 Years Expressed in Percentages

<u>Trials</u>	<u>Proposed Action</u>	<u>Alternative I</u>	<u>Alternative II</u>	<u>Alternative III</u>	<u>No Action</u>
Lowest Trial	14.5	11.8	16.3	12.1	15.0
10th Percentile	17.5	14.6	17.7	14.8	17.2
25th Percentile	18.5	15.6	18.8	15.5	18.2
Median Trial	19.7	16.8	19.8	16.4	19.1
75th Percentile	20.6	18.1	20.8	17.7	19.9
90th Percentile	21.9	19.2	22.4	18.8	20.7
Highest Trial	23.4	21.2	23.6	22.0	21.9

As expected, the two alternatives implementing fertility control (Alternative I and III) reflect the lowest overall median growth rate.

Alternative I implementing fertility control reflect the lowest overall median growth rate. For the median trial, the Proposed Action is 2.9% higher than Alternative I, which implements a fertility control measure. The difference between Alternative II and III, a non-fertility control and a fertility control scenario is 3.4%. The target size to which the population is gathered, 118, appears to have minimal impacts on growth rates, as demonstrated by the growth rates being quite similar for the Proposed Action and Alternative I (fertility control alternative).

The range of growth rates is a reasonable representation of what could be expected to occur in a wild horse population.

Population modeling for gathering to the upper end of the range with and without fertility control was also completed. The results show that the average median population without fertility control would be 287 head and 261 with fertility control. Both numbers exceed the AML by 60% and 46%, respectively. Neither option results in an acceptable population of horses.

Based on the model, the average population would exceed the upper end of the range by roughly 45% for both with and without fertility controls. This verifies and reemphasizes our conclusions in the main document.

Population Modeling Summary

To summarize the results obtained by simulating the range of alternatives for the Pinenut Mountain HMA wild horse gather, the original questions can be addressed.

1. Do any of the Alternatives “crash” the population?

None of the alternatives indicate that a crash is likely to occur to the population. Minimum population levels and growth rates are all within reasonable levels, and adverse impacts to the population are not likely.

2. What effect does fertility control have on population growth rate?

As depicted in the Growth Rate Table it appears that fertility control has a minor effect. The Proposed Action and Alternative I which implements fertility control vary by 5.6% over a 20 year period. The target size to which the population is gathered to (118 or 179 wild horses) also appears to have minimal impacts to growth rates, as demonstrated by the growth rates being quite similar for the Proposed Action and Alternative I (fertility control alternative).

3. What effect do the different alternatives have on the average population size?

Fertility control with a gather to the lower limit of the management range would produce the lowest minimum population but not significantly different from the Proposed Action. As expected, the No Action Alternative results in the highest minimum population.

The difference between the Proposed Action and Alternative I is only an 8% increase in average median population size. Both are gathered to lower limit of the management range but fertility control is not implemented in the Proposed Action.