

Nellis



1274-15



**UNITED STATES DEPARTMENT of the INTERIOR
BUREAU OF LAND MANAGEMENT
Caliente Resource Area Office**

P.O. Box 237
Caliente, Nevada 89008

In Reply Refer To:

4720.2
(NV-055.07)

12/95

Dear Interested Public:

Please find enclosed the Decision Record/Finding of No Significant Impact and supporting Environmental Assessment for the 1995 Nevada Wild Horse Range Herd Management Area Plan (HMAP).

The 1995 HMAP for the Nevada Wild Horse Range (NWHR) addresses, among other management actions, the use of immuno-contraception fertility control on the wild horse herd. The HMAP has been modified to incorporate recommendations received during the Public review period. Due to military access constraints, implementation of the HMAP is scheduled for December 21, 1995.

The U.S. Air Force has identified the period of December 15, 1995 to January 20, 1996 as the time period where access and flight limitations to all portions of the Nellis Air Force Range can be granted. The Caliente Resource Area will begin gathering horses within Kawich Valley of the NWHR on December 15, 1995 and continue until all areas of the NWHR have been covered. The implementation of the immuno-contraceptive fertility control will be conducted on those retained mares within the Gold Flat and Cactus Flat portions of the NWHR and Nellis Complex after January 3, 1996.

If you have any questions regarding the HMAP and associated EA, please contact Alan Shepherd, CRA Wild Horse and Burro Specialist, at the Caliente BLM office.

Sincerely,

Curtis G. Tucker
Caliente Area Manager

ENCLOSURES: NWHR HMAP DECISION RECORD/FONSI
NWHR EA (EA # NV-055-06-01)
NWHR HMAP

DECISION RECORD/FINDING OF NO SIGNIFICANT IMPACT
for
NEVADA WILD HORSE RANGE
HERD MANAGEMENT AREA PLAN

EA No. NV-055-06-01

The Bureau of Land Management (BLM), Las Vegas District, proposes to implement a revised Nevada Wild Horse Range Herd Management Area Plan (HMAP). In 1985, an HMAP was developed and approved for the Nevada Wild Horse Range (NWHR). Recent changes in the direction and policy in the wild horse and burro program necessitated a revision of the HMAP. The 1995 HMAP is located in Appendix 1 of the Environmental Assessment (EA).

The Nevada Wild Horse Range (NWHR) is contained within the north-central portion of the Nellis Air Force Range (NAFR). The NAFR is located in south-central Nevada in Clark, Lincoln and Nye counties. The NAFR comprises 2,209,326 acres for use as a high-hazard military weapons testing and training facility. The NWHR composes approximately 394,000 acres of the NAFR.

PROPOSED ACTION: The proposed actions which require analysis are to implement the portions of the NWHR Herd Management Area Plan which deal with selective removals and fertility control for the wild horse population within the NWHR only. All other activities in the HMAP have undergone environmental analysis through the Nellis Air Force Range Resource Plan (RP) / Environmental Impact Statement (EIS)(1992), the EA prepared for the 1985 HMAP (EA-NV-057-4-05) and the EA prepared for the last series of removals in the NWHR (EA-NV-055-02-01) (1991).

The desired objective of this management plan is to create a wild horse herd area under reasonable control of its reproductive rate (rate of increase). The NWHR is well known and well documented for its large wild horse population. The NWHR had a calculated reproductive rate of 27.5% for 1994 (313 foals out of 1451 horses processed) and a current estimated population of 2400 animals. Several large volume removals have taken place within the NWHR to slow the expansion of this population but to date no fertility control procedures have occurred. The number of unadoptable (old age) horses retained within the NWHR and adjacent areas within the NRC is estimated at 1400 animals (+/- 20% based on removal data collected between 1991-94). In order to achieve the desired objective of this plan, fertility control of the horses retained within the NWHR is essential.

The proposed action involves selective removal(s) to approach or attain the Appropriate Management Level (AML) identified in the NWHR HMAP. The AML for the NWHR was set at 1000 animals and was established in 1991 through the evaluation of the all existing monitoring data for the NWHR. The selective removal(s) would target animals in the age group one to nine years. The initial

removal would be scheduled to occur in December 1995 with additional removals to be scheduled as needed to attain AML. The initial selective removal would entail removing approximately 600-900 animals (dependant on available funding as well as access constraints within the Nellis Range). All animals removed through the gather operation would be placed into the Bureau's Adopt-A-Horse program. In conjunction with the initial removal in December 1995, 50-65% of the mares retained within the NWHR over the age of nine years (approximately 400 animals) would be treated with an immuno-contraceptive agent which would inhibit reproduction in the following breeding season.

Mitigation Measures

Standard operating procedures (SOPs) include all methodologies for captures and/or removals which are defined in the Nellis Air Force Range Wild Horse Removal Plan (1991) and analyzed in EA NV-055-02-01. All trap-sites and holding facilities used in captures or removals would be inventoried for threatened and/or endangered plants and animals as well as cultural resources. Traps would be relocated if these resources are found in the area.

Standard operating procedures for implementing the immuno-contraception are all methodologies found The Wild Horse and Burro Fertility Management Policy and Procedures Task Group - Final Report (June 1992) as well as the experimental protocol provided by Dr. John Turner.

All additional data (reproduction rates within older age class mares, recruitment rates, success of fertility control, etc.) will be collected through processing of the animals during gather operations and field observations of the animals.

The wild horses within the NWHR will be managed at a level of 1000 animals. The number of horses will be maintained at AML with an age structure similar to the structure which existed prior to the 1991 gather (Appendix 3 of the HMAP). This age structure as well as an annual recruitment rate of 5-10% should maintain the NWHR herd at the identified AML.

Alternatives Considered but Eliminated from Detailed Analysis

Other forms of fertility control that were considered by the State of Nevada Wild Horse Pilot Fertility Project Task Force were selective removals targeting one or the other sex, sterilization, and hormone implants. Selective removals targeting sex was not recommended at this time due to doubts about effectiveness. Sterilization was not recommended because of the invasive nature of the surgery required, lengthy recovery times would be required, risks of death loss would be too high, and the fact that it is permanent and non-reversible. The use of hormone implants was not recommended because of the invasive procedures required for the implanting and the lengthy recovery

time required prior to release. These alternatives as well as the No Action alternative would not meet the goals and objectives of the purpose and need for managing wild horse populations in natural, thriving ecological balance with with their habitat.

FONSI: I have reviewed this environmental assessment including the explanation and resolution of any potentially significant environmental impacts. I have determined that the proposed action with the mitigation measures will not have any significant impact to the quality of the human environment resulting from the implementation of the proposed action. Therefore, an environmental impact statement is not required for this action. I have determined that the proposed action is in conformance with the approved Nellis Resource Plan. It is my decision to implement the action with the mitigation measures identified.

Rationale: Analysis of impacts did not identify any unique or unknown risks. The stipulations and specifications and mitigating measures will minimize the negative impacts. Direct and indirect environmental benefits are anticipated for wild horses, wildlife, and their habitat with the adoption of the proposed action. The selective removal(s) and immuno-contraceptive fertility control will result in an improvement of the rangeland resources through decreased utilization of the forage in the removal areas, thus taking the first step towards restoring the range to a thriving natural ecological balance.

Curtis G. Tucker
Curtis G. Tucker
Area Manager
Caliente Resource Area

12-13-95
Date

Dawna E. Ferris
Dawna E. Ferris
Environmental Coordinator
Caliente Resource Area

12/12/95
Date

**FINAL
ENVIRONMENTAL ANALYSIS
for
NEVADA WILD HORSE RANGE
HERD MANAGEMENT AREA PLAN**

EA No. NV-055-06-01

**Prepared by Alan B. Shepherd
Wild Horse and Burro Specialist
Caliente Resource Area**

**Caliente Resource Area
Las Vegas District
Bureau of Land Management
Caliente, Nevada**

BACKGROUND INFORMATION

Introduction

The Bureau of Land Management (BLM), Las Vegas District, proposes to implement a revised Nevada Wild Horse Range Herd Management Area Plan (HMAP). In 1985, an HMAP was developed and approved for the Nevada Wild Horse Range (NWHR). Recent changes in the direction and policy in the wild horse and burro program necessitated a revision of the HMAP. The 1995 HMAP is located in Appendix 1 of this document.

The Nevada Wild Horse Range (NWHR) is contained within the north-central portion of the Nellis Air Force Range (NAFR). The NAFR is located in south-central Nevada in Clark, Lincoln and Nye counties. The NAFR comprises 2,209,326 acres for use as a high-hazard military weapons testing and training facility. The NWHR composes approximately 394,000 acres of the NAFR.

Purpose and Need

Population control actions are required to effectively manage the NWHR's wild horse population in order to achieve the appropriate management level (AML). The AML was established in 1991 through a multiple-use evaluation and decision. This AML of 1000 horses was based upon water availability from perennial water sources within the NWHR. Achieving the AML will help to maintain the wild horse population in a natural, thriving ecological balance with the other resources and uses within the NWHR. The population/fertility control being implemented within the State of Nevada is due to the significant rate of animal increase and the high cost of having to repeatedly remove the excess wild horses.

This Environmental Analysis (EA) analyzes only those management actions which have not been previously analyzed in prior analyses, which were prepared in accordance with the National Environmental Protection Act (NEPA). All other activities in the HMAP were analyzed through the Nellis Air Force Range Resource Plan (RP) / Environmental Impact Statement (EIS) (1992), the EA prepared for the 1985 HMAP (EA-NV-057-4-05) and the EA prepared for the last series of removals in the NWHR (EA-NV-055-02-01) (1991).

Relationship to Planning and Other Applicable Regulatory Authorities

This EA is tiered to the Nellis Air Force Range Resource Plan/Final (EIS) which analyzed the ecological impacts of managing the rangelands under a program of habitat monitoring and adjustment of wild horse numbers.

The proposal is in conformance with all applicable regulations and policies: The Wild Free-Roaming Horse and Burro Act (Public

Law 92-195), as amended by the Federal Land Policy and Management Act (Public Law 94-579); the Military Lands Withdrawal Act of 1986 (Public Law 99-606) which withdrew the Nellis Air Force Range for use as a high-hazard military weapons testing and training facility; Title 43 Code of Federal Regulations, Part 4700; BLM Manual 4710, Rel. 4-90; the BLM Strategic Plan for Management of Wild Horses and Burros on Public Lands (1992); and the Draft Nevada State Office Manual Supplement (Jan. 1989).

PROPOSED ACTION

The proposed action would be to implement selective removals and fertility control on the wild horse population within the NWHR.

The selective removal(s) would target animals in the age group one to nine years. The initial removal would be scheduled to occur in December 1995 with additional removals to be scheduled as needed to attain AML. The initial selective removal would entail removing approximately 600-900 animals (dependant on available funding as well as access constraints within the Nellis Range). All animals removed through the gather operation would be placed into the Bureau's Adopt-A-Horse program.

In conjunction with the initial removal, 50-65% of the mares retained within the NWHR over the age of nine years would be treated with an immuno-contraceptive agent which would inhibit reproduction in the following breeding season.

The proposed action plan for use of immuno-contraception within the NWHR is as follows: immuno-contraceptive drugs will be injected into 50-65% of all nine years and older females retained within the NWHR during the December 1995 gather operation. Based on existing data there will be approximately 700-800 mares in this age group if all the horses within the NWHR are captured during the gather operation. Approximately 375-488 mares (based on 750 mares) will be treated with the immuno-contraceptive agent.

The exact numbers of animals to be treated with immuno-contraception would be determined through the analysis of population modeling data prior to the implementation of the project (Appendix 1 of the HMAP contains the calculated age and sex distributions, number of females to be treated, and population size based on 20 random trials using the Wild Horse Population Model developed by Stephen Jenkins, UNR). Due to the seasonal movements of the horses and the ability to capture all the animals present, the exact number in each area is hard to predict but would approximate the numbers presented above.

Holding times and subsequent effects of holding would be consistent with the experimental protocol for the fertility control study as identified in Appendix 2 of the HMAP. The length of holding time would vary with each horse captured. All horses to be retained within the NWHR will be held until the end

of the gather operation or completion of specific valley that would allow the horses not to be captured again. The period of holding could be as short as one (1) day to as long as thirty (30) days.

Standard operating procedures (SOPs) include all methodologies for captures and/or removals which are defined in the Nellis Air Force Range Wild Horse Removal Plan (1991) and analyzed in EA NV-055-02-01. All trap-sites and holding facilities used in captures or removals would be inventoried for threatened and/or endangered plants and animals as well as cultural resources. Traps would be relocated if these resources are found in the area.

Standard operating procedures for implementing the immuno-contraception are all methodologies found The Wild Horse and Burro Fertility Management Policy and Procedures Task Group - Final Report (June 1992).

Alternatives Considered but Eliminated from Detailed Analysis

Other forms of fertility control that were considered by the State of Nevada Wild Horse Pilot Fertility Project Task Force were selective removals targeting one or the other sex, sterilization, and hormone implants. Selective removals targeting sex was not recommended at this time due to doubts about effectiveness. Sterilization was not recommended because of the invasive nature of the surgery required, lengthy recovery times would be required, risks of death loss would be too high, and the fact that it is permanent and non-reversible. The use of hormone implants was not recommended because of the invasive procedures required for the implanting and the lengthy recovery time required prior to release. These alternatives as well as the No Action alternative would not meet the goals and objectives of the purpose and need for managing wild horse populations in natural, thriving ecological balance with with their habitat.

DESCRIPTION OF THE AFFECTED ENVIRONMENT

A complete description of the affected environment is found in several documents: The Nellis Air Force Range Resource Plan, Nellis Air Force Range Wild Horse Removal Plan and EA, as well as the NWHR HMAP. The following information is presented to provide a better understanding of why fertility control measures are being sought with the NWHR wild horse herd:

The desired objective of this management plan is to create a wild horse herd area under reasonable control of its reproductive rate (rate of increase). The NWHR is well known and well documented for its large wild horse population. The NWHR had a calculated reproductive rate of 27.5% for 1994 (313 foals out of 1451 horses processed) and a current estimated population of 2400 animals. Several large volume removals have taken place within the NWHR to slow the expansion of this population but to date no fertility

control procedures have occurred. The number of unadoptable (old age) horses retained within the NWHR and adjacent areas within the NRC is estimated at 1400 animals (+/- 20% based on removal data collected between 1991-94). In order to achieve the desired objective of this plan, fertility control of the horses retained within the NWHR is essential.

Fertility control of the NWHR horse herd could be achieved using these mechanisms for both short and long term control of the population. With the desired objective (long term) as a horse herd with a substantially reduced reproductive rate (<10%), only some form of fertility control of all animals retained would achieve this objective. Immuno-contraception would provide fertility control for a 1-2 year period in the herd's treated mares, a small number of these mares (<10%) would still bear foals every year which would require gathering of the herd to remove this increase. The use of immuno-contraception would require retreating the mares every two years until a long-term (greater than 2 years) immuno-contraceptive is developed. One strong positive aspect of the immuno-contraception alternative is that it is reversible if a natural disaster to the horse population should occur.

Immuno-contraception represents one of the most recent advances in fertility control methodology. One of the most successful applications of immuno-contraception involves vaccinating the animal with porcine zonae pellucidae (PZP) which prevents fertilization of the egg. The zona pellucida is a non-cellular protein membrane which surrounds all mammalian eggs. In order for fertilization to occur, sperm must first bind to this membrane before they can penetrate the egg. The intramuscular injection (above the hamstring) of PZP into mares causes them to produce antibodies against the protein. The antibodies bind to the injected protein as well as the sperm attachment sites on the mare's eggs. This prevents sperm from attaching to the egg and prevents fertilization.

Pen and field studies have been conducted on wild horses using porcine zona pellucida (PZP). PZP immuno-contraception in wild horse mares was found to be successful in reducing pregnancy. At the present time, the PZP has been effective for 1-2 years using a one-shot treatment. Studies are currently being conducted to develop a one shot vaccination which will have an effective life of two or more years.

Field studies on wild horses has shown over 90% success in preventing pregnancy. Population models indicate that the current one year duration of control would be ineffective in the long-term management of wild horse populations. Speculative modeling, using a drug with a three year effective life, indicates that immuno-contraception targeted at 4 to 5 year old mares would be feasible in controlling reproduction.

PZP has been shown to be reversible in only a short time frame.

No side effects or environmental hazards have been identified. Some animals may experience allergic reactions to the agent, however, no problems have been identified in previous wild horse studies.

ENVIRONMENTAL CONSEQUENCES

The consequences of removing wild horses and maintaining AML in the NWHR have been analyzed in the EA for the latest Wild Horse Removal Plan (EA-NV-055-02-01) and the EA for the 1985 NWHR HMAP (EA-NV-057-4-05). The proposed actions, selective removals and fertility control, would have no impact on the physical environment beyond those already analyzed. The following do not occur or would not be impacted by the proposed action: threatened or endangered species (plant or animal); riparian areas; wilderness or wilderness study areas; social and economic values; water (drinking/ground/quality); air quality; Native American Religious concerns, wastes (hazardous and solid); floodplains; wetlands; areas of critical environmental concern; wild and scenic rivers; visual resource management; prime or unique farmlands; or cultural, paleontological, and historical resources.

All trap-sites and holding facilities used in captures or removals would be inventoried for threatened and/or endangered plants and animals as well as cultural resources. Traps would be relocated if these resources are found in the area.

Wild Horses

The use of fertility control and/or selective removals would affect the wild horse population in the NWHR by lowering the reproductive rates (currently 27.5%). The reduced reproductive rates would have a positive impact on both individual wild horses and the NWHR's population by causing a slower population growth which in turn would make removals necessary less often. Fewer removals would mean that individual horses would experience less stress from removal actions. The initial removal and subsequent removals (if necessary) of wild horses aged one to nine years to approach and/or attain AML and the injection of an immuno-contraceptive drug would cause increased stress levels and could potentially increase mortality on a temporary basis (less than a one percent death loss rate has occurred during gathers within the NWHR since 1992). Increased mortality may be caused by a slight increase in handling to inject animals but is not anticipated to exceed one percent (1%) of the animals treated.

The advantages of this proposed strategy are identified as, a) the basic gene pool of the NWHR's herd would remain intact; b) younger more adoptable animals would be available for private placement; c) displacement of older animals would be minimized; d) capability for selection and upgrading herd through sterilization of animals with undesirable qualities, or physical debilitation; e) opportunities to reverse or continue

contraception; f) reduced rates of population growth; and g) mares continue to ovulate so that stallions would continue to tend them and maintain the harem structure.

The immuno-contraceptive treatment may cause temporary disruption of band units. When horses are captured and then released back to the same area, it appears that they reorganize into bands which closely resemble the former structure.

The NWHR's horse habitat would show a positive response to the proposed action by receiving reduced utilization pressure on the vegetative growth that occurs each year. The vegetative component of the area would be able to strengthen its root reserves and fulfill its reproductive cycles due to the reduced grazing pressure by the wild horses.

PROPOSED MITIGATING MEASURES

Standard operating procedures (SOPs) include all methodologies for captures and/or removals which are defined in the Nellis Air Force Range Wild Horse Removal Plan (1991) and analyzed in EA NV-055-02-01. All trap-sites and holding facilities used in captures or removals would be inventoried for threatened and/or endangered plants and animals as well as cultural resources. Traps would be relocated if these resources are found in the area.

Standard operating procedures for implementing the immuno-contraception are all methodologies found in The Wild Horse and Burro Fertility Management Policy and Procedures Task Group - Final Report (June 1992) as well as the experimental protocol provided by Dr. John Turner.

All additional data (reproduction rates within older age class mares, recruitment rates, success of fertility control, etc.) will be collected through processing of the animals during gather operations and field observations of the animals.

The wild horses within the NWHR will be managed at a level of 1000 animals. The number of horses will be maintained at AML with an age structure similar to the structure which existed prior to the 1991 gather (Appendix 3 of the HMAP). This age structure as well as an annual recruitment rate of 5-10% should maintain the NWHR herd at the identified AML.

SUGGESTED MONITORING

The Caliente Resource Area Wild Horse and Burro Specialist, the Caliente Resource Area Manager and the Las Vegas District Wild Horse and Burro Specialist would ensure that all monitoring identified in the NWHR HMAP would occur.

CONSULTATION AND COORDINATION

Intensity of Public Interest and Record of Contacts

The issue of wild horses and their management has created intense public interest for many years. Concerns include forage allocation for wild horses, livestock and wildlife; maintaining levels of wild horses; and removals of wild horses.

Since the public interest is high and the wild horse program is often controversial, public notification of the HMAP and this EA was given and public comments were solicited. Comments received were considered in finalizing the HMAP and associated EA.

The following individuals or groups responded to the initial review of these documents and their comments were addressed where pertinent:

- Commission for the Preservation of Wild Horses and Burros
- Nevada Division of Wildlife

Internal District Review

Gary McFadden
Dawna Ferris


Kyle Teel

Curtis Tucker
Mike Dwyer

Wild Horses
Environmental Coordination/
Cultural/Land Use Planning
Wildlife/Threatened and
Endangered Animals
Caliente Resource Area Manager
Las Vegas District Manager

SIGNATURES

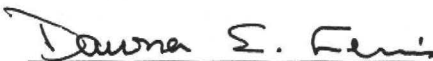
Prepared by:



Alan B Shepherd
Wild Horse and Burro Specialist
Caliente Resource Area

12/13/95
Date

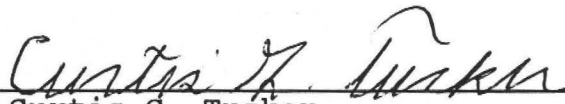
Reviewed by:



Dawna Ferris
Environmental Coordinator
Caliente Resource Area

12/12/95
Date

Approved by:



Curtis G. Tucker
Area Manager
Caliente Resource Area

12-13-95
Date

NEVADA WILD HORSE RANGE HERD MANAGEMENT AREA PLAN

I. INTRODUCTION:

A. Location and Setting:

The Nevada Wild Horse Range (NWHR) is contained within the north-central portion of the Nellis Air Force Range (NAFR). The NAFR is located in south-central Nevada in Clark, Lincoln and Nye counties. The NAFR occupies Kawich Valley, Cactus Flat, Gold Flat, Stonewall Mountain, and Mud Lake. The NAFR is bordered on the north, west and portions of the east boundaries by the Tonopah Resource Area (RA), Battle Mountain District of the Bureau of Land Management (BLM). The southern and portions of the eastern boundaries is the made up of the Stateline and Caliente RA's, Las Vegas District BLM. The remainder of the eastern boundary is composed of the boundary of the Desert National Wildlife Refuge (U.S. Fish and Wildlife Service (USFWS)). The NAFR comprises 2,209,326 acres of which approximately 394,000 acres composes the Nevada Wild Horse Range. The Caliente RA has administrative responsibilities for all land management activities within the NAFR and NWHR.

B. Background Information:

The Nevada Wild Horse Range Herd Management Area Plan (HMAP) is designed to manage the wild horse population inhabiting the NWHR in accordance with Washington Office Instruction Memorandum 83-289, Title 43 Code of Federal Regulations (Part 4700), and Nevada State Office Draft Manual Supplement 4730.6. The wild horse population will be managed as a component of the public lands in a manner that maintains or improves the rangeland ecosystem and promotes a thriving ecological balance with all other users and resources. The HMAP adheres to the multiple use policy specified in the Wild Free Roaming Horse and Burro Act of 1971 (P.L. 92-195) as amended, and the Federal Land Policy and Management Act of 1976 (FLPMA, P.L. 94-579), while maintaining the free roaming behavior of the wild horses with the NWHR.

Preparation of a wild horse herd management plan designed to manage the wild horses within the NWHR, using multiple use principles, was recommended by the Nellis Air Force Range Resource Plan (RP, Las Vegas District, BLM, U.S. Department of the Interior, 1992). There are currently five (5) HMAPs written for HMAs within the Caliente Resource Area. The BLM Strategic Plan for the Management of Wild Horses and Burros directs each Resource Area to develop HMAPs for all HMAs within the Resource Area. The pending HMAP for the Nevada Wild Horse Range will replace the HMAP written and approved in 1985.

The appropriate management level (AML) for the wild horses within the NWHR was set in 1991 through evaluations and multiple use decisions. This AML of 1000 horses was based upon water availability from perennial water sources within the NWHR.

The Nevada Wild Horse Range has been chosen to become the second fertility controlled horse area within the administrative responsibility of the BLM. Population/fertility control is being implemented within the State of Nevada due to the significant rate of animal increase and the high cost of having to repeatedly remove the excess wild horses. The approved Nevada Wild Horse Range HMAP will help facilitate additional fertility control usage within other wild horse herds within Nevada and the Bureau.

C. Resource Information:

1. Wild Horse Population Information

a. Wild Horse History

The Nevada Wild Horse Range was established in 1962 by a Cooperative Agreement with the Commander, Nellis Air Force Base and the State Director, Nevada Bureau of Land Management. The NWHR was the first wild horse area established in the U.S. and was brought about in response to pressure from across the nation by thousands of wild horse admirers. While the primary purpose of the Nellis Range Complex (NRC), a complex withdrawn from public use, is weapons development and flight training, the existence of wild horses on the NWHR is a secondary use of the lands.

In 1971, Congress passed the Wild Horse and Burro Act and the USDI subsequently developed the 43 Code of Federal Regulations 4700 to implement the Wild Horse and Burro Act. In 1977, a five-party agreement, between the U.S. Air Force (USAF), U.S. Fish and Wildlife Service (USFWS), U.S. Department of Energy (DOE), Bureau of Land Management (BLM), and the Nevada Division of Wildlife (NDOW), was developed for protecting, developing, and managing the natural resources of fish and wildlife, vegetation, watershed, and wild horses within the Nellis Air Force Range.

Wild horse population estimates in 1962 were 200 head. These horses were mainly in the area designated as the Nevada Wild Horse Range (NWHR). The NWHR, comprised of Kawich Valley and eastern one-third of Cactus Flat and Gold Flat, has no natural barriers or management facilities present to deter wild horses from roaming throughout the NAFR (Gold Flat and Cactus Flat areas). Since 1962, the wild horses have expanded their range and roam over most of the northern two-thirds of the NRC. The total area of the present home range is estimated at 1,780,000 acres.

Historically the NRC was grazed by livestock, wild horses, and wildlife. Even though the area was withdrawn primarily for military purposes in 1940, livestock grazing continued until 1979. Attempts were made during the fifties and sixties to discontinue livestock grazing to no avail. In 1979, a fence

along the northern boundary was completed, thus eliminating livestock grazing from the area and movement in and out of the NRC by wild horses.

In 1985 an approved Herd Management Area Plan (HMAP) was developed for the NWHR. This HMAP established management methods and studies that would be used within the NWHR. This document also recommended an appropriate management level (AML) of 2000 wild horses for inside the NWHR only.

Due to large numbers of wild horses roaming freely about the NRC, military activities were often interfered with by the animals. Between 1985 and 1987, the BLM with cooperation of the USAF, conducted a three large captures to manage the horse population. Table 1 below displays capture totals for the period 1984 through 1994.

Table 1. Wild Horse Removal Totals for the Period 1984 through 1994.

WILD HORSE REMOVAL TOTALS FOR 1984 THROUGH 1994		
Date of Removal	Location	Animals Removed
June 1985	EC East	1,498
June 1986	EC East	1,043
July/Aug 1987	EC West/EC East	1,210
Dec 1989	EC East/EC West	683
May/Aug 1991	EC West/EC East	2,269 (includes 395 orphaned foals)
Jan/Feb 1992	Kawich Valley	820
May/June 1992	EC West/EC East	730
Jan 1993	71 S., 71 N., 76 and EC West	563
Sept 93	71 S., 71 N., 76, Kawich and EC West/EC East	872 (includes 126 burros and mules)
Dec 1994	71 S., 71 N., 76, and EC West/EC East	743
	TOTAL	10,431

Removals were discontinued pending the final resolution of the 1988 Animal Protection Institute's (API) Interior Board of Land Appeals (IBLA) appeal on BLM's scheduled removal for 1988. In 1989, IBLA ruled in favor of API's appeal and removals were temporarily interrupted.

In November 1988, BLM completed an investigation and report on the death of 61 horses. The animals died of ammonia toxicity

when they accidentally ingested rinse water with a urea compound washed out of a truck during a time the natural water sources were not meeting the demands of the horses within the NRC.

During December 1989, 683 wild horses were removed under an emergency removal due to drought conditions and lack of sufficient water supplies for the entire horse herd. In July 1990, drought, decreased natural water supplies, and insufficient forage caused the death of more than 50 horses. BLM requested that the USAF begin to haul water to the horses when natural waters were not adequate, pending removals scheduled for May/August 1991. The 1990 census counted 4,302 horses and a relative horse concentration survey in February counted 3,236. The post capture census conducted in September 1991 counted 5,219 horses following the removal of 2,269 horses during the gather.

Census data collected for the period 1984 to 1991 for the NRC is displayed in Table 2. The last census completed on the NRC and the associated NWHR was completed in September 1991.

Table 2. Wild Horse Census Data Collected for the Period 1984 through 1991 within the NRC and Associated NWHR.

WILD HORSE CENSUS INFORMATION FOR THE NRC AND ASSOCIATED NWHR FOR THE PERIOD 1984 TO 1991	
YEAR	ANIMALS COUNTED
1984	4,890
1985	5,642
1986	4,178
1989	6,255
1990	4,302
1991 (Feb)	3,236
1991 (Sept)	5,219
1986 and Sept 1991 censuses are post-gather numbers.	

The Caliente Resource Area (CRA) initiated a multiple use evaluation of the NWHR during 1990-91 to evaluate the current conditions of the NWHR. This evaluation, which was signed and approved in December 1991, established a new AML for the NWHR at 1,000 horses. The limiting factor which established this lower AML was the lack of reliable perennial water. Developed in conjunction with this evaluation was a wild horse gather plan and environmental assessment (EA), which outlined the necessary steps to be taken to achieve the 1,000 animal AML. This gather plan and supporting documents were signed and approved by the

Assistant Secretary of the Interior on January 16, 1992.

During January and February 1992, the CRA conducted the first gather under the new gather plan in which 820 wild horses were removed from Kawich Valley on the east side of the NWHR. A second gather was completed in May and June 1992 within the Cactus Flat portion of the NRC, which resulted in the removal of 730 horses.

In January and February 1993, the CRA completed its third horse gather within the NRC in a twelve (12) month period. This gather was concentrated within the southern reaches of the winter range for the wild horses in Gold Flat and Stonewall Mountain areas (Areas 75 E. & W. and 76). This gather was able to remove animals that spend a significant portion of their time within restricted access areas. A total of 563 horses were removed during this gather before it was terminated due to winter emergencies within northern Nevada wild horse herds.

During September 1993, a major gather operation was conducted within the NRC and NWHR. The entire northern half of the NRC was gathered by either helicopter or water trapping. Primary helicopter activities were placed on Kawich Valley (Areas 74 B. and east half of EC East) and Stonewall Flat (Areas 71 N. & S. and 76) with water trapping being conducted within EC West and the west half of EC East. This gather operation handled 1,638 horses and burros with 872 these animals being removed. All the burros (120 burros and 6 mules) captured were removed from the Stonewall Mountain and Stonewall Flat areas due to the NRC being classified as a burro-free area.

A December 1994 gather marked the first time that helicopters were used within EC East and West (Cactus Flat and Gold Flat) to gather horses. Over 1420 horses were captured with 743 horses being removed from the Range.

b. Present Situation

i. Wild Horse Habitat and Use Areas

Wild horse habitat in the NWHR and NRC was evaluated in 1990-91 in the Nellis Air Force Range Evaluation. Results of this analysis indicated that perennial water availability was the most limiting factor in the NWHR. Forage availability is limited due to excessive wild horse numbers. Cover, space, and forage were determined to be less restrictive than water availability in terms of supporting the wild horse populations.

In this evaluation 764,480 acres were evaluated. Within this area, there are 126,720 acres of dry lake beds and mountain ranges that are unsuitable range for horses. There are 282,560 acres capable of producing forage and are within 6 miles of a

water source that is suitable for use by horses. The remaining 355,200 acres are potentially suitable. These acres would become suitable acres if water sources were available.

Table 3 is a compilation of the known perennial water sources on the NAFR. The sources were visited during 1989 to 1993 with the rate of flow being measured and/or estimated.

Table 3. Known Perennial Water Sources of the NAFR and Rate of Flow.

Water Source Inventory on the Nevada Wild Horse Range Nellis Air Force Base 1989 to 1995 Readings are in gallons/minute							
Water Source	1989	1990	1991	1992	1993	1994	1995
Cliff Spring **	2.8	2	not measurable				
Cedar Well *	0.25	0.19	0.02	dry	dry	0.75 ¹	0.75
Corral Spring (Lower Trough)			0.56	0.25	0.625	0.5	0.5
Corral Spring (Upper Trough)	0.125	0.47	0.2	0.2	0.2	0.2	0.2
Tunnel Spring	0.125	0.09	not measurable	not measurable	0.4	0.3 ³	0.3
Harley Spring	0.125	0.125	0.08	0.125	0.17		
Cactus #1			0.83	0.625	0.625	0.625	0.625
Cactus #2		1.5	0.94	0.94	0.75	0.75	0.75
Lower Antelope A&B		0.75	0.03	0.016	not measurable	not measurable	not measurable
Upper Antelope ***				15 rain runoff	not measurable	not measurable	not measurable
Middle Rose Trough	2.5	2	2.2	2.5	3.0	2.6 ²	2.6
Lower Rose Trough			1.3	1.875	1.5	1.2 ²	1.0
Cedar Pass Spring		0.125	not measurable	0.25	0.54	0.4	0.4
Silver Bow (source) #	1	1	not measurable	not measurable	not measurable	not measurable	not measurable
Silver Bow (trough) #		1	0.03	not measurable flow est. at 1-1.5	not measurable flow est. at 1-1.5	not measurable flow est. at 1-1.5	not measurable flow est. at 1-1.5
<p>* Cedar Well has been silted in by runoff. Water table has dropped below catchment box. ** Cliff Spring was not measured in 1992-93 due to access constraints. *** Upper Antelope Spring was found in 1992 due runoff flowing wash near Lower Antelope Spring # Silver Bow was not measured in 1992-93 due high runoff in 1993 and was unmeasurable in 1992. ¹ Cedar Well Spring was re-established in May 1994 ² Rose Spring Pipeline was replaced in May 1994 ³ Tunnel Spring Pipeline and Trough was replaced in May 1994</p>							

Water is a critical resource in semi-arid environments. Lack of sufficient drinking water is very stressful to horses as evidenced by veterinarian report on horse condition collected in November 1989 and necropsy reports from the December 1989 emergency gather. When horses must wait at the water source to

obtain sufficient drinking water, severe over utilization of the vegetation and mechanical damage to the water source result. In semi-arid environments it is much easier to prevent damage to the water and vegetative resources than to repair damage. At the present time, flow data shows sufficient water for 1000 horses. With the current population at over twice that number, the horses are drinking the water as fast it comes out of the pipe or the ground. Horses are spending large amounts of time waiting to get drink. Areas around water sources are in severe condition and will likely never respond to a reduced horse population as the rest of the range may respond.

Wild horses graze the NAFR year long. From spring until late fall, horses use perennial water sources and forage up to 15 miles from these waters. With the coming of fall rains and winter snows, horses have less dependency on perennial water sources and range further south, utilizing the snow cover as a water source.

The CRA's Wild Horse and Burro Specialist has conducted extensive use pattern mapping within the NRC and NWHR as well as water inventories for the area. This monitoring has been conducted on a annual basis since 1985, except in 1988-89 for which no monitoring was completed.

Use pattern maps indicating significant areas of heavy and severe utilization have been prepared. These maps also indicate a trend of increasing size in the heavy and severe utilization zones as shown in Table 4 below.

Table 4. Utilization Summary for NAFR Use Pattern Maps for the Period 1985 through 1993.

Utilization Summary for NAFR Use Patterns Maps for the Period 1985 to 1993 Identified by Acres within each Utilization Level							
Year	Unsuitable /No Use	Slight 1-20%	Light 21-40%	Moderate 41-60%	Heavy 61-80%	Severe 81-100%	Total Acres
1985	125,748	94,963	180,056	185,939	120,372	170,341	877,419
1986	188,927	191,786	74,415	74,754	117,239	230,298	877,419
1987	158,739	282,293	87,511	83,796	113,765	151,315	877,419
1990	0	58,238	0	258,127	0	561,054	877,419
1991*					9,075	366,959	376,034
1992*					16,839	382,541	399,380
1993*					20,000	370,000	390,000

*Due to time constraints and access limitations the entire horse use area was not monitored for 1991-93.

Photographs taken during the monitoring trips show severe use and degraded condition of plants over the entire NWHR and NRC that is used by wild horses. Little or no residual forage was available in significant portions of the range. Because of low plant vigor, response to precipitation is not significantly noticed.

Any regrowth or growth response to moisture is generally consumed quickly by the horses.

Vegetative growth for the shrubs and grasses varies from 1 to 6 inches annually. This growth generally occurs following seasonal precipitation in the spring (rain/snow) and late summer (thunderstorms). The severe utilization by the wild horses has caused the palatable shrubs and grasses to have decreased vigor which has led to limited growth and weakened root reserves.

Utilization on the shrub species (winterfat, bud sage) can be observed on the present years growth as well as the bark, stems and residual growth from the previous year. The grasses (Indian ricegrass, needleandthread, three awn, galleta grass, and bottlebrush squirreltail) are grazed to the ground level with any new annual growth or regrowth often only visible on the edges of the plants.

Generally, at any point in time, wild horses can be observed in all areas of the NWHR and NRC. Wild horses graze this entire area year round but the major concentrations of horses can be found in seasonal use areas. Primarily during the late fall, winter and early spring, the majority of the horses will be found in the extreme southern end of Kawich Valley, Gold Flat and south of Stonewall Mountain. The forage is generally more available and ephemeral water is present from rains and snows. As temperatures rise in the spring and the ephemeral waters dry up on the winter range, the concentration of horses move north. The animals are now using the perennial water sources associated with Cactus Flat, Stonewall Flat, Mud Lake, and upper Kawich Valley. The horses will be traveling up to 15 miles in this area to find suitable grazing as summer progresses. With any faint hint of oncoming moisture (thunderstorms or snow), the horses will begin traveling to the southern portions of the range. They make this trek knowing that better grazing areas are available with the ephemeral water.

ii. Population Demographics

Demographic data for the wild horses within the Nevada Wild Horse Range has been collected during gathers conducted on the area since 1991. Age structure and rates of increase of the population can all be calculable from removal data.

Age structure is useful in determining the direction a population is headed. For example, a population with many young animals is an increasing population and vice versa; a population with too many older animals is usually decreasing. The wild horse population within the NWHR is increasing fairly significantly as shown by 41% of the population being under 4 years of age (based on data collected in Jan. and Sept. 1993). Another significant factor to this information is that over 45% of the horse

population is over 10 years of age. This large older animals percentage is due to selective removals since 1991, which concentrated removals on all animals under 9 years of age. The life-span of wild horses is believed to average 20-25 years, which is routinely observed within the NWHR herd. It is common to observe a mare within this age group with a foal at her side which proves the capability and resiliency of these horses. Survival rates and rates of reproduction are factors of population demographics which give insight into the health and vigor of a population. When the reproductive rate is was calculated using the formula from the BLM Nevada Manual Supplement 4730, an annual reproductive rate of 34% for the January 1993 gather, 23% for the September 1993 gather, and 27.5% for the December 1994 gather.

$$\text{Reproductive Rate} = \frac{\text{Number of animals 0-1 year of age}}{\text{Number of animals 1 year and older}}$$

Band structure within the NWHR is derived from census data and field observations. Band size ranges from 1 to 10 animals but varies depending on the total population size. When the population is large, band sizes increase and conversely when the population is smaller, band sizes decrease. Bands within the NWHR typically have one stallion and several mares. Information is sketchy on average numbers of each sex per band because it is not practical to sex the animals during the census. Sexing the animals during field observations is often not possible due to distance and the fact that the horses are generally moving away from the observer.

To date, there has been no genetic studies conducted within the NWHR. Overt characteristics, such as color and conformation, are evident from animals removed through gathers. Color characteristics such as pinto markings and primitive bloodlines have been documented in the various gathers conducted within the NWHR. Table 5 shows percentages of each color variation found within the NWHR based on January and September 1993 gathers within the NWHR. The color composition presented in Table 5 has been consistent will all gathers on the NWHR. Upon reaching AML for the NWHR, the color composition should approximate these levels.

Table 5. Percentage of Color Variation in the NWHR.

Percentage of Color Variation in the NWHR		
Color	Jan 1993 Percentage	Sept 1993 Percentage
Brown	30%	20%
Black	10%	12%
Sorrel	27%	21%
Bay	25%	34%
Gray	2%	7%
Other: Pinto, Roan, White, Buckskin, Dun, Palomino	5%	6%

A few horses, classified as duns, show the primitive color characteristics of the "Spanish Barb". These traits include a general buckskin color with a dark dorsal stripe down the back, black zebra stripes on the legs, and a black mane and tail with blonde hairs mixed in. There is controversy over whether these characteristics are primitive or not and the purity of the bloodlines is questionable. However, any animals exhibiting these traits will be excluded from removals or fertility control measures.

Additionally, a small percentage of the horses from the Stonewall Mountain and Stonewall Flat areas outside the NWHR exhibit pinto color markings. Any animals exhibiting these markings will be retained within the NWHR to preserve these markings. They will also be exempt from any fertility control processes.

The overall condition of the NWHR horses is fair at the present time. In the late 80's and early 90's, when the horse population was in excess of 4000 animals, a majority of the horses gathered were in extremely poor condition. These poor conditions can be contributed to insufficient water supplies, severe use levels on the available forage, and excessive horses numbers within the NWHR. Due to an average of two removals a year since 1992, which has eased some of the competition for water supplies and forage, the condition of the horses within NWHR is beginning to show some improvement. This upward trend in condition should continue as more removals are completed within the NWHR in order to achieve the appropriate management level identified for the NWHR.

2. Reference to the Resource Plan (RP)

The Approved Nellis Air Force Range Resource Plan (RP) and Record of Decision (ROD) directs the level of management of the natural and cultural resources by the Bureau of Land Management for the Nellis Air Force Range planning area. The development of the RP conforms with the requirements of the Military Lands Withdrawal Act of 1986.

The planning process for the development of this Plan began in July, 1988. Final approval by the Nevada BLM State Director was received in February 1992. This Plan directs the BLM to manage the wild horses found within the NRC as authorized within the Cooperative Agreement of February 8, 1974 with the Nellis Air Force Base. This cooperative agreement identifies the area for management of wild horses as the Nevada Wild Horse Range and describes its location by legal description.

The Approved Resource Plan establishes objectives, direction, and actions for the management of wild horses within the NRC and the associated NWHR.

3. Other Resources and Uses

a. Vegetation

The planning area is characterized by a high diversity of vegetative communities. The transition from the Great Basin Desert to the north and the Mojave Desert to the south occurs on the northern portion of the Nellis Air Force Range. The southern portion of the planning area is dominated by communities typical of the eastern Mojave Desert. Plant associations vary geographically and with elevation. Descriptions of the major plant communities are as follows:

1. Saltbush Community: This community is found at the lower elevations of the planning area, occurring from below 4,000 feet to about 5,000 feet, in valley bottoms, on playas and bajadas. Dominant shrub species of this community include four-wing saltbush (*Atriplex canescens*), shadscale (*Atriplex confertifolia*), green ephedra (*Ephedra viridis*), seep weed (*Suaeda torrevana* var. *ramosissima*) and bud sage (*Artemisia spinescens*).
2. Mixed Mojave Community: This broad community type, which may be further divided into several ecological sites, consists of a mixture of shrubs characteristic of the Mojave Desert. This community generally occurs on tuff or alluvial deposits in the southeastern portions of the Range at elevations generally between 4,500 feet and 5,500 feet. Joshua tree (*Yucca brevifolia*) is a conspicuous overstory species in this community. Dominant shrubs are smooth horsebrush (*Tetradymia glabrata*), spiny menodora (*Menodora spinescens*), hymenoclea (*Hymenoclea salsola*), box thorn (*Lycium andersonii*), green ephedra, green rabbitbrush (*Chrysothamnus viscidiflorus*), Nevada jointfir (*Ephedra nevadensis*), and four-wing saltbush. Common grasses are big galleta (*Hilaria rigida*), Indian ricegrass (*Oryzopsis hymenoides*), and fluffgrass (*Erioneuron pulchellum*). Conspicuous cacti are cottontop barrel

cactus (*Echinocactus polycephalus*) and prickly pear (*Opuntia echinocarpa*).

3. **Blackbrush Community:** The blackbrush (*Coleogyne ramosissima*) community is found in zones which are intermediate between mixed Mojave and sagebrush community types and marks the interface between the Great Basin and Mojave deserts. At lower elevations, it dominates the upper bajadas above the Mixed Mojave community type; at higher elevations it interfaces with Sagebrush communities, but often forms pure stands on drier south- or west- facing slopes. Subordinate shrubs in the Blackbrush Community include desert bitterbrush (*Purshia glandulosa*), big sagebrush (*Artemisia tridentata*), black sagebrush (*Artemisia nova*), Nevada jointfir, and green rabbitbrush. Grass cover tends to be quite low in this community, with dominants being squirreltail (*Sitanion hystrix*), Indian ricegrass, and galleta (*Hilaria jamesii*). When blackbrush is burned or otherwise disturbed, purple three awn (*Aristida purpurea*) dominates the site. Grizzlybear pricklypear (*Opuntia erinacea*), and strawtop pricklypear (*Opuntia echinocarpa*) are common in this vegetation association.
4. **Sagebrush Community:** This community is dominated by a mosaic of black sagebrush and big sagebrush, which occur on a variety of parent materials at intermediate elevations above 5,000 feet. Big sagebrush occurs on deeper, sandy soils on mesas and in drainages and valley bottoms, whereas black sagebrush occupies shallower, rocky soils of ridges and hillsides. Often these two sage species occur as co-dominants. Subordinate trees and shrubs in this community are single needle pinyon (*Pinus monophylla*), Utah juniper (*Juniperus osteosperma*), desert bitterbrush, Nevada jointfir, green ephedra, and cliffrose (*Cowania mexicana*). Representative grasses of this community type include squirreltail, galleta, Indian ricegrass, and desert needlegrass (*Stipa speciosa*). The major cacti occurring in this community type are grizzlybear and strawtop pricklypear.
5. **Pinyon-Juniper Community:** Single needle pinyon and Utah juniper become dominant constituents with sagebrush at about 6,000 feet, along drainages and on north-facing slopes. They continue to form discontinuous stands up to about 7,800 feet, creating a vegetation belt at these elevations across most of the Nellis Air Force Range. Understory shrubs in this community are black sagebrush, big sagebrush, desert bitterbrush, cliffrose, green ephedra, and green rabbitbrush. Common grasses are needle-and-thread (*Stipa comata*) and

squirreltail, with prickly pear being the most conspicuous cactus.

6. Pinyon Community: Single needle pinyon occupies discontinuous pure stands above 6,300 feet, forming a fairly continuous forest at elevations between 7,500 feet and 8,500 feet. The Pinyon community is found primarily on rocky volcanic substrates. Understory shrubs in this community are identical to those in the Pinyon-Juniper community, although currant (*Ribes velutinum*) and Gambel's oak (*Quercus gambelii*) are also found as localized co-dominants. The dominant grass is mutton grass; the prickly pear is found in scattered locations.
7. Mountain Mahogany Community: This community type is a distinct association of mountain mahogany (*Cercocarpus ledifolius*), single needle pinyon, and Utah juniper. It is restricted to the top of limestone ridges at elevations between 6,700 feet and 7,000 feet. Subordinate shrubs in this community type are cliffrose, buck brush (*Ceanothus greggii*), black sagebrush, and green ephedra. The dominant grass in this community type is squirreltail; the grizzlybear pricklypear occurs occasionally.
8. Riparian Vegetative Communities: These communities presently occur only along sections of Breen Creek in the northeastern portion of the planning area. Breen Creek is a perennial stream which flows for a distance varying from 1 to 7 miles, depending on yearly precipitation levels. Riparian vegetation survives along its banks only in those areas where topographic features deny wild horses access to the stream. Species typical of these communities include box elder (*Acer negundo*), ash (*Fraxinus* spp.), cottonwood (*Populus* spp.), desert willow (*Chilopsis linearis*), rabbitbrush (*Chrysothamnus* spp.), sedge (*Carex* spp.), rush (*Juncus* spp.) and cat-tail (*Typha latifolia*). Other spring sources within the Nevada Wild Horse Range, although not as extensive as Breen Creek, could potentially support riparian vegetation; excessive wild horse usage and man-made developments however, have eliminated riparian communities at these sites.

It is estimated that ecological condition on the NRC has been seriously degraded within a 4.5 mile radius of water sources (814,300 acres-37 percent of the planning area) and is currently in a early seral stage (within one-half mile of water sources) to a mid seral stage (between one-half mile and 4.5 miles). Riparian vegetation along Breen Creek (approximately 150 acres), the only perennial stream in the NRC, and at six developed and 14

undeveloped spring sources has been severely overgrazed and in some cases, eliminated. The remainder of wild horse habitat (969,550 acres-44 percent of the NRC) within the NRC is estimated to be in a mid seral stage due to heavy grazing from wild horses. Vegetation trend within these areas is downward or retrogressive (a change away from the original climax vegetative community).

There are no known threatened/endangered plant species in the identified wild horse use area. There are, however, three candidate species within the area, that are being considered for federal listing under the endangered species act. Asclepias eastwoodiana; category 2, Sclerocactus polyancistrus; category 2, and Astragalus beatleyae; category 2 (Federal Register Vol. 45, No. 242 and Vol. 48, No. 229). Astragalus beatleyae is also listed critically endangered by Nevada State Status NRS 527.270.

b. Soils

No intensive soil survey has been conducted.

c. Water

Water sources for the wild horses and wildlife on the NWHR consist mainly of developed springs and pipelines and natural catchment basins. Past livestock operations developed some of the springs and pipelines, but since these operations have been restricted from the NRC, these developments have deteriorated to the point that they provide water only at the source.

The BLM, with assistance from the National Wild Horse Association, USAF, and DOE are maintaining five springs; Rose Spring, Silverbow Spring, Tunnel Spring, Upper and Lower Corral Springs. Rose and Silverbow spring developments consist of pipelines for better water distribution.

Sumner and Cedar Springs, along with George's Water, are used outside of the NRC area for livestock and are maintained by Mr. Joseph P. Fallini, Jr.

During the drier seasons wild horse use is restricted to waters within the NWHR, which don't produce adequate amounts of water for the wild horse population.

d. Wildlife

Mule deer are found on all mountain ranges within the area. Antelope use the foothills and the valleys. Main concentrations of antelope are in the northern portion of Cactus Flat and all of Kawich Valley with occasional sightings around Stonewall Mountain. The antelope and mule deer populations are conspicuous by their absence. The shadscale-budsage vegetative communities cover over 300 square miles and are usually excellent antelope

habitat. Only 39 antelope were censused in February, 1991. Mule deer habitat in the Kawich, Belted, and Stonewall mountains has been considered good in the past. Only 43 mule deer were censused in February, 1991. Nellis AF personnel are concerned with the decreased visibility of large wildlife species.

Desert bighorn sheep are on and around Stonewall Mountain. Scattered sightings of bighorn sheep within the Cactus Range occur every year. The Nevada Division of Wildlife (NDOW) under cooperative agreement with the Nellis AFB currently conducts an annual bighorn hunting season on Stonewall Mountain.

Other wildlife species found in the area include a variety of raptors, such as Golden eagles and hawks, chukar partridge, numerous small birds and small mammals, and many reptiles. Jackrabbits and cottontails are common, but population levels fluctuate periodically in high/low cycles.

Mountain lions are found throughout the entire area. These lions are being attracted to the lower valley floors where the horses are. Numerous sightings have been reported by Nellis personnel. The sparse wildlife populations at higher elevations and large horse numbers in the valleys appears to be influencing the lions movements.

e. Livestock

Authorized livestock grazing on the Nellis Air Force Range was discontinued in 1959. By 1965, all grazing permits and leases had been eliminated by the Air Force, under the authority of Air Force Real Estate Directive 592.2.

f. Cultural Resources

Cultural resources are non-renewable resources which cannot be repaired or replaced if damaged or destroyed; adequate management is essential to these unique and vulnerable resources. BLM uses the term "cultural resources" to indicate all sites and isolated manifestations, both prehistoric and historic.

Paleontological resources are managed under the Cultural Resource Management Program.

Cultural Resources

Limited field inventories indicate that cultural resources are present in all parts of the planning area. Prehistoric cultural resources reflect human adaptations to the region from approximately 10,000 B.C. to the time of Anglo-European contact. Site types include residential bases, long and short-term campsites and activity loci. Activity sites generally reflect resource procurement and processing strategies and include

quarries, lithic scatters, pinyon and other plant processing locales, hunting blinds, aboriginal trails, and rock alignments. Other cultural manifestations include rock art sites containing petroglyphs and/or pictographs.

Historic resources generally consist of the material remains of late 19th and early 20th century mining, ranching, transportation, and communication activities. Historic aboriginal settlements and activity sites, evidence of Western Shoshone and Southern Paiute lifeways, are also present.

Of the approximately 1,750 cultural resources recorded on the NRC, nearly one-third evidence potential eligibility for National Register of Historic Places, as stated in 36 CFR 60.4. The present condition of many of these resources is unknown, as a result of the access constraints imposed by the military withdrawal of the lands. Most of the Nellis Air Force Range has been closed to the public since the early 1940's, thus affording protection from large-scale looting and other types of vandalism. Some unauthorized collection of artifacts has been reported in the past (Bergin, 1979:114) and may continue to impact the integrity of sites within the planning area. Trampling by wild horses and livestock in those areas where large numbers of animals congregate, particularly at water sources, may damage artifacts and alter the spatial patterning of archeological sites.

Paleontological Resources

Paleontological resources consist of the fossil record of past plant and animal life. The geologic history of southern Nevada is preserved in the fossil record, portions of which are exposed on the Nellis Air Force Range. Four general ages of sedimentary rocks, dating from 600 million years ago to approximately one million years ago, contain evidence of past plant and animal life. Strata from the Lower, Middle and Upper Paleozoic (600-300 million years ago) and Pleistocene outcrops (one million years ago to 10,000 years ago) are visible in various mountain ranges contained within the NRC.

II. MANAGEMENT OBJECTIVES, DIRECTION, AND ACTIONS

A. Nellis Resource Plan

The February 1992 Approved Nellis Resource Plan outlined three objectives, eleven management directions, and seven management actions for the management of wild horses within the Nevada Wild Horse Range. Resource Plan monitoring is to be completed on an annual basis to monitor the achievement/completion of these objectives, directions, and actions.

1. Management Objectives:

- a. To maintain and manage populations of wild, free-roaming horses only on the Nevada Wild Horse Range.
- b. To maintain the Nellis Air Force Range as a burro-free area.
- c. To achieve a thriving ecological balance with other resource values.

2. Management Direction:

- a. BLM is authorized to manage wild horses on the Nellis Air Force Range through the Cooperative Agreement of February 8, 1974 with the Nellis Air Force Range. This cooperative agreement identifies the area for management of wild horses as the Nevada Wild Horse Range and describes its location by legal description.
- b. Adjust wild horse numbers to achieve a thriving ecological balance using data obtained from monitoring and, if available, other sources.
- c. Develop and implement a gathering plan for the removal of all wild horses outside the Nevada Wild Horse Range Herd Management Area.
- d. Continue to conduct annual censuses to determine wild horse populations on the Nevada Wild Horse Range and the remainder of the planning area.
- e. Continue to conduct gatherings, relocations and removals to enhance color markings in specified areas.
- f. Continue to monitor the physical condition of wild horses.
- g. Continue to conduct studies to determine productivity, survival, sex ratios, age structure, seasonal movement, and home ranges.
- h. Continue to develop and maintain permanent water sources on the Nevada Wild Horse Range.
- i. Continue to conduct vegetation trend and utilization studies.
- j. Use fencing only when monitoring demonstrates that other management practices are not successful in achieving the identified objectives.
- k. Delineate 1971 wild horse use areas.

3. Management Actions:

- a. Conduct gatherings to achieve a thriving ecological balance on the Nevada Wild Horse Range.
- b. Conduct gatherings to remove wild horses outside the boundaries of the Nevada Wild Horse Range.
- c. Develop or improve water sources on the Nevada Wild Horse Range, including but not limited to the following springs: Cedar Wells, Upper and Lower Corral, Silverbow, Rose, Tunnel, and Cedar Springs.
- d. Remove all burros from the planning area.
- e. Amend, if necessary, the Nevada Wild Horse Range Herd Management Area Plan (HMAP) to conform with this resource plan.
- f. If monitoring demonstrates that the above management practices are not successful in preventing wild horse use outside of the Nevada Wild Horse Range, build and maintain up to 125 miles of boundary fence on the Nevada Wild Horse Range.
- g. If monitoring demonstrates that the above management practices are not preventing wild horses and burros from moving onto planning area from adjacent lands, build and maintain up to 75 miles of fence to selectively fence the boundary of the planning area.

The management objectives, directions, and actions identified within the Approved Nellis Resource Plan supersedes any objectives, directions, and actions identified in other resource documents.

B. Herd Management Area Plan Objectives:

Nevada Wild Horse Range HMAP was written and approved in 1985. During 1990-91 this plan and associated management was evaluated through the Nevada Wild Horse Range Evaluation. The following objectives were evaluated:

1. HABITAT OBJECTIVES:

- a. Determine key areas and key forage plant species for wild horses.
- b. Allow utilization of key forage plant species by horses to exceed the allowable use factor by no more than ten percent on the NWHR as established by the Nevada Range Monitoring Task Group (1984).

- c. Maintain static to upward apparent trend in vegetation characteristics through control of grazing pressure.
- d. Minimize incidence of wild horses being unable to obtain sufficient drinking water at specific water sources.

2. POPULATION OBJECTIVES:

- a. Monitor the physical condition of wild horses and maintain animals in fair to good condition.
- b. Acquire additional data on wild horses to better understand the forces that affect wild horse populations.
- c. Determine wild horse seasonal movement and distribution patterns within the next five years.
- d. Enhance the gray and roan color markings in the Kawich Valley Area and palomino, dun and buckskin in Cactus Flat and Gold Flat Areas.
- e. Preserve 10 head of pintos from the Stonewall mountain Area by relocating them in appropriate HMA.
- f. Manage wild horses on the NAFR with the objective to maintain home range wholly within the NWHR.

SHORT-TERM OBJECTIVES

QUANTIFICATION OF ACTIVITY PLAN OBJECTIVES

- 1. Manage the utilization levels of cool and warm season grass and shrub key species, identified below, for key areas A, 1, 9, 10, 11 and 12 respectively of the Nevada Wild Horse Range at or below fifty (50) percent on an annual basis.
(Habitat #2)

Warm Season Grasses:

galleta grass (HIJA)
sand dropseed (SPCR)

Cool Season Grasses:

Indian ricegrass (ORHY)
bottlebrush squirreltail (SIHY)

Shrub Species:

bud sage (ARSP5)
winterfat (CELA)

This level of utilization will provide for yearlong grazing, satisfaction of plant growth requirements, and standing crop in reserve for

at 54%, Indian ricegrass at 19% and globemallow at 47%.

Key Area F: Maintain frequency of sand dropseed at 52% and winterfat (CELA) at 72%.

2. Manage for static to upward apparent trend in key areas A-F. (Habitat #3)
3. Reduce the percentage of bays, blacks, browns and sorrels in the population from 75% to 45%. Increase the percentage of grays, pintos, palominos, buckskins and roans from 25% to 55% of the population. (Population #4)

C. Wild Horse Objectives:

1. Multiple Use:

An objective for the Nevada Wild Horse Range is to maintain a healthy, viable population of wild horses in a thriving natural ecological balance with all other resources and users.

2. Appropriate Management Level (AML):

The wild horses within the NWHR will be managed at a level of 1000 animals. This AML was established through the completion and approval of the Nevada Wild Horse Range Evaluation in 1991. The number of wild horses will be maintained at AML. The age structure of the NWHR herd at an AML maintenance level will approximate the age structure within the NWHR herd prior to the 1991 gather (see Appendix 3).

AML will be maintained using one or more of the following options: periodic removals with no selectivity, selective removals targeting specific age groups, and/or fertility control. The objectives of the selective removals and fertility control is to decrease the reproductive rate in the wild horse population so removals are not necessary more than once every four years. The reproductive rate is greater than 23% annually (27.5% in 1994), the objective is to reduce the rate to less than ten percent increase (recruitment rate) for all horses within the NWHR.

3. Free-roaming Characteristics:

The wild horses within the NWHR will be managed in a manner that maintains their wild free-roaming characteristics.

4. Coloration and Conformation:

The wild horses within the NWHR which exhibit the "Spanish Barb" characteristics and pinto color markings will be maintained within the population. Fertility control treatments will exclude those animals that obviously exhibit those traits. No other characteristics or conformations will be selected. Only those animals with gross deformities or disease will be eliminated from the herd.

III. Management Methods

A. Resource Plan Objectives, Directions, and Actions

Resource Plan (RP) objectives, directions, and actions are general. By conducting management actions to attain habitat and animal objectives, the RP objectives should be met.

B. Activity Plan Objectives

1. Habitat Objectives

- a. Determine key areas and key forage plant species for wild horses.

Establishment of key areas and identification of key forage species for each of these area was completed in 1985. Thirty-one (31) sites were selected for monitoring and a total of eight (8) different forage species identified.

Of these 31 sites identified for monitoring, eight sites are located within the NWHR and 23 sites are located outside the NWHR within the NRC. Of the eight forage species identified for monitoring, four species are classified as grasses and four species are classified as shrubs. The eight species monitored at the various sites include: Sporobolus cryptandrus (SPCR), Hilaria jamesii (HIJA), Oryzopsis hymenoides (ORHY), Sitanion hystrix (SIHY), Ephedra nevadensis (EPNE), Atriplex canescens (ATCA2), Artemisia spinescens (ARSP5) and Ceretoides lanata (CELA).

- b. Allow utilization of key forage plant species by horses to exceed the allowable use factor by no more than ten percent on the NWHR as established by the Nevada Range Monitoring Task Group (1984).

Utilization levels on key areas will be maintained through population control measures with adjustments to grazing level by all users being determined through monitoring data.

- c. Maintain static to upward apparent trend in vegetation characteristics through control of grazing pressure.

Apparent trend ratings for the key areas will be conducted every three years to document any changes in the soil and vegetative conditions following wild horse population control measures.

- d. Minimize incidence of wild horses being unable to obtain sufficient drinking water at specific water sources.

Supplying yearlong water for wild horses is of critical management concern within the NWHR. Past history within the NWHR has shown that water supplies are not of sufficient quantities to maintain the present wild horse population. The known perennial water sources within the NWHR have been calculated to being able to support approximately 1000 animals as identified in the 1991 Nevada Wild Horse Range Evaluation. The current AML (1000 animals) for the NWHR was established using this limiting factor.

The perennial water source identified in the table below are crucial to the management of the wild horses within the NWHR. Also identified in the table is the management activity proposed for each source. All proposed improvements are listed in descending priority for development and are subject to available funding.

Based the principle use of the Nellis Complex being military training, no new water developments are being initiated or planned at this time. Maintenance and upgrading of the existing projects will be priority.

Table 6. Known NWHR Perennial Water Sources and Proposed Management.

Known NWHR Perennial Water Sources and Proposed Management	
Cliff Spring	Develop source and construct pipeline & trough system.
Cedar Well	Re-establish collection box at the new water table level and fence the source to protect it (Work was completed on this project in May 1994.)
Rose Spring	Complete routine maintenance (Pipeline between the two troughs (3.5 miles) was replaced in May 1994 and 1000 ft section of pipeline was replaced below the collection box.)
Silver Bow Spring and pipeline	Complete routine maintenance (Maintenance of pipeline and trough was completed in May 1994.)
Tunnel Spring and pipeline	Install new collection box and fence the source to protect it (A new trough was placed at the site and the pipeline and collection box was cleaned out.)
Corral Spring and pipeline	Complete routine maintenance and fence the source to protect it
Harley Spring	Fence the source
Cedar Pass Spring	Fence the source and upper pool and allow horses to use overflow collected in lower pool

2. Population Objectives

- a. Monitor the physical condition of wild horses and maintain animals in fair to good condition.

Physical condition the horses within the NWHR will be observe through routine field observations and processing of the animals during gather operations. Population control measures and habitat condition improvements will be necessary in order to improve the overall physical condition of the animals.

- b. Acquire additional data on wild horses to better understand the forces that affect wild horse populations.

All additional data (reproduction rates within older age class mares, recruitment rates, success of fertility control, etc.) will have to be collected through processing of the animals during gather operations and field observations of the animals.

One possible source of information on animal health and physical condition would be the completion of necropsies on animals that

succumb to gather related stress or are euthanized due to severe injuries.

- c. Determine wild horse seasonal movement and distribution patterns within the next five years.

Seasonal horse movements and distribution would be collected through routine field observations and censuses.

- d. Enhance the gray and roan color markings in the Kawich Valley Area and palomino, dun and buckskin in Cactus Flat and Gold Flat areas.

The achievement of this objective is no longer pursued. The wild horses identified as buckskins and duns (primitive markings) will be excluded from fertility controls and retained within the NWHR.

- e. Preserve 10 head of pintos from the Stonewall Mountain Area by relocating them in appropriate HMA.

All horses observed with these color markings during gather operations will be retained within the NWHR and will be excluded from fertility controls.

- f. Manage wild horses on the NAFR with the objective to maintain home range wholly within the NWHR.

The achievement of this objective will be completed by the removal of animals outside the NWHR boundaries and relocating them within the NWHR. This procedure would be completed as part of any gather operation.

C. Wild Horse Objectives

1. Multiple Use:

The Nevada Wild Horse Range will be managed to maintain a healthy wild horse population in thriving natural ecological balance with all other resources and users.

2. Appropriate Management Level (AML):

a. AML

The wild horses within the NWHR will be managed at a level of 1000 animals. This AML was established through the completion and approval of the Nevada Wild Horse Range Evaluation in 1991. The number of horses will be maintained at AML with an age structure similar to the structure which existed prior to the

1991 gather (Appendix 3). This age structure as well as an annual recruitment rate of 5-10% should maintain the NWHR herd at the identified AML.

b. Maintaining AML - Discussion of Procedures

Maintaining the wild horse AML for the NWHR will be accomplished through the completion of the following procedures: i. complete removal with age selectivity, and ii. immuno-contraceptive fertility control of 50-65% of all mares retained within the NWHR. All capture operations will be completed according to the stipulations identified in the Capture/Removal Plan for the NWHR signed by the Assistant Secretary of the Interior on January 16, 1992.

It is believed that an annual recruitment rate of 5-10% will maintain the desired AML following attainment. This rate of recruitment should offset the estimated death loss within the NWHR herd.

i. Complete Removal with Age Selectivity.

Gather operations will be conducted within the entire wild horse use area of the Nellis Range Complex (NWHR and adjacent areas outside established NWHR boundaries) in order to capture and process all the wild horses residing in the area. The removals will target all horses under the age of ten years. Only animals exhibiting characteristics identified early in this document will be excluded from these removals. All animals over nine years of age will be retained within the identified boundaries of the NWHR. Whenever possible and feasible, horses gathered outside the NWHR, but within the boundaries of the NAFR, these animals will be relocated within the identified boundaries of the NWHR.

These gather operations will continue on the NWHR until AML is attained or long-term fertility control can control the existing rate of increase within the NWHR horse herd.

ii. Immuno-Contraceptive Fertility Control of 50-65% of All Mares within the NWHR.

The desired objective of this management plan is to create a wild horse herd area under reasonable control of its reproductive rate (rate of increase). The NWHR is well known and well documented for its large wild horse population. Several large volume removals have taken place within the NWHR to slow the expansion of this population but to date no fertility control procedures have occurred. The number of unadoptable (old age) horses retained within the NWHR and adjacent areas within the NRC is estimated at 1400 animals (+/- 20% based on removal data collected between 1991-94). In order to achieve the desired objective of this plan, fertility control of the horses retained

within the NWHR is essential.

The Wild Horse and Burro Fertility Management Task Group's Final Report (June 1992) evaluated four fertility control alternatives: selective removals, sterilization, hormonal/steroid implants, and immuno-contraception. Positive and negative aspects of each option was identified with recommendations for use of each. After review of these alternatives in relation to the desired objective of this plan, only sterilization and immuno-contraception in conjunction with selective removals appear to be possible population control mechanisms.

Fertility control of the NWHR horse herd can be achieved using these mechanisms for both short and long term control of the population. With the desired objective (long term) as a horse herd with a substantially reduced reproductive rate (<10%), only some form of fertility control of all animals retained will achieve this objective. Immuno-contraception will provide fertility control for a 1-2 year period in the herd's treated mares, a small number of these mares (<10%) will still bear foals every year which will require gathering of the herd to remove this increase. The use of immuno-contraception will require retreating the mares every two years until a long-term (greater than 2 years) immuno-contraceptive is developed. One strong positive aspect of the immuno-contraception alternative is that it is reversible if a natural disaster to the horse population should occur.

Immuno-contraception represents one of the most recent advances in fertility control methodology. One of the most successful applications of immuno-contraception involves vaccinating the animal with porcine zonae pellucidae (PZP) which prevents fertilization of the egg. The zona pellucida is a non-cellular protein membrane which surrounds all mammalian eggs. In order for fertilization to occur, sperm must first bind to this membrane before they can penetrate the egg. The intramuscular injection of PZP into mares causes them to produce antibodies against the protein. The antibodies bind to the injected protein as well as the sperm attachment sites on the mare's eggs. This prevents sperm from attaching to the egg and prevents fertilization.

Pen and field studies have been conducted on wild horses using porcine zona pellucida (PZP). PZP immuno-contraception in wild horse mares was found to be successful in reducing pregnancy. At the present time, the PZP has been effective for 1-2 years using a one-shot treatment. Studies are currently being conducted to develop a one shot vaccination which will have an effective life of two or more years.

Field studies on wild horses has shown over 90% success in preventing pregnancy. Population models indicate that the current one year duration of control would be ineffective in the

long-term management of wild horse populations. Speculative modeling, using a drug with a three year effective life, indicates that immuno-contraception targeted at 4 to 5 year old mares would be feasible in controlling reproduction.

PZP has been shown to be reversible in only a short time frame. No side effects or environmental hazards have been identified. Some animals may experience allergic reactions to the agent, however, no problems have been identified in previous wild horse studies.

C. Maintaining AML in NWHR

1. Selected Option for NWHR

The NWHR has been selected as the second location within Nevada for the use of immuno-contraception fertility control (the Antelope and Antelope Valley HMAs within Ely and Elko Districts were the first areas treated). The method to be used in the NWHR will be a combination of selective removals to approach or attain AML and the use of immuno-contraception to maintain AML over a longer period of time to attain a recruitment rate approximating 5-10% of the population.

The selective removals are scheduled to begin in late December 1995 and will target animals in the one-to-nine year old age classes. The NWHR has a calculated reproductive rate of 27.5% for 1994 (313 foals out of 1451 horses processed) and a current estimated population of 2400 animals. To attain an AML of 1000 animals, a total of 1400 animals plus the current year's foals would have to be removed. Based on removal data, 52.7% of the population is under the age of 9 years (764 horses removed out of 1451 horses processed). The December 1994 gather did not cover the entire horse range so all the animals present on the area were not handled during gather operations. It is believed that there are between 1400 and 1600 horses over the age of 9 years on the NWHR with a sex ratio of approximately 1 to 1. Table 6 shows the age class and sex structure of the NWHR horse population based on horses handled during the last removal (12/94).

The proposed action plan for the NWHR is as follows: immuno-contraceptive drugs will be injected into 50-65% of all nine years and older females retained within the NWHR during the December 1995 gather operation. Based on existing data there will be approximately 700-800 mares in this age group if all the horses within the NWHR are captured during the gather operation. Approximately 375-488 mares (based on 750 mares) will be treated with the immuno-contraceptive agent.

Exact numbers of animals to be treated with immuno-contraception will be determined through the analysis of population modeling data prior to the implementation of the project (Appendix 1

contains the calculated age and sex distributions, number of females to be treated, and population size based on 20 random trials using the Wild Horse Population Model developed by Stephen Jenkins, UNR). Due to the seasonal movements of the horses and the ability to capture all the animals present, the exact number in each area is hard to predict but will most likely be close to the numbers presented above.

Table 6. Age class and sex structure of horses processed during December 1994 NWHR Wild Horse Gather.

AGE/SEX DISTRIBUTION DEC. 1994 NELLIS GATHER		
AGE	MALE	FEMALE
Foals	166	147
1	26	22
2	34	49
3	51	66
4	34	48
5	12	10
6	7	17
7	15	30
8	12	18
9	21	24
10	70	80
11	68	51
12	40	33
13	19	19
14	18	14
15	29	26
16	12	8
17	10	14
18	26	17
19	3	1
20	32	26
20+	13	13
TOTAL	718 (49.5%)	733 (50.5%)

The advantages to this strategy are identified as, a) the basic gene pool of the NWHR's herd will remain intact; b) younger more adoptable animals will be available for private placement; c) displacement of older animals will be minimized; d) capability for selection and upgrading herd through sterilization of animals

with undesirable qualities, or physical debilitation; e) opportunities to reverse or continue contraception; f) reduced rates of population growth; and g) mares continue to ovulate so that stallions will continue to tend them and maintain the harem structure.

a. Methodology

Methods which are common to all capture/removal/treatment operations are as follows:

Capture animals following current Nevada capture policies and procedures using either helicopter or bait/water trapping.

Animals will be sorted by sex and age with animals 1-9 years old being removed if they are in excess of AML.

Move animals to be released on site into holding facilities with separate pens for males and females. Holding facilities may or may not be required depending on the number of trap sites to be used, number of animals to be removed and the distribution of animals throughout the gather area.

Animals identified for placement into the adoption system should be shipped as soon as possible to avoid stress and the possibility of contracting diseases associated with confinement.

Release animals as each trap site operation is completed or upon completion of all gather operations. Holding time for all animals should be minimized.

Captures and treatments will not occur during the peak foaling season, March 1 through June 30.

Methodology for implementing immuno-contraception in mares will be as follows:

Mares determined to be the correct age for treatment will be placed in a squeeze chute;

Characteristics including sex, age, color, special markings, etc., will be recorded for each animal.

A decision will be made if the animal is to be treated or not.

If necessary, each animal will be injected with a long acting penicillin (Benzathine penicillin) at a dosage of 50-75 cc per horse. Injection will be deep intramuscular into

the rear leg hamstring muscle with a needle and syringe or a jab pole syringe mechanism.

Inject PZP vaccine into mares selected to be in the treatment group. Injection will be a deep intramuscular injection in the opposite rear leg hamstring than the one injected with penicillin.

Injected animals will be marked in such manner (i.e. freezebranding) to allow for visual observation of the animal following release.

Injected animals will be held in temporary facilities as consistent with the proposed research (experimental) protocol as contained in Appendix 2.

b. Monitoring Population

Population data, including total numbers, seasonal movements, home ranges, age structure, sex ratio, survival rates, mortality, and proportion of breeding females in each age class will continue to be collected and analyzed. Total number, seasonal movements and possibly home ranges will be determined through periodic censuses and visual observations, if possible based on the controlled access constraints within the NWHR. Population demographics will be determined through data collected during captures or removals. Collected data will be input to computer models which calculate rates of increase, survival rates, mortality rates, etc. Rates of increase will also be calculated using simple mathematics. Animal condition will be documented through observations during removals or captures as well as routine ground observations.

Short-Term Monitoring. For animals which are to be released back to the HMA, minimum standards will be to monitor the condition of the horses by ground and/or air within 24 hours of their release.

Long-Term Monitoring. On a year long basis, monitoring data will be collected concerning the general health and welfare of the horses. At a minimum, visual observations will be conducted after each foaling season to collect population recruitment data, proportions of adults to yearlings to foals, seasonal movement patterns, and grazing habits. Other data may be collected if determined to be necessary.

Evaluation of the effectiveness of the selective removals and/or the fertility control measures will be discussed under the Evaluation section of this document.

3. Free-Roaming Characteristics:

The wild horses within the NWHR will be managed in a manner that maintains their wild free-roaming characteristics.

4. Coloration and Conformation:

The wild horses within the NWHR which exhibit the "Spanish Barb" characteristics and pinto color markings will be maintained within the NWHR population. Fertility control treatments will exclude those animals that obviously exhibit these traits. No other characteristics or conformations will be selected. Only those animals with gross deformities or disease will be eliminated from the herd.

IV. Evaluation and Plan Revision

The effectiveness of the management actions in reaching the objectives stated in this plan will be evaluated as follows:

A. Effectiveness in Meeting Resource Plan Objectives

The Nellis Resource Plan objectives are general and all other objectives conform to them. Reaching the habitat and wild horse objectives will help meet the resource plan objectives.

B. Effectiveness in Meeting Activity Plan Objectives

1. Habitat Objectives:

Vegetation objective attainment will be evaluated through the multiple use rangeland monitoring program. Data will be collected, in conjunction with the wild horse and burro specialist and the wildlife biologist, on use pattern mapping, condition, trend, utilization, and precipitation. The data will be analyzed to determine if utilization, condition, and trend objectives are being met. Routine water monitoring trips will be conducted within the NWHR to determine water availability to the wild horses and wildlife. If habitat objectives are not met through the implementation of this plan and the wild horse management program, the identified AML will be re-evaluated.

2. Population Objectives:

Wild horse population objective attainment will be evaluated through routine field inspections, census flights, and data collected through gather operations. Color enhancement objective attainment will no longer be critical within the desired goal of a fertility controlled herd. Protection of horses with the primitive color and pinto markings will be achieved through gather operations and retainment within the NWHR. The re-establishment of the pre-1991 age structure will begin following

the attainment of the identified AML. Managing of wild horses wholly within the boundaries of the NWHR will be monitored for effectiveness through census flights and visual observations. All relocation efforts will be made entirely within the boundaries of the NWHR. If the wild horse population objectives are not being met through the implementation of this plan and the wild horse management program, the population objectives will be re-evaluated.

C. Effectiveness in Meeting Wild Horse Management Objectives

1. Multiple Use:

Evaluation will consist of ongoing multiple use monitoring of all resources within the NWHR. All appropriate BLM programs will be involved in the monitoring.

2. Appropriate Management Level (AML):

a. AML

The AML for the NWHR was established in 1991 and identified the AML to be 1000 horses based on available monitoring information. The multiple use evaluation process will continually re-examine the AML and adjustments will be made if monitoring data identifies changes are necessary.

b. Maintaining AML

To evaluate the effectiveness of the removals and fertility control procedures in order to maintain AML with a 5-10% recruitment rate, routine field monitoring trips and annual census flights will be conducted. During these field observations and census flights any foals observed will be documented to aid in evaluating the success of the procedures. As with any large scale management operation, a small percentage (<5%) of the horses will elude capture and not be treated. The magnitude of this escapement will increase if access to all areas of the NWHR and NRC is not authorized by the USAF (Department of Defense (DOD)) and Department of Energy (DOE). To achieve a thorough and complete operation, coordination and consultation must be completed with these agencies in order to gain these necessary clearances.

The re-establishment of the pre-1991 age structure will begin at attainment of the identified AML for the NWHR. This process will be in conjunction with gather operations used to maintain the AML and the fertility control operations.

Use pattern mapping, utilization, trend, and water availability information will assist in evaluating if habitat conditions are

affected by the results of the removals and fertility control process. Comparisons of the habitat conditions before and after achieving AML levels and fertility control of the remaining horses will be made. If habitat conditions remain unchanged following the implementation of this plan additional management options will have to be considered.

c. Free-Roaming Characteristics

The attainment of the free-roaming objectives will be evaluated through field observations and census flights. If movement, due to season and/or precipitation, by the horses appears to be hampered by a physical barrier (i.e. fence) the necessity of this project will be re-evaluated.

d. Coloration and Conformation

Color objective attainment will no longer be critical within the desired goal of a fertility controlled herd so no evaluation of this portion of the objective is required.

Protection of horses with the primitive color and pinto markings will be achieved through removals and retainment of the animals within the NWHR with no fertility control treatment. The success of these procedures will be evaluated through field observation and census flights.

V. COORDINATION

Vegetation monitoring, water availability, project development, and all other management actions which may affect wildlife, wild horses, and other pertinent resources will be closely coordinated with the respective BLM programs, members of the Five-Party Agreement (Department of Defense (USAF), Department of Energy, U.S. Fish and Wildlife Service (USFWS), and Nevada Division of Wildlife (NDOW)) and affected interest groups.

A. Cooperation in Management

All significant management actions within the Nevada Wild Horse Range are taken within consideration of the Five-Party Agreement signed in 1977. Review and approval by representatives of the Five-Party Agreement will be completed prior to implementation of this plan.

VI. APPROVAL

Prepared By:

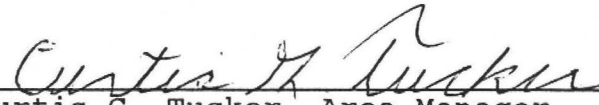


Alan B. Shepherd, Wild Horse Specialist
Caliente Resource Area

12/13/95

Date

Recommended for Approval By:



Curtis G. Tucker, Area Manager
Caliente Resource Area

12/13/95

Date

Commander
554 Range Group
Nellis AFB

Date

Regional Director
U.S. Fish and Wildlife Service

Date

Director
Nevada Division of Wildlife

Date

Manager
Department of Energy

Date

Approved By:

Michael Dwyer

Mike Dwyer, District Manager
Las Vegas District

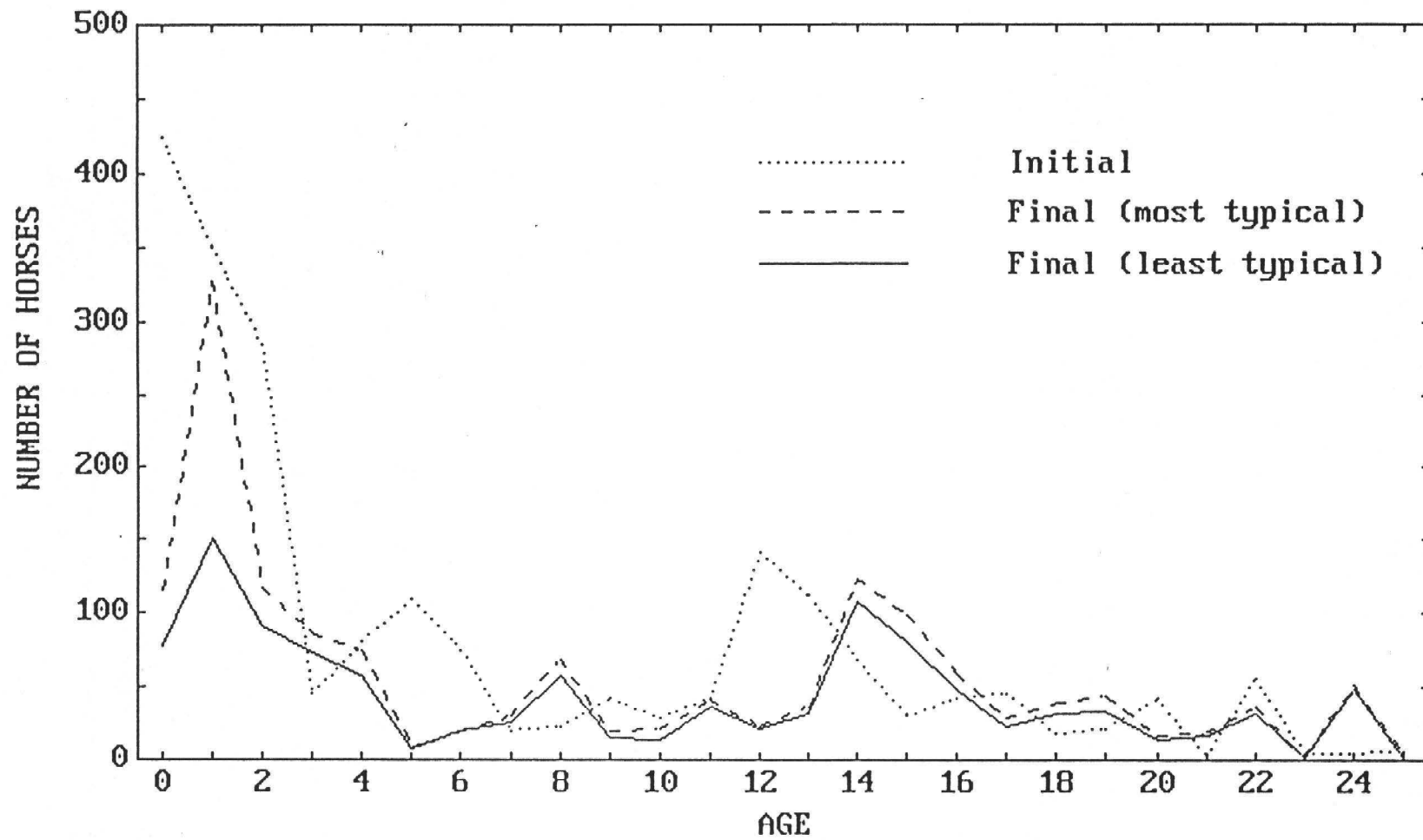
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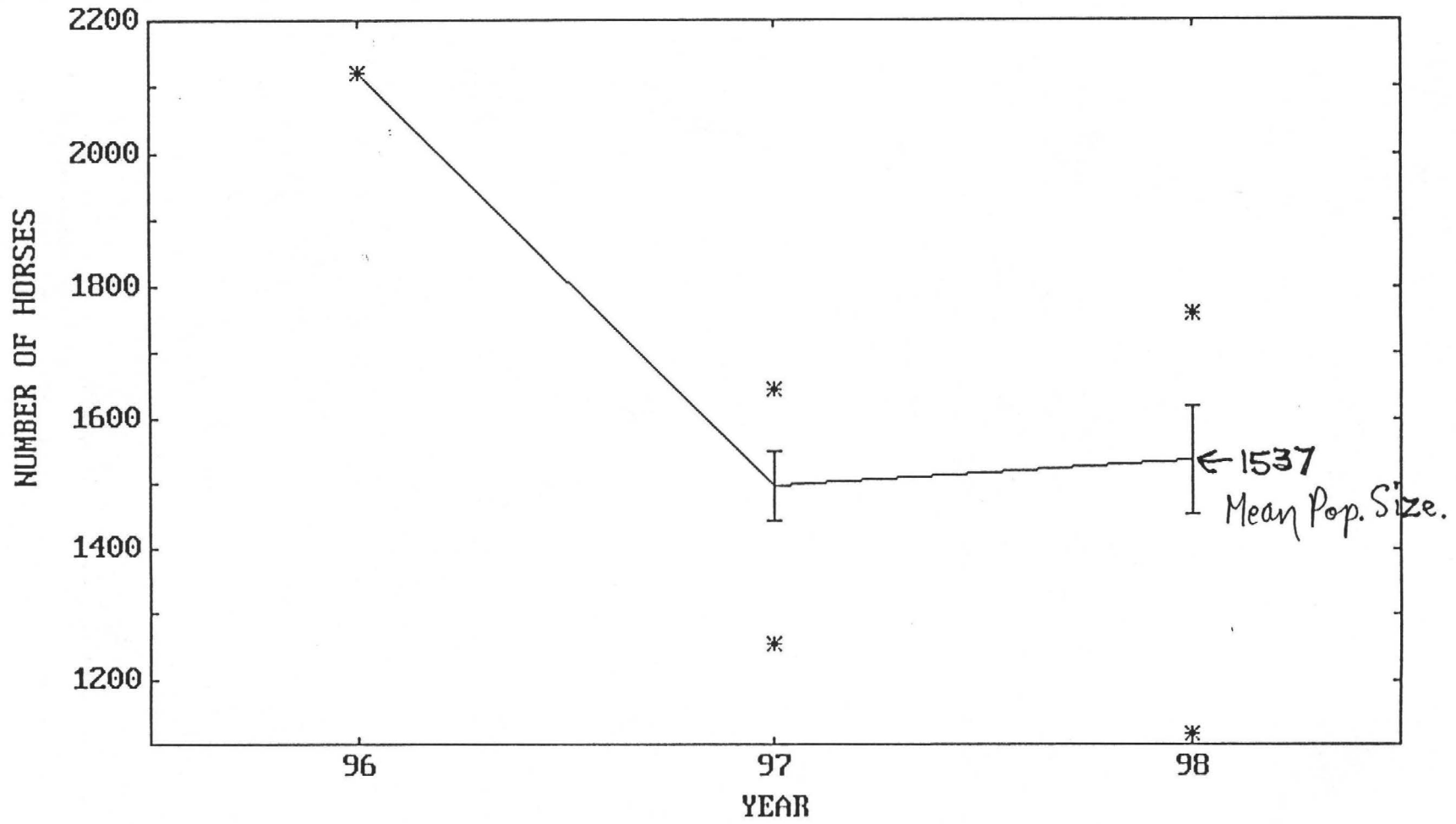
APPENDIX 1

Wild Population Model

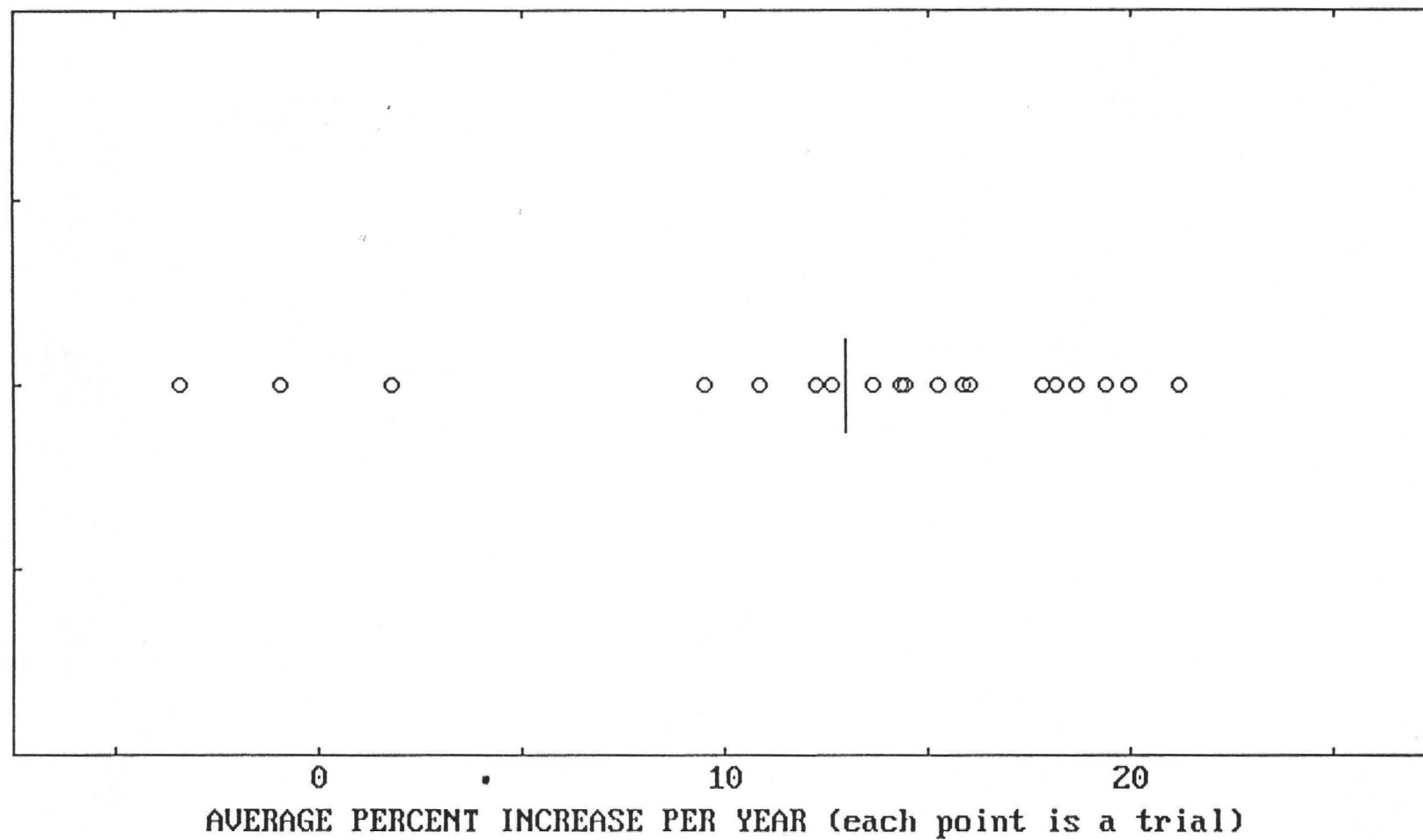
INITIAL vs. FINAL AGE DISTRIBUTIONS



NUMBER OF 0 TO 25 YEAR-OLDS OF BOTH SEXES



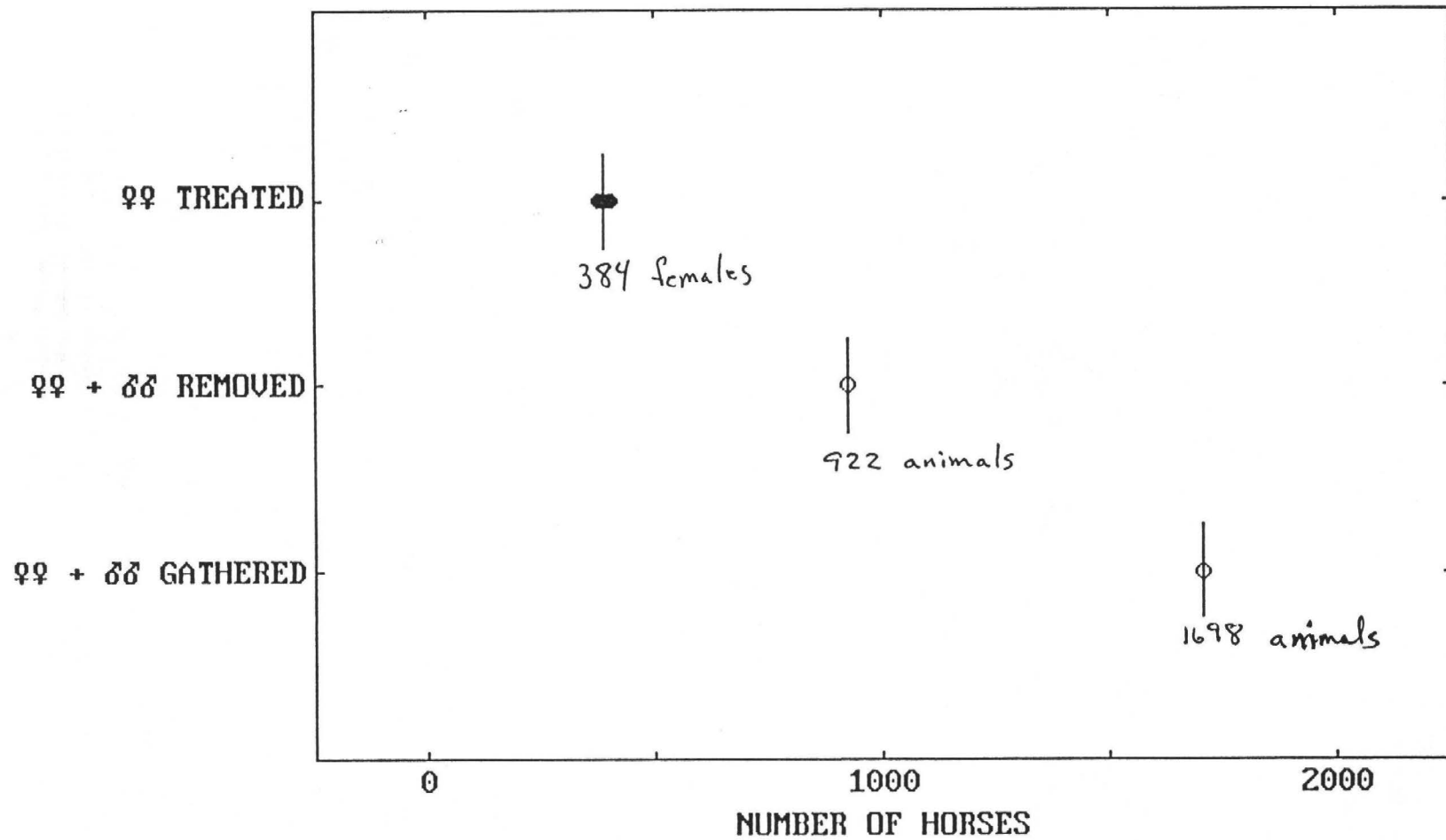
POPULATION GROWTH RATES IN ALL TRIALS (| = mean)



TRIAL	AVERAGE GROWTH RATE
1	15.2 %
2	12.2 %
3	14.4 %
4	1.8 %
5	- 3.5 %
6	12.6 %
7	15.8 %
8	18.1 %
9	10.8 %
10	12.6 %
11	9.5 %
12	19.9 %
13	17.8 %
14	14.3 %
15	18.6 %
16	19.4 %
17	13.6 %
18	- 1.0 %
19	16.0 %
20	21.2 %

MEAN	13.0 %
MINIMUM	- 3.5 %
MAXIMUM	21.2 %
LOWER 95 % CONFIDENCE LIMIT	9.8 %
UPPER 95 % CONFIDENCE LIMIT	16.1 %

NUMBER OF 0 TO 25 YEAR-OLDS PROCESSED IN EACH TRIAL (| = mean)



NUMBER OF 0 TO 25 YEAR-OLDS PROCESSED IN EACH TRIAL

TRIAL	NUMBER OF GATHERS	HORSES GATHERED	HORSES REMOVED	FEMALES TREATED
1	1	1698	922	387
2	1	1698	922	389
3	1	1698	922	384
4	1	1698	922	383
5	1	1698	922	383
6	1	1698	922	400
7	1	1698	922	396
8	1	1698	922	389
9	1	1698	922	386
10	1	1698	922	387
11	1	1698	922	385
12	1	1698	922	381
13	1	1698	922	374
14	1	1698	922	379
15	1	1698	922	382
16	1	1698	922	403
17	1	1698	922	397
18	1	1698	922	395
19	1	1698	922	389
20	1	1698	922	395
MEAN	1.0	1698	922	388
MINIMUM	1	1698	922	374
MAXIMUM	1	1698	922	403
LOWER 95 % CONFIDENCE LIMIT		1698	922	385
UPPER 95 % CONFIDENCE LIMIT		1698	922	392

INITIAL vs. FINAL AGE DISTRIBUTION

AGE	INITIAL		FINAL MOST TYPICAL		FINAL LEAST TYPICAL	
	Females	Males	Females	Males	Females	Males
0	204	220	80	68	59	45
1	169	181	155	176	48	46
2	131	153	66	80	42	62
3	20	25	52	69	46	39
4	48	33	43	57	29	35
5	63	46	5	10	7	5
6	42	33	23	11	11	9
7	10	10	20	16	12	12
8	16	7	14	12	11	2
9	29	13	4	6	3	3
10	17	12	9	2	5	2
11	22	20	8	5	5	3
12	75	66	16	11	10	8
13	50	62	21	19	17	16
14	31	38	70	64	43	40
15	14	16	45	59	34	37
16	25	18	31	36	23	27
17	20	26	14	15	10	9
18	7	11	21	18	14	12
19	13	9	20	24	11	16
20	16	26	7	11	5	9
21	1	2	12	9	4	7
22	24	32	15	23	8	17
23	2	3	1	2	1	1
24	3	2	23	30	16	18
25	3	3	2	3	2	3
TOTAL	1055	1067	777	836	476	483

APPENDIX 2

Experimental Protocol for Fertility Control Implementation

Medical College of Ohio

Department of Physiology and Molecular Medicine

419-381-4172

3000 Arlington Avenue
 Mailing Address: P.O. Box 10008
 Toledo, Ohio 43699-0008



November 22, 1995

419-381-4139
 FAX: 419-381-3124

John W. Turner, Jr., Ph.D.
 Professor

Tom Pogacnik
 Nevada Office of the BLM
 850 Harvard Way
 P.O. Box 12000
 Reno, NV 89520

Dear Tom:

Based on our telephone conversation of November 27, I am presenting the following Nellis experimental protocol revision below:

Treatment	No. of Mares	Length of Holding (Days)
2-injection PZP vaccine*	100	17-18
2-injection PZP vaccine	100-200	14
1-injection PZP vaccine**	100	0-1
* We may test 2 different 2-injection preps in these mare.		
** Contains controlled-release PZP/adjuvant microspheres		

If you have any questions, please call at (419) 381-4146.

Sincerely,

John W. Turner, Jr., Ph.D.
 Professor
 Department of Physiology & Molecular Medicine

JWT:mm

APPENDIX 3

1991 Age Structure

Age structure of horses processed during Summer 1991
 NWHR Wild Horse Gather.

AGE DISTRIBUTION SUMMER 1991 NELLIS GATHER	
AGE	PERCENT OF POPULATION
1	6
2	16.2
3	13
4	14.2
5	3.2
6	5.6
7	7.7
8	4
9	4
10	6.3
11	4.6
12	5.2
13	4.1
14	2.7
15	1.4
16	0.6
17	0.3
18	0.7
19	0.0
20	0.4
20+	0.1
TOTAL	100



COMMISSION FOR THE
PRESERVATION OF WILD HORSES

255 W. Moana Lane

Suite 207A

Reno, Nevada 89509

(702) 688-2626

January 3, 1996

Mr. Curtis G. Tucker
Caliente Resource Area
Bureau of Land Management
P.O. Box 237
Caliente, Nevada 89008

Subject: Nellis Final Decision/Plan

Dear Mr. Tucker:

The Commission for the Preservation of Wild Horses provided specific comments to the draft environmental assessment, Nevada Wild Horse Range Plan and proposed decision. Issues specific to the proposed actions were discussed with your staff prior to the gathers being conducted at present. Several issues require changes in the plan and additional monitoring of the affected herds.

From our review of the final documents, no changes have been made the documents and the District did not commit to verbal agreements made in our phone conversations. We request that a response be formally prepared and a mutual agreement between our agencies be made prior to any changes in management authority by the Bureau of Land Management.

We assume the final documents have been agreed to by other members of the five party agreement. The signature page is incomplete.

We look forward to working with the District regarding this matter in the immediate future.

Sincerely,

A handwritten signature in cursive script that reads "Catherine Barcomb".

CATHERINE BARCOMB
Executive Director