

ENVIRONMENTAL ASSESSMENT

Clan Alpine Horse Gather

DOI-BLM-NV-C010-2023-0004-EA



Department of the Interior
Bureau of Land Management
Carson City District
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September 2023

It is the mission of the Bureau of Land Management to sustain the health, diversity, and productivity of the public lands for the use and enjoyment of present and future generations.

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Acronyms

AML	Appropriate Management Level
APHIS	Animal and Plant Health Inspection Service
AUM	Animal Unit Month
BCS	Body condition score
BLM	Bureau of Land Management
CAWP	Comprehensive Animal Warfare Program
CCD	Carson City District
CESA	Cumulative Effects Study Area
CFR	Code of Federal Regulations
CRMP	Consolidated Resource Management Plan
EA	Environmental Assessment
EIS	Environmental Impact Statement
EPA	Environmental Protection Agency
ESA	Endangered Species Act
FLPMA	Federal Land Policy and Management Act
FONSI	Finding of No Significant Impact
GAO	Government Accountability Office
GHMA	General Habitat Management Areas
GRSG	Greater Sage-grouse
HMA	Herd Management Area
IBLA	Interior Board of Land Appeals
IM	Instruction Memorandum
LHA	Land Health Assessment
LWC	Lands with Wilderness Characteristics
MUD	Multiple Use Decision
NA	Not Affected
NDA	Nevada Department of Agriculture
NEPA	National Environmental Policy Act
NI	Not Impacted
No.	Number
NRC	National Research Council
OHMA	Other Habitat Management Areas
ORC	Off Range Corrals
ORP	Off-Range Pastures
PFC	Proper Functioning Condition
PI	Potentially Impacted
PZP	Porcine Zona Pellucida
RDF	Required Design Features
RFFA	Reasonably Foreseeable Future Actions
SDD	Standard Determination Document
SOPs	Standard Operating Procedures
VRM	Visual Resource Management
WAPT	Wildlife Action Plan
WFRHBA	Wild Free Roaming Horses and Burros Act

1.0 Introduction

1.1 Introduction to this EA

The Bureau of Land Management Stillwater Field Office (BLM) is proposing to gather and remove excess wild horses from within and outside the Clan Alpine Herd Management Area (HMA). This action is necessary because an overpopulation of wild horses is contributing to overuse of upland and riparian vegetation and is degrading wild horse and wildlife habitat. Native bunchgrasses, the primary forage for wild horses and some wildlife species, are being overgrazed. Overgrazing native bunchgrasses can lead to their loss, depriving wild horses and other grazing animals of the forage that they require to survive. Riparian areas are also being overused as a result of the overpopulation of wild horses combined with permitted livestock grazing, and these areas are critical for many species of native wildlife. Overuse of riparian areas and creeks causes erosion and loss of native vegetation, which leads to a decrease in water quality.

In compliance with the National Environmental Policy Act (NEPA) (CEQ 2022), this Environmental Assessment (EA) is a site-specific analysis of potential impacts that could result from implementation of the Proposed Action or Alternatives. If the BLM determines significant impacts could occur, an Environmental Impact Statement (EIS) would be prepared for the project. If no significant impacts are expected, an EIS would not be required, and a decision would be issued along with a Finding of No Significant Impact (FONSI) documenting the reasons why implementation of the selected Alternative would not result in significant environmental impact.

Incorporation by reference provides opportunities to reduce paperwork and redundant analysis in the NEPA process. When incorporating by reference, the author refers to other available documents that cover similar issues, effects, and/or resources considered in the NEPA analysis that is being prepared. Incorporation by reference allows brief summarizations of relevant portions of other documents rather than repeating them.

1.2 Background

Since the passage of the Wild Free Roaming Horses and Burros Act (WFRHBA), the BLM has refined its understanding of how to manage wild horse population levels. By law, BLM is required to control any overpopulation, including by removing excess animals once a determination has been made that excess animals are present and that removal of the excess animals is necessary. Program goals have always been to establish and maintain a “thriving natural ecological balance,” which requires identifying the Appropriate Management Level (AML) for wild horses and burros in individual HMAs or Ranges and maintaining herd sizes within the high and low bounds of those AMLs. Over the past two decades, goals have also explicitly included conducting gathers and applying population growth suppression treatments (i.e., fertility control) to achieve and maintain wild horse and burro populations within the established AML, so as to manage for healthy wild horse and burro populations, healthy wildlife populations, and healthy rangelands. The use of fertility control methods helps reduce total wild horse and burro population growth rates in the short term, increases the length of time between gathers, and decreases the number of excess wild horses and burros that must be removed from the range in the long term. Other management efforts include collecting genetic baseline data to support genetic diversity assessments. Decreasing the numbers of excess wild horses in the Clan

Alpine HMA is consistent with the WFRHBA, findings and recommendations from the National Academy of Sciences (NRC 2013), American Horse Protection Association, the American Association of Equine Practitioners, Government Accountability Office (GAO), Office of the Inspector General, and BLM policy.

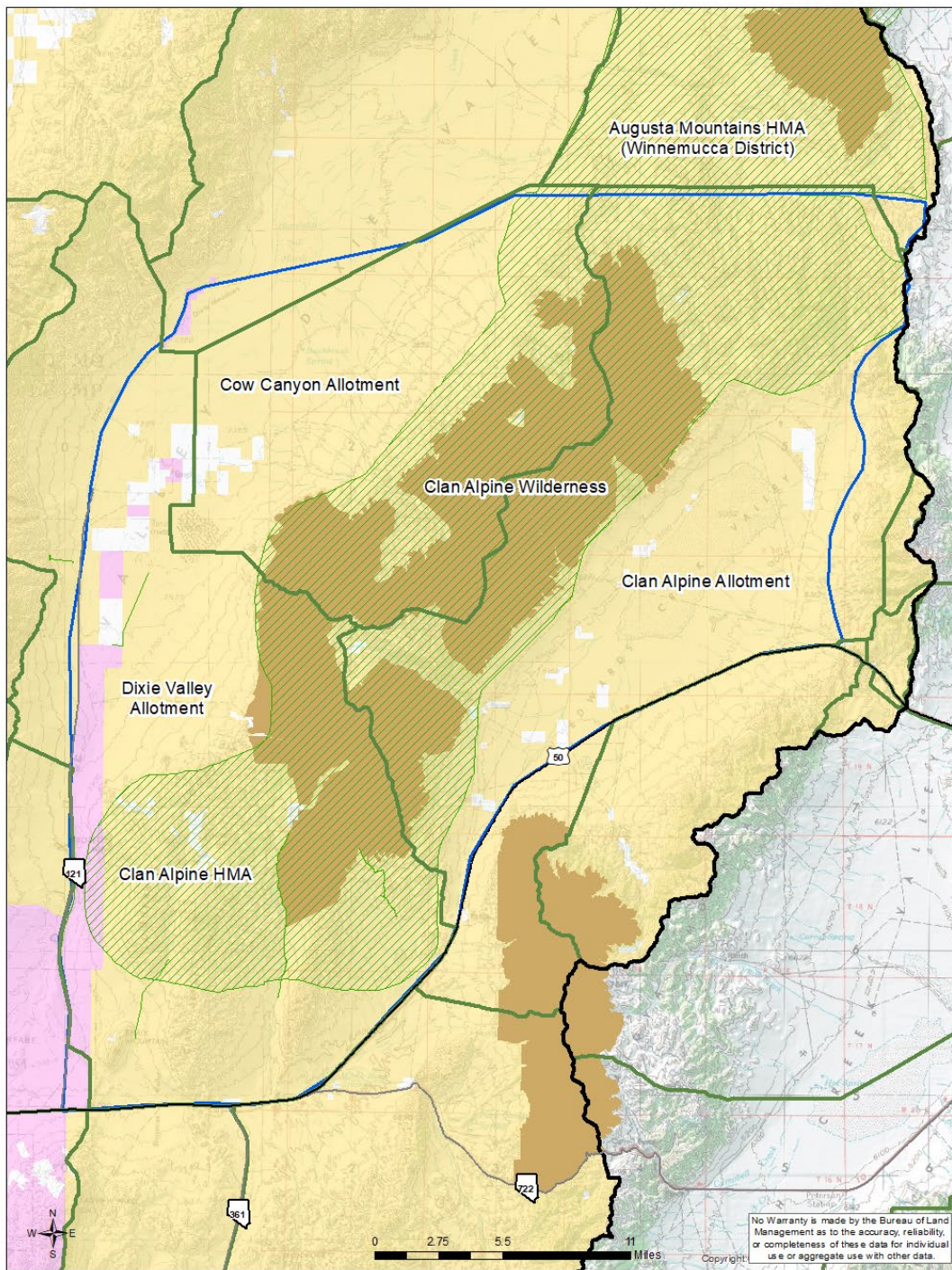
The gather area includes a total of 604,380 acres due to horses expanding outside of the HMA in search of resources. The Clan Alpine HMA, which is 304,763 acres, lies about 75 miles east of Fallon, Nevada in Churchill County (Figures 1 and 2). The Clan Alpine HMA overlaps the Cow Canyon, Clan Alpine, and Dixie Valley grazing allotments. The wild horse AML for the Clan Alpine HMA is 612-979 horses and was set in 1992 in a Multiple Use Decision (MUD; BLM 1992) and later reaffirmed in the 2001 Carson City Field Office Consolidated Resource Management Plan (CRMP). The MUD set the wild horse AMLs for each grazing allotment, specifically 253-405 for the Clan Alpine Allotment, 112-179 for the Cow Canyon Allotment, and 247-395 for the Dixie Valley Allotment. This multiple use decision allocated all available forage between wildlife, wild horses, and livestock. Table 1 below breaks down these AMLs, the percent and acreage of the HMA overlapped by each allotment, and the horse and livestock AUMs¹.

Table 1: Allotments, Percent of Clan Alpine HMA, and Animal Unit Months (AUMs)

Allotment	Percent of HMA	Acres	Horse AUMs	Livestock AUMs (type of livestock)	Year last grazed by livestock
Clan Alpine	49%	149,334	4,860	5,115 AUMs (cattle), 1,200 AUMs (sheep)	2023
Cow Canyon	20%	60,952	2,148	2,382 AUMs (cattle)	2023
Dixie Valley	31%	94,477	4,740	6,341 AUMs (cattle)	2023

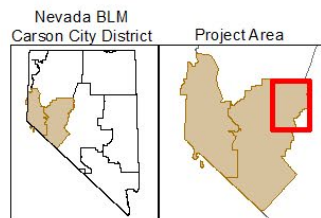
¹ The 2010 BLM Wild Horses and Burros Management handbook (BLM 2010; H-4700-1) includes the guideline that wild horses, one year of age or older, count as one (1) Animal Unit.

Figure 1: Clan Alpine Proposed Gather Area



Clan Alpine Gather Project Area

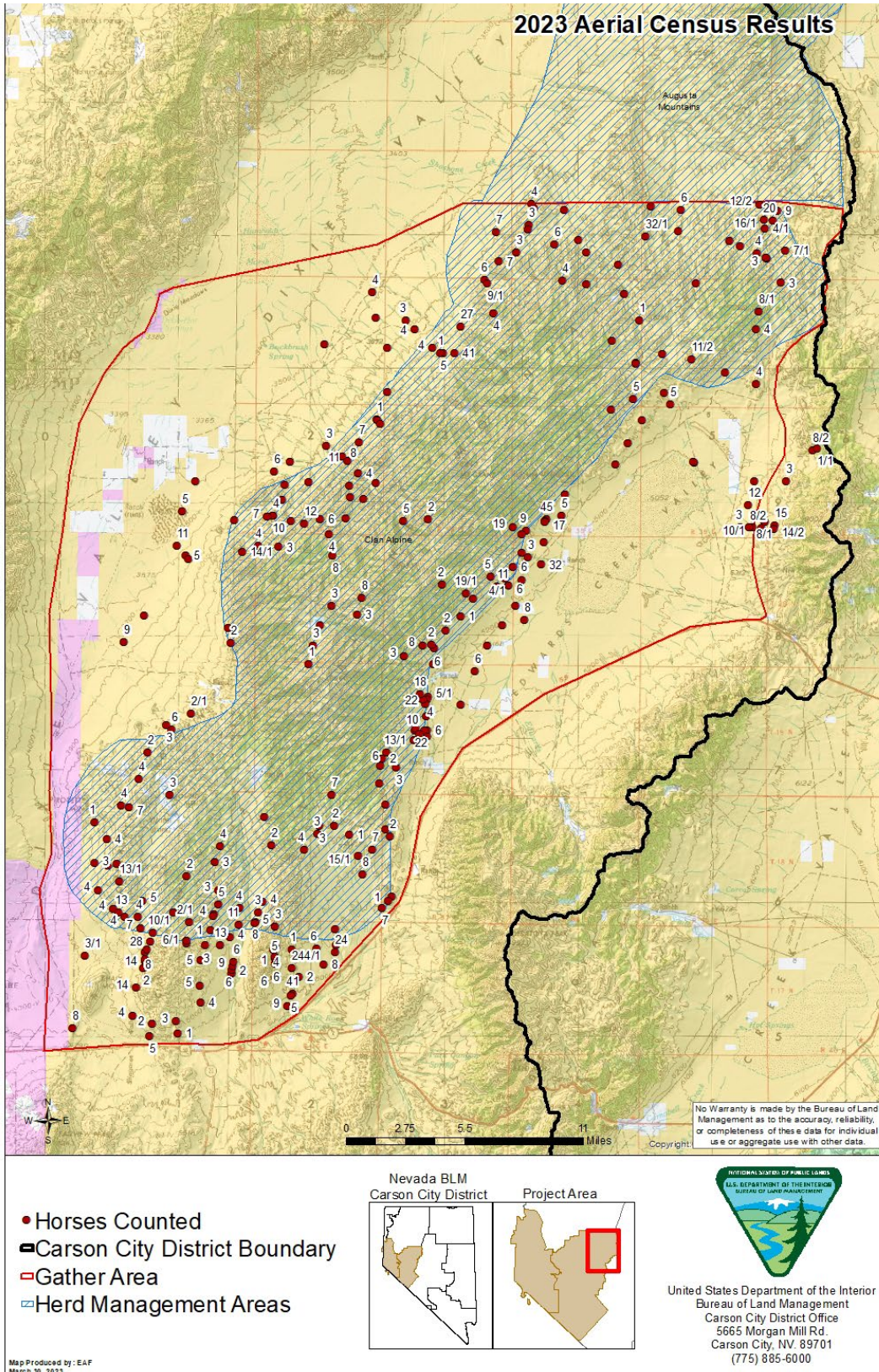
-  Gather Area
-  Herd Management Areas
-  Grazing Allotments
-  Wilderness Areas
-  Carson City District Boundary



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Map Produced by:
 May 26, 2023

Figure 2: Animal Distribution Map



The Clan Alpine HMA contains many unique and important biological, geological, scenic, and cultural resources. Besides providing forage and habitat for wild horses, the HMA provides important habitat for many wildlife species, including mule deer, pronghorn, and bighorn sheep. The other predominant land uses within the Clan Alpine HMA are wilderness recreation and general recreation (both motorized and non-motorized), including hunting, hiking, and exploring. Domestic livestock grazing is authorized on all three allotments within regulated seasons of use. The full gather area beyond the HMA also overlaps withdrawn Department of Defense lands, used by the Navy, on the east side.

The AML range for the Clan Alpine HMA is 612 to 979 wild horses. The AML upper limit is the maximum number of wild horses that BLM has determined the Clan Alpine HMA can support while maintaining a thriving natural ecological balance (TNEB) and multiple use relationship on the BLM-administered public lands in the area.² Establishing AML as a population range allows for the periodic removal of excess animals (to the low end of the AML range) and subsequent population growth (to the high end of the AML range) between removals. The AML for the Clan Alpine HMA was established in the Lahontan Resource Management Plan approved in 1985 and re-established at the same level in the Multiple Use Decision (MUD; BLM 1992) and reaffirmed in the 2001 CRMP; BLM 2001). The AML was determined based on an in-depth analysis of habitat suitability, resource monitoring, and population inventory data following opportunity for public involvement.

The Carson City District (CCD) published a herd management area plan (HMAP) in 1993 for the Clan Alpine HMA that is incorporated by reference into this EA. The HMAP provides background information and continues to serve as a reference because the objectives have remained the same: maintain the population at AML, achieve a TNEB that will promote the potential natural plant community, and proactively manage the horse population.

The most recent gather took place in 2006 and removed 88 horses after part of the HMA burned in a wildfire. The CCD signed a decision in 2010 to gather and remove horses from the HMA but the gather, scheduled for February of 2011, was suspended because an aerial survey found that the population was low enough to allow the BLM to postpone a gather.

The most recent aerial survey within and outside the Clan Alpine HMA occurred February 2023. 1,608 animals were visually seen and counted at that time, but that does not include wild horses that were present but not detected. Data were recorded in a standardized way that allowed for such an analysis (Griffin et al. 2020). A statistical analysis of the data was completed in late July 2023, estimating that at least 1,661 horses were present in the surveyed area at the time (Crabb 2023). This estimate is extremely close to the 1,688 value that was used in the preliminary EA, to the extent that a reanalysis of Appendix H was not deemed necessary to make informed conclusions for this analysis. Crabb (2023) used published USGS methodology (Ekernas and

² The Interior Board of Land Appeals (IBLA) defined the goal for managing wild horses (or burro) population in a thriving natural ecological balance as follows: “[T]he ‘benchmark test’ for determining the suitable number of wild horses on the public range is ‘thriving natural ecological balance.’ In the words of the conference committee which adopted this standard: ‘The goal of WH&B management should be to maintain a thriving ecological balance (TNEB) between WH&B populations, wildlife, livestock and vegetation, and to protect the range from the deterioration associated with overpopulation of wild horses and burros.’” *Animal Protection Institute of America*, 109 IBLA 112, 115 (1989) (citing *Dahl v. Clark*, 600 F.Supp.585 (D. Nev. 1984)).

Lubow 2019) to estimate that approximately 1.4% of horses present in the surveyed area were not seen by observers. Crabb (2023) also noted that, for methodological reasons, it is more likely that 1,661 horses was an underestimate of true herd size, and that the true value was likely to have been somewhat higher. For planning and decision purposes, the BLM expects that the total number of adult horses on and near the Clan Alpine HMA in February 2023 was at least 1,661 horses. Based on BLM’s expectations for the herd in this HMA, the agency has used an annual growth rate of 15 percent per year. Although 15 percent per year is slightly lower than the national average, this value is extremely close to the empirically derived estimate for this herd of 14.1 percent (based on the last 9 years; see below), is well within the range of annual growth rates that the BLM would typically use for projections, and within a published meta-analysis of horse demographic rates (Ransom et al. 2016). Starting with 1,661 horses in February 2023 and applying a 15 percent annual growth rate, this means that by fall 2023 it is likely that at least 1,910 horses will be present in and near the Clan Alpine HMA.

Aerial survey observations are made using the simultaneous double-observer method, in which observers in an aircraft independently observe and record groups of wild horses (Lubow and Ransom 2016). Sighting probabilities for the observers are estimated from the information collected and those are used to estimate the total herd size (Griffin et al. 2020; Ekernas and Lubow 2019). Direct counts of wild horse and burro populations have been proven to consistently underestimate the true populations (National Research Council (NRC) 2013). In this HMA, the percentage of wild horses present in the survey area during an aerial survey but not seen by any observer has varied between 1.4% - 7.8 percent (Lubow 2015, 2017, 2020, Crabb 2021, 2023), with an average of about 4-5 percent. Table 2 shows the dates and results of the five most recent aerial surveys/census efforts covering the Clan Alpine HMA. The population has grown exponentially during these 9 years in which no removals took place. The average annual growth rate in this herd is 14.1 percent per year—that value is based on the standard method of fitting a linear regression line through the log-transformed time series of adult population size estimates.

Table 2: Clan Alpine HMA Census Record

Date	Estimated Number of Adult Wild Horses	Comments
Oct. 2014	497	An estimated 7.8% of horses present were not seen by any observer (Lubow 2015)
Apr. 2017	838	An estimated 3.5% of horses present were not seen by any observer (Lubow 2017)
July 2019	1,132	An estimated 3.5% of horses present were not seen by any observer (Lubow 2020)
June 2021	1,319	An estimated 5.9% of horses present were not seen by any observer (Crabb 2021)
Feb. 2023	1,661	1,608 adult wild horses were observed, and analysis of observation data led to an estimated total of 1,661 horses present at the time of the survey; an estimated 1.4% of horses present were not seen by any observer (Crabb 2023).

Based on all information available at this time, the BLM has determined that excess wild horses exist within and outside the Clan Alpine HMA and need to be removed. This assessment is based on the following factors that include but are not limited to:

1. This area is in very poor condition due to overgrazing by wild horses. Perhaps as a result of the degraded rangelands, the annual growth rate for this herd appears to be about 14%-15 percent (Table 2), which is low compared to published values for average wild horse growth rates (NRC 2013, Ransom et al. 2016). In this HMA, it is not uncommon to see horses in very poor condition which results in increased mortality and decreased foal survival.
2. In February 2023, the BLM conducted an aerial survey of the Clan Alpine HMA and counted 1,608 adult wild horses. Based on an analysis of observation data from that survey, the most likely total number of wild horses in the area was at least approximately 1,661. By fall 2023, it is expected that the number of wild horses in and near the range will be at least 1,910. Given the impacts of overgrazing on vegetative and riparian resources caused by the overpopulation of wild horses, BLM has determined animals above low AML are excess animals that need to be removed, and that the population needs to be maintained at AML over the 10-year gather plan period to allow sufficient opportunity for degraded resources to recover. Considering that the low end of AML is 612 animals, the BLM has determined that as of February 2023, there were approximately 1,049 excess wild horses within and outside of the Clan Alpine HMA that need to be removed. If a gather took place in the fall of 2023 to bring the population to low AML, the number of excess horses at that time would be approximately 1,310.
3. These excess wild horse numbers are almost certainly an underestimate because populations increase annually due to foaling (which typically occurs during the spring), and some animals die throughout the year; that is what leads to a net 14-20 percent population growth. Even statistically corrected estimates for herd size in aerial surveys can lead to underestimates of the true number of animals present (Lubow and Ransom 2016). Thus, it is quite possible that the actual number of adult horses present in February 2023 was greater than 1,661 (Crabb 2023). If that was the case, then when a gather takes place, a greater number of excess wild horses would likely need to be removed to reach the low AML.
4. With an approximately 15 percent rate of increase per year, the wild horse population is expected to be approximately 1,910 by fall of 2023.
5. Riparian proper functioning assessments completed in 2021 documented wild horse use that, combined with cattle use, was concluded to be a causal factor in not achieving wetland-riparian area standards due to extensive spring degradation, streambank alteration, trailing damage, and some utilization of forage within riparian and wetland habitats.
6. Land health evaluations and determinations are underway with field data that was collected between 2020 and 2022. Preliminary observations indicate the wild horse overpopulation is contributing to degradation of Standards 1: Soils, 2: Riparian/Wetland, and 4: Plant and Animal Habitat.

1.3 Purpose and Need for Action

The purpose of the BLM's action is to remove excess horses from the Clan Alpine HMA, and to achieve and maintain the wild horse population within the established AML range over a long enough period of time that range resources have the opportunity to recover.

The need for the action is to prevent undue or unnecessary degradation of the public lands associated with excess wild horses, and to restore a thriving natural ecological balance and multiple-use relationship on the public lands, consistent with the provisions of Section 1333 (b) of the WFRHBA.

The EA follows the guidance provided in BLM IM No. 2019-004. This memorandum guides BLM offices to analyze various wild horse management actions to meet the Purpose and Need for Action and to analyze management actions over multiple years. The 10-year timeframe of this EA enables BLM to achieve the purposes of the proposed action: 1) To remove excess wild horses and achieve AML, 2) to implement population controls, and 3) to manage for resource recovery.

Factors such as weather, water availability, forage availability, animal behavior, and the administration of fertility control can all increase the amount of time needed to reach AML. The trapping and fertility control treatment application process, along with concomitant monitoring as noted in the EA, will continue up to 10 years. This time frame allows for enough trapping and application of fertility control treatments to reduce the population growth rate for the HMA and number of excess wild horses that would need to be removed in the future.

1.4 Land Use Plan Conformance

This EA is in conformance with the Carson City Field Office Consolidated Resource Management Plan (May 2001):

- WHB-1,2. "Remove excess wild horses and burros from public land to preserve and maintain a thriving ecological balance and multiple-use relationship."
- WHB-2, Desired Outcomes #2 – "Maintain sound thriving populations of wild horses and burros within herd management areas."
- WHB-2, Desired Outcomes #3 – "Maintain or improve the condition of public rangelands to enhance productivity for wild horses and burros within herd management areas."
- WLD-2, Desired Outcomes #4 – "Maintain and improve wildlife habitat, including riparian/stream habitats, and reduce habitat conflicts while providing for other appropriate resource uses."

Although the 2001 RMP calls for an updated HMAP to be completed for the Clan Alpine HMA, the BLM is not required to update the 1993 HMAP before issuing a gather decision to address excess animals. The Interior Board of Land Appeals (IBLA) has held that an HMAP is not a prerequisite to BLM conducting a gather operation (*Animal Protection Institute of America*, 109 IBLA 112, 127 (1989)), so long as the record otherwise substantiates compliance with the WFRHBA. Based on all available information, BLM has (see section 1.2, above) determined under the WFRHBA that excess wild horses are present and that a gather for removal of excess animals is necessary. Application of population growth suppression measures can improve the

likelihood of maintaining the herd at levels that achieve a thriving natural ecological balance. While BLM has not updated the existing HMAP, it is not necessary to do so as the main components of the HMAP have been addressed by BLM, including the establishment of the HMA, AML and objectives for management (i.e. through the CRMP, BLM 2001), monitoring and evaluating whether management objectives are being met (as summarized in this NEPA document), and establishing a ten-year management plan (through the Proposed Action and Alternatives being analyzed). Moreover, the objectives of the 1993 HMAP are still the same. The BLM is also providing an opportunity for public participation through the comment period for this EA.

1.5 Relationship to Laws, Regulations, and Other Plans

The Proposed Action and Alternatives comply with the following federal, state, and local plans:

- Executive Order 13175 of Nov 6, 2000, Consultation and Coordination With Indian Tribal Governments;
- Federal Land Policy and Management Act (FLPMA) of 1976 (43 U.S.C. 1701 et seq.);
- Fundamentals of Rangeland Health (43 CFR [Code of Federal Regulations] 4180);
- Migratory Bird Treaty Act, 1918, as amended, and Executive Order 13186;
- National Environmental Policy Act of 1969, as amended;
- National Historic Preservation Act of 1966, as amended;
- Public Rangelands Improvement Act of 1978;
- State Protocol Agreement between the BLM, Nevada and the Nevada Historic Preservation Officer (2014);
- Special Status Species Manual and Direction for State Directors to Review and Revise Existing Bureau Sensitive Species Lists (Instruction Memorandum (IM) Number (No.) NV-2011-059);
- Taylor Grazing Act of 1934, as amended;
- Wild Free-Roaming Horses and Burros Act of 1971, as amended;
- Protection, Management, and Control of Wild Free-Roaming Horses and Burros (43 CFR 4700);
- Wild Horses and Burros Management Handbook (H-4700-1).

Refer to Appendix A for ‘Additional Federal Laws and Regulations, Plans, Programs, and Policies’.

The Proposed Action and action Alternatives (except Alternative 4) are consistent with the applicable regulations at 43 CFR 4700 and are also consistent with the WFRHBA, which mandates that BLM “*manage wild free-roaming horses and burros in a manner that is designed to achieve and maintain a thriving natural ecological balance on the public lands,*” “*prevent the range from deterioration associated with overpopulation,*” and “*remove excess wild horses in order to preserve and maintain a thriving natural ecological balance and multiple use relationships in that area.*” Additionally, federal regulations at 43 CFR 4700.0-6 (a) state that, “*Wild horses shall be managed as self-sustaining populations of healthy animals in balance with other uses and the productive capacity of their habitat.*”

- 43 CFR 4710.4: Constraints on management. “Management of wild horses and burros shall be undertaken with the objective of limiting the animals’ distribution to herd areas.

Management shall be at the minimum feasible level necessary to attain the objectives identified in approved land use plans and herd management area plans.”

- 43 CFR 4720.1: “Upon examination of current information and a determination by the Authorized Officer that an excess of wild horses or burros exists, the Authorized Officer shall remove the excess animals immediately.”
- WFRHBA 1333(a): “The Secretary shall manage wild free-roaming horses and burros in a manner that is designed to achieve and maintain a thriving natural ecological balance on the public lands.”
- WFRHBA 1333 (b)(1) states: “The purpose of such inventory shall be to: make determinations as to whether and where an overpopulation exists and whether action should be taken to remove excess animals; determine appropriate management levels or wild free-roaming horses and burros on these areas of public land; and determine whether appropriate managements should be achieved by the removal or destruction of excess animals, or other options (such as sterilization, or natural control on population levels).”
- WFRHBA 1333 (b) (2) (iv) states that once the Secretary determines “...that an overpopulation exists on a given area of the public lands and that action is necessary to remove excess animals, he shall immediately remove excess animals from the range so as to achieve appropriate management levels.”

In *Animal Protection Institute*, 118 IBLA 75 (1991), the IBLA found that under the Wild Free-Roaming Horses and Burros Act of 1971 (Public Law 92-195) “excess animals” must be removed from an area in order to preserve and maintain a thriving natural ecological balance and multiple-use relationship in that area. Regulations at 43 CFR 4700.0-6(a) also direct that wild horses be managed in balance with other uses and the productive capacity of their habitat. The Proposed Action is in conformance with federal statute, regulations, and case law.

1.6 Conformance with Rangeland Health Standards and Guidelines

From 1977 to 2022, the BLM established and/or monitored numerous plots for land health assessments (LHA) within the Clan Alpine HMA. The BLM completed an LHA and Standard Determination Document (SDD) for the Cow Canyon, Clan Alpine, and Dixie Valley Allotments in 2009 and 2014 respectively (BLM 2014a). That assessment found that wetland/riparian areas, plant and animal habitat, and special species habitat were not meeting standards and wild horse utilization was a causal factor. These documents also found drought, historic grazing, and grazing practices prior to 2017 to be reasons why the grazing allotments were not meeting standards. The grazing management as prescribed by the permits for these allotments was modified via a permit renewal decision in 2017.

1.7 Decision to Be Made

The Authorized Officer would determine whether to implement all, part, or none of the Proposed Action as described in Section 2.2.1 to manage wild horses within the Clan Alpine HMA. The Authorized Officer’s decision may select gather methods, numbers of horses gathered and removed, and population growth suppression technique(s) depending on the alternative or parts of any alternative chosen. The gather plan decision would not set or adjust AML, nor would it adjust livestock use, as these were set through previous land use planning and multiple use or grazing decisions, which require adherence to regulatory processes set forth in 43 CFR Part 4100 and 4700.

1.8 External Involvement

The first public scoping period for the preparation of the Clan Alpine HMA Gather EA was from December 21, 2022 to January 20, 2023. Mailings included the BLM Media, Nevada State Clearinghouse distribution, Stillwater Field Office NEPA, and the CCD Office Wild Horse and Burro email lists, which included local and state governments, media, and members of the public. The BLM received seven comments, including from the Nevada Department of Wildlife. The BLM conducted a second public scoping period from February 27 to March 30, 2023, due to requests for additional time to submit comments. Approximately 1,695 comments were received via email and through ePlanning. About 88 percent of these were form letters. The BLM considered all scoping comments during the development of this EA.

In addition to the scoping letters, Executive Order 13175 stipulates that during the NEPA process, federal agencies must consult tribes identified as being directly and substantially affected, to provide tribal entities the opportunity to identify ethnographic resources and the potential effects the project may have on Native American interests. The BLM has identified the Fallon Paiute-Shoshone Tribe, the Yomba Shoshone Tribe, and the Lovelock Indian Colony as having traditional territory that overlaps with the project area, as well as being users of natural and cultural resources within the project area. The BLM sent the Fallon Paiute-Shoshone Tribe and the Yomba Shoshone Tribe consultation letters on December 20, 2022, and to the Lovelock Indian Colony on May 25, 2023. The letters included a description of proposed gather and an invitation for consultation. The BLM has not received any response from the Tribes; however, consultation with the Tribes is ongoing and will continue through the decision and implementation.

The public comment period for the preliminary EA was from June 16 through July 17, 2023. The BLM mailed letters to 48 individuals, organizations and agencies on June 16, 2023. Notification of the availability of the Preliminary EA to state offices was sent through the Nevada State Clearinghouse distribution list on June 16, 2023. The CCD published a Press Release on June 16, 2023 that was sent to media outlets listed on the Nevada BLM State Office media list.

Comment Types

There were three individual letters received via USPS and 16 letters received via email. BLM thoroughly reviewed and considered all the comments that it received and made minor changes to the EA. The BLM's response to comments is found at Appendix L.

2.0 Description of the Alternatives

2.1 Introduction

This section describes the Proposed Action and Alternatives, including any that were considered but eliminated from detailed analysis. For this EA, four Alternatives are analyzed in detail including the preferred Alternative (Table 3).

The action Alternatives were developed in response to the identified resource issues and the purpose and need, as described in Section 1.8. A summary description of alternatives analyzed in detail is as follows:

Table 3: Summary of Alternative Actions

Alternative	Title	Description
Alternative 1	Proposed Action: Gather and Removal of Excess Wild Horses to Low-AML, Sex Ratio Adjustment, and Vaccine-based Fertility Control	Conduct an initial gather and any follow-up gathers necessary to remove excess animals in and outside the HMA to achieve low AML, and over a 10-year period, adjust sex ratio in favor of males, apply immunocontraceptive vaccines as fertility control treatments, and conduct maintenance gathers to maintain population at AML if after low AML has been achieved, population growth results in the AML being exceeded again.
Alternative 2	Remove wild horses to Low-AML	Initial gather(s) to remove all excess wild horses above low AML then conduct maintenance gathers as needed over the life of the plan to maintain population at AML. Would not implement population control measures nor adjust sex ratios within the gather area.
Alternative 3	Removals of horses to Low-AML with Vaccine-based Fertility Control and Some Physical Sterilization	Same as Alternative 1, with the addition of gelding, minimally invasive mare sterilization, or ovariectomy as population growth suppression options all within the gather area.
Alternative 4	No Action	Would not achieve the identified purpose and need. However, it is analyzed in this EA to provide a basis for comparison with the other action Alternatives and to assess the effects of not conducting a gather. The No Action Alternative would be in violation of the WFRHBA, which requires the BLM to immediately remove excess wild horses or burros when a determination is made that excess animals are present, and that action is necessary to remove excess animals and maintain a thriving natural ecological balance.

2.2.1 Management Actions & Environmental Protection Measures Common to Alternatives 1 through 3

1. The gathers would begin with the initial gather scheduled by the BLM National Wild Horse and Burro Program Office. Several factors such as animal condition, herd health, weather conditions, or other considerations could result in adjustments in the gather schedule.
2. The initial and subsequent gathers to reach low AML, for application of population controls and to maintain AML would take place within the 10-year period that would begin from the date of the initial gather. The BLM would begin with an initial gather to remove excess wild horses to achieve low AML. If achieving AML is not possible in a single gather, then BLM would conduct follow-up gather(s). Various factors such as animal condition, herd health, weather conditions, and other considerations could affect scheduling of the initial gather and the necessity to conduct follow-up gathers to achieve low AML.

3. Gather operations would be conducted in accordance with the Comprehensive Animal Welfare Program (CAWP) for Wild Horse and Burro Gathers, which includes provisions of the Comprehensive Animal Welfare Program (BLM Permanent Instruction Memorandum 2021-002; Appendix B).
4. A combination of gather methods may be used, depending on the specific needs and any applicable emergency situations. Gather methods would be conducted by either the BLM or contractors and may include the helicopter drive trapping, roping from horseback, and bait and water trapping. Trapping methods would be determined by the BLM on a case-by-case basis.
5. BLM would make every effort to place gather sites in previously disturbed areas, but if a new site needs to be used, they would be inventoried for cultural resources, noxious weeds, and sensitive species. If cultural resources or sensitive species are encountered, these locations would not be used unless they could be modified to avoid impacts.
6. Multiple, temporary gather sites (traps) would be used to gather excess wild horses both from within and outside the Clan Alpine HMA. In addition to public lands, other property may be utilized for gather sites and temporary holding facilities (with the landowner's or managing agency's written permission/authorization).
7. Any trapping activities would be scheduled in locations and during time periods that would be most effective to gather enough animals to achieve management goals for the areas being gathered. The most efficient gather technique would be chosen as determined by the gather needs of the specific area and funding and logistic constraints at that time.
8. Temporary gather and holding sites would be no larger than 0.5 acres. Bait or water trapping sites could remain in place up to one year. Temporary holding sites could be in place for up to 45 days depending on length of gather. The exact location of gather sites and holding sites may not be determined until immediately prior to the gather because the location of the animals on the landscape is variable and unpredictable.
9. A veterinarian from the U.S. Department of Agriculture Animal and Plant Inspection Service, or other licensed veterinarian, would be on call or onsite or as needed for the duration of the gather to examine animals and make recommendations to the BLM for the care and treatment of wild horses, and ensure humane treatment. Additionally, animals transported to all BLM Off Range Corral facilities are inspected by facility staff and the contract Veterinarian to observe health and ensure the animals have been cared for humanely.
10. Decisions to humanely euthanize animals in field situations would be made in conformance with BLM policy (Permanent Instruction Memorandum 2021-007 or most current, <https://www.blm.gov/policy/pim-2021-007>).
11. Data including sex and age distribution, condition class information (using the Henneke rating system), color, size, and other information may also be recorded, along with the disposition of that animal (removed or released).
12. GPS radio collars and / or GPS tail tag transmitters may be used as part of monitoring efforts. Radio collars would not be used on Stallions.
13. Genetic monitoring of captured animals would be conducted, to inform the BLM about the contemporary conditions of genetic diversity, in accordance with BLM IM 2009-062 or current policy and the Wild Horse and Burro Handbook BLM-4700-1.

14. During or after gathers, 1-3 fertile males or females from a different HMA with similar or desired characteristics of the horses within the Clan Alpine HMA could be released to increase the genetic diversity (i.e., if genetic monitoring indicates that is prudent).
15. Delays in implementing the gather and population control components could increase the number of excess wild horses that would need to be gathered to achieve low AML and to maintain the population within AML.
16. All animals outside of established Clan Alpine HMA boundaries would be removed. No horses would be returned to areas in the proposed gather area that are outside the Clan Alpine HMA.
17. Population inventories and routine resource/habitat monitoring would be completed every two to three years to document current population levels, growth rates, and areas of continued resource concerns (horse concentrations, riparian impacts, over-utilization, etc.). This information would be used in internal BLM assessments on the effectiveness of previous management actions that inform the timing and extent of fertility control activities and follow-up gathers.
18. Gather sites would be screened for noxious weed species prior to being used. Any noxious weed populations present would be avoided.
19. Any feed provided for horses during gather operations on public lands would be Nevada Department of Agriculture (NDA) certified weed free.

Helicopter Drive Trapping

The BLM would utilize a contractor to perform the gather activities in cooperation with the BLM. The contractor would be required to conduct all helicopter operations in a safe manner and in compliance with Federal Aviation Administration regulations found in 14 CFR § 91.119.

Per BLM Washington Office IM No. 2013-059 and BLM Washington Office IM No. 2010-164, helicopter landings would not be allowed in wilderness except in the case of an emergency. Helicopter drive trapping may be needed to meet management objectives to capture the highest percentage of wild horses possible. The appropriate gather method would be determined by the Wild Horse and Burro Specialist based on the location, accessibility of the animals, local terrain, vegetative cover, and available sources of water and forage. Roping from horseback could also be used when necessary. Based on wild horse locations in this area, it is estimated that multiple trap sites may be used during trapping activities.

Helicopter drive trapping involves use of a helicopter to herd wild horses into a temporary trap. The SOPs outlined in Appendix B would be implemented to ensure that the gather is conducted in a safe and humane manner, and to minimize potential impacts or injury to the wild horses. Utilizing the topography, traps would be set in areas with high probability of horse access. This would assist with capturing excess wild horses residing nearby. Traps consist of a large catch pen with several connected holding corrals, jute-covered wings, and a loading chute. The jute covered wings are made of fibrous material, not wire, to avoid injury to the horses. The wings form an alley way used to guide the horses into the trap. Trap locations are changed during the gather to reduce the distance that the animals must travel. A helicopter is used to locate and herd wild horses to the trap location. The pilot uses a pressure and release system while guiding them to the trap site, allowing them to travel at their own pace. As the wild horse herd approaches the trap the pilot applies pressure and a “prada” horse is released, guiding the wild horses into the

trap. Once horses are gathered, they are removed from the trap and transported to a temporary holding facility where they are sorted.

During helicopter drive trapping operations, BLM would ensure that an Animal and Plant Health Inspection Service (APHIS) veterinarian or contracted licensed veterinarian is onsite or on call to examine animals and make recommendations to BLM for care and treatment of wild horses. BLM staff would always be present on the gather to observe animal condition, ensure humane treatment of wild horses, and ensure contract requirements are met.

Bait/Water Trapping

Bait and/or water trapping would be used as appropriate to gather wild horses efficiently and effectively. Bait and water trapping may be utilized when wild horses are in an area where there are limited resources (food or water). The use of bait and water trapping, though effective in specific areas and circumstances, would not be timely, cost-effective, or practical as the primary or sole gather method for the Clan Alpine HMA. However, water or bait trapping could be used as a supplementary approach to achieve the desired goals of Alternatives 1-3 throughout portions of the Clan Alpine HMA and gather area. Bait and/or water trapping generally requires a longer window of time for success than helicopter drive trapping. Although the trap would be set in a high probability area for capturing excess wild horses residing within the area and at the most effective time periods, time is required for the horses to acclimate to the trap and/or decide to access the water/bait. Trapping involves setting up portable panels around an existing water source or in an active wild horse area, or around a pre-set water or bait source. The portable panels would be set up to allow wild horses to go freely in and out of the corral until they have adjusted to it. When the wild horses fully adapt to the corral, it is fitted with a gate system. The period of adaptation for the animals creates a low stress trapping method. During this acclimation period, the wild horses would experience some stress due to perceived access restriction to the water/bait source by the panels. See Water and Bait Trapping Standard Operation Procedures (SOPs), Appendix B. Gathering excess horses using bait/water trapping could occur at any time of the year and traps would remain in place until the target numbers of animals are removed.

Gather-related Temporary Holding Facilities (Corrals)

Wild horses that are gathered would be transported from the gather sites to a temporary holding corral. At the temporary holding corral, wild horses would be sorted into different pens. Females would be identified for fertility control and treated at the corrals. The horses would be provided good quality hay and water. Females and their unweaned foals would be kept in pens together. At the temporary holding facility, a veterinarian, when present, would provide recommendations to the BLM regarding care and treatment of recently captured wild horses. Any animals affected by a chronic or incurable disease, injury, lameness, or serious physical defect (such as severe tooth loss or wear, club foot, and other severe congenital abnormalities) would be humanely euthanized using methods acceptable to the American Veterinary Medical Association (i.e., BLM Permanent IM 2021-007 or the most current edition). GPS radio collars or tail tags could be affixed to wild horses that are intended to go back to the range, at temporary holding facilities, or at an off-range prep facility corral.

Transport, Off-range Corrals, and Adoption Preparation

All gathered wild horses would be removed and transported to BLM off range corrals (ORCs) where they would be inspected by facility staff (and if needed by a contract veterinarian) to observe health conditions and ensure that the animals are being humanely cared for.

Those wild horses removed from the range would be transported to the receiving off-range corrals (ORCs, formerly short-term holding facilities) in a gooseneck stock trailer or straight-deck semi-tractor trailers. Trucks and trailers used to haul the wild horses would be inspected prior to use to ensure wild horses can be safely transported. Wild horses would be segregated by age and sex when possible and loaded into separate compartments. Females and their unweaned foals may be shipped together. Conditions for transportation of recently captured wild horses are subject to standards of the BLM comprehensive animal welfare program (BLM IM 2021-002).

Excess animals would be transported to BLM off-range corrals where they would be prepared (e.g., freeze marked, microchipped, vaccinated, de-wormed, and gelded) for adoption, sale (with limitations), transfer to an authorized government agency, or off-range pastures (ORP).

Upon arrival, recently captured wild horses are offloaded by compartment and placed in holding pens where they are provided good quality hay and water. Most wild horses begin to eat and drink immediately and adjust rapidly to their new situation. At the ORC, a veterinarian provides recommendations to the BLM regarding care, treatment, and if necessary, euthanasia of the recently captured wild horses. Any animals affected by a chronic or incurable disease, injury, lameness, or serious physical defect (such as severe tooth loss or wear, club foot, and other severe congenital abnormalities) would be humanely euthanized using methods acceptable to the AVMA. Wild horses in very thin condition, or animals with injuries, are sorted and placed in hospital pens, fed separately, and/or treated for their injuries.

After recently captured wild horses have transitioned to their new environment, they are prepared for adoption, sale, or transport to ORPs. Preparation involves freeze marking the animals with a unique identification number, vaccination against common diseases, castration, microchipping, and deworming. At ORC facilities, a minimum of 700 square feet of space is provided per animal.

Adoption

Adoption applicants are required to have at least a 400 square foot corral with panels that are at least six feet tall for horses. Applicants are required to provide adequate shelter, feed, and water. The BLM retains title to the horses for one year and inspects the horses and facilities during this period. After one year, the applicant may take title to the horses, at which point the horses become the property of the applicant. Adoptions are conducted in accordance with 43 CFR Subpart 4750.

Sale with Limitations

Buyers must fill out an application and be pre-approved before they may buy a wild horse. A sale-eligible wild horse is any animal that is more than 10 years old or has been offered unsuccessfully for adoption at least three times. The application also specifies that buyers cannot sell the horse to anyone who would sell the animals to a commercial processing plant. Sales of wild horses are conducted in accordance with the 1971 WFRHBA and congressional limitations.

Off-Range Pastures

In Off-Range Pastures (ORP), females and sterilized males (geldings) are segregated into separate pastures. Although the animals are placed in ORP, they remain available for adoption or sale to qualified individuals. Foals born to pregnant females in ORP are gathered and weaned when they reach about 8-12 months of age and are also made available for adoption. The ORP contracts specify the care that wild horses must receive to ensure they remain healthy and well-cared for. Handling by humans is minimized to the extent possible although regular on-the-ground observation by the ORP contractor and periodic counts of the wild horses to ascertain their well-being and safety are conducted by BLM personnel and/or veterinarians.

Shipping

When shipping wild horses for adoption, sale, or ORP the animals may be transported for up to a maximum of 24 hours. Immediately prior to transportation, and after every 24 hours of transportation, animals are offloaded and provided a minimum of eight hours on-the-ground rest. During the rest period, each animal is provided access to unlimited amounts of clean water and two pounds of good quality hay per 100 pounds of body weight with adequate space to allow all animals to eat at one time.

Euthanasia or Sale without Limitations

Under the WFRHBA, healthy excess wild horses can be euthanized or sold without limitation if there is no adoption demand for the animals. However, while euthanasia and sale without limitation are allowed under the statute, for several decades Congress has prohibited the use of appropriated funds for this purpose. If Congress were to lift the current appropriations restrictions, then it is possible that excess horses removed from the Clan Alpine HMA over the next 10 years could potentially be euthanized or sold without limitation consistent with the provisions of the WFRHBA.

Any old, sick, or lame horses unable to maintain an acceptable body condition (greater than or equal to a Henneke body condition score (BCS) of 3) or with serious physical defects would be humanely euthanized either before gather activities begin or during the gather operations as well as within ORCs. Decisions to humanely euthanize animals in field situations would be made in conformance with BLM policy (Permanent Instruction Memorandum 2021-007 or the most current edition).

Public Viewing Opportunities

Opportunities for public observation of the gather activities on public lands would be provided, when and where feasible, and would be consistent with Washington Office IM No. 2013-058 and the wild horse gather observation protocols in Appendix M. This protocol is intended to establish observation locations that reduce safety risks to the public during helicopter gathers (e.g., from helicopter-related debris or from the rare helicopter crash landing, or from the potential path of gathered wild burros and horses), to the wild horses (e.g., by ensuring observers would not be in the line of vision of wild horses being moved to the gather site), and to contractors and BLM employees who must remain focused on the gather operations and the health and well-being of the wild horses. Observation locations would be located at gather or holding sites and would be subject to the same cultural resource requirements as those sites.

No public observation is permitted during water/bait trapping operations as this could interfere with the trapping operations and impact the contractor's ability to capture wild horses. Only essential gather operation personnel would be allowed at the trap site during operations.

2.2.2 Alternative 1: Proposed Action: Gather and Removal of Excess Wild Horses to Low AML, Sex Ratio Adjustment, and Vaccine-based Fertility Control

The Proposed Action (Alternative 1) would involve three distinct types of management activities over the 10-year life of the plan:

1. Initially, gather and remove excess wild horses to achieve low AML within the proposed gather area either in a single first gather or with a follow-up gather(s) if all excess animals are not captured and removed in the initial gather. Based on BLM's experience over the past few decades, there are a number of logistical and operational factors that can affect BLM's ability to achieve AML with a single gather, including (but not limited to) that: gather efficiency is typically less than 80%, which reduces the likelihood that all excess animals can be removed in a single operation when the population significantly exceeds AML; the likely population undercount can result in additional excess wild horses being identified in a follow-up inventory even if the targeted numbers of estimated excess wild horses have been removed; the wild horses become more challenging to catch as the helicopter gather operation progresses and they learn to evade the helicopter, such that smaller numbers of horses are able to be driven by helicopter to the trap site in a single run resulting in fewer horses gathered in a single day or even over the course of a week for longer gathers relative to the start of the gather; weather conditions may impede achieving the targeted removal numbers during gather operations; and limited availability of contractors with the expertise needed to gather animals safely can impact the ability to continue with a gather until all excess animals have been removed. For this reason, if low AML cannot be achieved through a single initial gather, a follow-up gather(s) may be necessary to achieve low AML.
2. Over the 10-year period, apply population growth suppression methods to reduce the herd's annual growth rate. These methods include the use of approved immunocontraceptive vaccines (with initial doses and booster doses) to gathered and released mares (female horses). Both approaches can slow population growth and help to maintain a wild horse population that is already within AML range to AML. In this way, population growth suppression methods can help to allow for resource recovery and reduce the number of excess animals that ultimately must be removed from the public range over time. Fertility control vaccines and sex ratio adjustment measures can be applied even if low AML is not reached during an initial gather if any captured horses are released back to the range.
3. Over the 10-year period, manage for a population that ensures a thriving natural ecological balance by conducting additional/maintenance gathers after the initial gather(s) to bring wild horse population back to low AML if the population grows to again exceed high AML during the 10-year plan life after low AML was achieved, and to allow for additional population growth suppression actions. Such follow-up management activities can help to provide the ecosystem with a sufficient period of time for degraded range resources to recover.

At the current population size, if a single gather were to be immediately conducted in Fall 2023 to reach low AML, the BLM would need to gather and remove approximately 1,310 excess wild horses within and outside of the Clan Alpine HMA. However, the wild horse population grows

each year (i.e., Table 2) and if an initial gather takes place later, or if multiple gathers are necessary to achieve low AML because all excess animals could not be captured and removed in a single gather, the total number of excess wild horses needing gather and removal to achieve low AML would be higher. All three components of the Proposed Action would allow BLM to achieve management goals and objectives of attaining a herd size that will not exceed AML and that will result in a thriving natural ecological balance on the range as required under the WFRHBA.

Based on BLM's experience over several decades, it is expected that gather efficiencies and other factors discussed above, as well as limitations in off-range corral space availability or annual budget appropriations may not allow for the attainment of low AML during a single initial gather (i.e. if not enough horses are successfully captured and removed to reach low AML). If low AML is not achieved with the first gather, the BLM would return to the gather area to remove remaining excess horses above low AML in one or, if necessary, more follow-up gathers. Multiple gathers will be used over a 10-year period to gather a sufficient number of wild horses in order to implement (in a phased manner) the population growth suppression component of the Proposed Action, which includes sex ratio adjustment (so that the herd may sometimes be composed of as many as 60 percent males and as few as 40 percent females) and fertility control treatments (PZP vaccines, GonaCon-Equine vaccine) for wild horses remaining in the HMA. Because continued management of the HMA's wild horse population at AML over the 10-year period is necessary to allow degraded range resources to recover and to achieve a thriving natural ecological balance, BLM would maintain the population at AML through additional removals and population growth suppression actions (during follow-up gathers) if the population should again exceed AML after low AML was reached.

The management objective for the Clan Alpine HMA would be to gather and remove excess wild horses within and outside the Clan Alpine HMA to achieve low AML and then maintain AML over the 10-year plan period through population growth suppression measures and, if necessary, additional removal of animals that exceed high AML. In Alternative 1, the use of population growth suppression measures could include:

- Administration of fertility control vaccines (i.e., approved Porcine Zona Pellucida (PZP) vaccines, GonaCon-Equine, or newly developed immunocontraceptive vaccine formulations) to released females.
- Adjustment of sex ratios to achieve a 60 percent male to 40 percent female ratio.

While in the temporary holding corral, wild horses would be identified for removal or release based on age, sex, and/or other characteristics. As part of periodic genetic monitoring to monitor wild horse genetic diversity in the Clan Alpine HMA, samples would be collected for analysis to assess the levels of observed heterozygosity, which is a measure of genetic diversity (BLM 2010) within the HMA and may be analyzed to determine relatedness to established breeds and other wild horse herds. Females identified for release would be aged, microchipped, and freeze-marked for identification prior to being released to help identify the animals for future treatment/boosters and possibly assess the efficacy of fertility control treatment.

Population Growth Suppression Methods

Alternative 1 would include population growth suppression methods such as fertility control vaccines, and sex ratio adjustments in the herd. In cases where a booster vaccine is required to increase the duration of vaccine contraceptive effect, females could be held for approximately 30 days and given a booster shot prior to release. Over the course of multiple gathers over the 10-year time period, BLM would treat/retreat females with fertility control to help meet herd management objectives. Vaccines would be limited to formulations that are authorized for use in wild horses. At present, those include EPA-registered formulations such as PZP ZonaStat-H vaccine (EPA 2012) and GonaCon-Equine vaccine (EPA 2013). Since release of the 2013 NRC Report, the BLM has supported pen trials and field trials of potential fertility control methods that may be used in WHB management (BLM 2021d), but inclusion of any particular method as a part of management does not depend on completion of any given research project. The use of any new fertility control method would conform to current best management practices at the direction of the BLM National Wild Horse and Burro Program.

Sex Ratio Adjustment

Sex ratio adjustment, leading to a reduced proportion of females in the herd, can be considered a form of contraceptive management, insofar as it can reduce the realized per-capita growth rate in a herd. By reducing the proportion of breeding females in a population (as a fraction of the total number of animals present), fewer foals would be born, relative to the total number of herd size. Sex ratio is typically adjusted in such a way that 60 percent of the horses are male. In the absence of other fertility control treatments, this 60:40 sex ratio alone can temporarily reduce population growth rates from approximately 20 percent to approximately 15 percent (Bartholow 2004). While such a decrease in growth rate may not appear to be large or long-lasting, the net result can be that fewer foals are born, at least for a few years, which can extend the time between gathers and reduce impacts on-range and costs off-range. Even at low AML, the herd size in the Clan Alpine HMA would be well above the minimum herd size guidelines for application of sex ratio adjustment recommended in the BLM wild horse and burro management handbook (BLM 2010).

Contraception

The BLM has identified fertility control as a method that could be used to protect rangeland ecosystem health and to reduce the frequency of wild horse and burro gathers and removals. Expanding the use of population growth suppression to slow population growth rates and reduce the number of animals removed from the range and sent to ORPs is a BLM priority. No finding of excess animals is required for the BLM to pursue contraception in wild burros and horses as a population management tool.

Contraception has been shown to be a cost-effective and humane treatment to slow increases in wild horse and burro populations or, when used with other techniques, to reduce population size (Bartholow 2004; de Seve and Boyles-Griffin 2013; Fonner and Bohara 2017).

Porcine Zona Pellucida Vaccine

Immunocontraceptive vaccines such as Porcine Zona Pellucida (PZP) vaccines are currently being used on over 75 areas managed for wild horses and burros by the National Park Service, U.S. Forest Service, and the Bureau of Land Management, and its use is appropriate for free-ranging wild horse and burro herds. Taking into consideration available literature on the subject,

the National Research Council concluded in their 2013 report that PZP vaccine was one of the preferred available methods for contraception in wild horses and burros (NRC 2013). Appendix C includes a thorough review of scientific literature currently available, related to PZP vaccines. PZP vaccine use can reduce or eliminate the need for gathers and removals (Turner et al. 1997). PZP vaccines meet most of the criteria that the National Research Council (2013) used to identify promising fertility control methods, in terms of delivery method, availability, efficacy, and side effects. PZP vaccine can be relatively inexpensive (~\$30 / dose), meets BLM requirements for safety to females and the environment, and is commercially produced as ZonaStat-H, an EPA-registered product (EPA 2012, SCC 2015), or as PZP-22 vaccine, which is a formulation of PZP in polymer pellets that can lead to a longer immune response (Turner et al. 2002, Rutberg et al. 2017, Carey et al. 2019). Because the EPA regulates products that mitigate fertility in feral animals, such as federally protected wild horses, ZonaStat-H is registered with the EPA as a ‘pesticide,’ even though the effects are contraceptive, not lethal. ZonaStat-H and PZP-22 can be remotely administered (dart-delivered) in the field, but only where females are relatively approachable.

Under the Proposed Action, females being treated for the first time could receive a liquid primer dose of ZonaStat-H, along with the PZP-22 time-release pellets. BLM would return to the Clan Alpine HMA as needed to re-apply PZP-22 and/or ZonaStat-H vaccines and initiate new treatments to maintain contraceptive effectiveness in controlling population growth rates. Application methods could be by handled in a working chute during gathers, or through field darting if females in some portions of the Clan Alpine HMA prove to be approachable and appropriately identified females can be accurately identified and distinguished. Both forms of PZP can safely be reapplied as necessary to control the population growth rate. Even with repeated booster treatments of PZP, it is expected that most, if not all, females would return to fertility, and that not all females would be treated or receive boosters within the HMA due to the sheer number of horses, the large size of the HMA, and logistics of gathers where gather efficiencies fall below 100 percent. Once the population is at AML and population growth seems to be stabilized, BLM could use population planning software (such as PopEquus, currently in development by USGS Fort Collins Science Center) to determine the required frequency of re-treating females with PZP or other fertility control methods (BLM 2009).

GonaCon-Equine

The immune-contraceptive GonaCon-Equine vaccine meets most of the criteria that the National Research Council of the National Academy of Sciences (NRC 2013) used to identify the most promising fertility control methods, in terms of delivery method, availability, efficacy, and side effects. GonaCon-Equine is approved for use by authorized federal, state, tribal, public and private personnel, for application to wild and feral equids in the United States (EPA 2013, 2015). Its use is appropriate for free ranging wild burro and horse herds. Taking into consideration available literature on the subject, the National Research Council concluded in their 2013 report that GonaCon-B (which is produced under the trade name GonaCon-Equine for use in feral horses and burros) was one of the most preferable available methods for contraception in wild horses and burros (NRC 2013). Appendix C includes a thorough review of scientific literature currently available, related to GonaCon vaccine. In 2013, the NRC suggested that additional studies be done on the contraceptive efficacy and behavioral effects of GonaCon-Equine, and such suggested studies have been published since that time (see Appendix C). GonaCon-Equine has been used on feral horses in Theodore Roosevelt National Park (Baker et al. 2018), and on

BLM-managed wild horses in over 15 HMAs since 2020. GonaCon-Equine can be remotely administered in the field in cases where females are relatively approachable, using a customized pneumatic dart (McCann et al. 2017). Use of remotely delivered (dart delivered) vaccine is generally limited to populations where individual animals can be accurately identified and repeatedly approached within 50 meters or less (BLM 2010). As with other contraceptives applied to wild burros or horses, the long-term goal of GonaCon-Equine use is to reduce or eliminate the need for gathers and removals (NRC 2013). It is relatively inexpensive (~\$50 / dose), meets BLM requirements for safety to females and the environment, and is produced in a United States Department of Agriculture-APHIS laboratory. Like ZonaStat-H, GonaCon is regulated by the EPA (2009a, 2013, 2015) because it can mitigate the growth rate of wild horses and burros, but the vaccine is merely immunocontraceptive, not lethal. GonaCon-Equine is produced as a pharmaceutical-grade vaccine, including aseptic manufacturing technique to deliver a sterile vaccine product (Miller et al. 2013). If stored at 4° C, the shelf life is 6 months (Miller et al 2013).

Miller et al. (2013) reviewed the vaccine environmental safety and toxicity. When advisories on the product label (EPA 2015) are followed, the product is safe for users and the environment (EPA 2009b). EPA waived a number of tests prior to registering the vaccine because GonaCon was deemed to pose low risks to the environment, so long as the product label is followed (Wang-Cahill et al. 2017).

Under Alternative 1, the BLM would return to the Clan Alpine HMA as needed to reapply GonaCon-Equine and initiate new treatments in order to maintain contraceptive effectiveness in controlling population growth rates. Booster dose effects may lead to increased effectiveness of contraception, which is generally the intent. GonaCon-Equine can safely be reapplied as necessary to control the population growth rate. Even with one booster treatment of GonaCon-Equine, it is expected that most, if not all, females would return to fertility at some point, although the average duration of effect after booster doses has not yet been quantified. It is unknown what would be the expected rate for the return to fertility rate in females boosted more than once with GonaCon-Equine. Once the herd size in the project area is at AML and population growth seems to be stabilized, BLM would make a determination as to the required frequency of new treatments and re-treatments with GonaCon-Equine or other fertility control methods to maintain the wild horse population within AML.

Please refer to Appendix C for further information on BLM's use of contraception in wild horse management and the effects of those various contraceptive methods and refer to Appendix D for procedures to be followed for implementation of fertility controls.

GPS Radio Collars and Tail Tags

To facilitate the BLM's monitoring of released wild horses, United States Geological Survey (USGS) staff or other similarly qualified personnel may, at the direction of the authorized officer, affix small, lightweight GPS radio transmitters (GPS tail tags) into the tails of wild horses, and / or fit GPS radio collars to wild mares, before such animals are released back to the Clan Alpine HMA. If funding and logistics allow for this, it would allow for more detailed wild horse monitoring in this herd. Telemetry-based monitoring would allow the Bureau of Land Management (BLM) to more easily observe the outcome of fertility control treatments, and to learn more about wild horse movement patterns in the HMA. The primary reasons to conduct

this non-destructive data collection activity would be, first, to monitor the outcome of fertility control treatments and, second, to learn more about wild horse movements in the area. Having tail tags or radio collars on mares will allow the BLM, or the USGS or other cooperating institution, to periodically locate the animals with telemetry and check whether they have a foal. Detailed information about wild horse movements in the HMA that GPS telemetry can provide is not currently available. The location data from the telemetry devices is expected to inform the BLM about natural resources that the wild horses use throughout the year.

Tags or collars would be affixed on fewer than 100 horses over the 10-year period, with no more than 50 attached at a time. The tail-mounted GPS units (< 50 g) or GPS radio collars (< 1 kg) would be programmed to collect multiple locations per day. Both the collars and the tail-braid attachments are designed to prevent negative impacts to horse welfare and are expected to detach from the horse within 3 years. The collars have a longer expected duration of use and would be more informative for fertility control monitoring. The tail tags have a more limited duration of use but will increase the number of animals providing monitoring results for seasonal movements. Both collars and tail tags are solid-battery powered and will include a very-high frequency (VHF) transmitter to facilitate unit location and recovery. See Appendix J for further details on GPS collar and tag application, and periodic monitoring to ensure ongoing animal safety.

2.2.3 Alternative 2: Remove Wild Horses to Low AML (Figure 1)

Under Alternative 2, BLM would gather and remove excess animals inside and outside the Clan Alpine HMA and surrounding areas, which could include withdrawn Department of Defense lands, to reach low AML. Horses would be gathered in all locations within the gather area (Figure 1). Alternative 2, as with the Proposed Action (Alternative 1), would begin with an initial gather to remove a sufficient number of horses to bring the population down to the low AML of 612 horses and any follow-up gather(s) that may be necessary if low AML is not achieved with the initial gather. Because the Clan Alpine horse population was at least approximately 1,661 horses in February 2023, if the initial gather occurred in fall of 2023, approximately 1,310 horses would need to be removed to bring the herd to low AML, but the number of horses to be gathered would be higher if the initial gather is delayed. The horses would be gathered and removed, without use of any fertility control methods or sex ratio adjustments. Impacts from this alternative would be similar to the gathering and handling impacts under the Proposed Action (Alternative 1), however there would be no horses released or fertility control administered to released horses. While wild horses would be gathered to the low AML of 612 horses, the wild horse AML would be exceeded sooner than under Alternative 1 or Alternative 3, since fertility rates would be higher than if any form of fertility control were administered. This alternative may result in more gathers within the next 10 years since the population would be predicted to increase at a higher rate than the Proposed Action (Alternative 1).

2.2.4 Alternative 3: Removals of Horses to Low AML with Vaccine-based Fertility Control and Some Physical Sterilization

This alternative would be similar to Alternative 1 in that BLM would gather and remove excess animals to low AML and implement fertility controls and sex ratio adjustment, but under this

Alternative the BLM would also use physical forms of fertility control and manage a portion of the population as non-reproducing individuals, through the use of mare sterilization and/or gelding of males. No more than approximately 25 percent of the population would be physically sterilized.

Male Sterilization

After low AML is reached, to reduce the number of animals in ORPs, a portion of male horses would be sterilized, either by gelding (neutering) or surgical vasectomy, and returned to the Clan Alpine HMA. These released non-reproducing males would bring the population on the range closer to mid-AML (instead of low AML), but the herd would not exceed a roughly 60:40 male to female ratio. All animals treated with any type of fertility control would be freeze marked and identified according to current guidelines and consistent with Nevada state rules for branding. Intact males released back to the Clan Alpine HMA would be selected to maintain a diverse age structure, historical herd characteristics, and desirable conformation. The procedures to be followed for implementing male sterilization are detailed in Appendix E.

Neutering (Gelding) or Vasectomy of Males

To reduce the total number of excess wild horses that would otherwise be permanently removed from the Clan Alpine HMA, up to 25 percent of the male horse population would be managed as geldings, or vasectomized males, but consistent with BLM wild horse and burro management guidelines (BLM 2010), the total number of male horses would not exceed roughly 60 percent of the population.

The BLM routinely gelds all excess male horses that are captured and removed from the range prior to their adoption, sale, or shipment to off-range facilities. The gelding procedure for excess wild horses removed from the range would be conducted at temporary (field) facilities or ORCs by licensed veterinarians and would follow industry standards. Under Alternative 3, some geldings would be returned to resume their free-roaming behaviors on the public range instead of being permanently removed from the Clan Alpine HMA.

By including some geldings or vasectomized males in the population and having a slightly skewed sex ratio with more males than females overall in the potential breeding population, the anticipated result would be a reduction in population growth rates while allowing for management of a larger total wild horse population on the range. See Appendix C for an in-depth discussion of the various fertility control techniques contemplated in this EA and their potential effects.

Physical Sterilization of Females

As with gelding, no more than 25 percent of female wild horses living on the HMA would be physically sterilized (i.e., ovariectomized or treated with minimally invasive sterilization). Methods and possible effects are described in Appendix C. In most cases the current contraceptive vaccines available for use in wild horses are only effective for one to several years unless a booster is given, and for most mares in the Clan Alpine HMA, giving boosters is not expected to be feasible on an annual basis. A helicopter gather may often be the only practical way to gather and booster the large fraction of females in the herd that would be needed to substantially slow the population growth. Humane physical sterilization offers a permanent

method to prevent pregnancies in treated females which would reduce the rate of population increase and potentially increase the interval between gathers while reducing the total number of animals that would need to be gathered and removed in the future.

2.2.5 Alternative 4: No Action

Under Alternative 4, no gather and no population management to control the size of the wild horse populations within the Clan Alpine HMA or to remove excess animals would occur. Wild horses are not a ‘self-regulating species,’ so in the absence of management actions to limit the herd size, the wild horse population would increase to a point where the resources are depleted resulting in the irreversible loss of native vegetation, a loss of wildlife habitat (including riparian habitat), and eventually the potential for periodic large-scale die-offs of the wild horses themselves (NRC 2013). During the February 2023 aerial inventories, about 30 percent of the animals appeared to fall within categories 2 (very thin) and low 3 (thin) on the Henneke Body Condition Scoring System (Henneke et al. 1983). Most of these horses are expected to improve in body condition in the spring but the low body scores are an indication of over grazing and lack of forage.

2.3 Environmental Protection Measures

The BLM Contracting Officer Representative and Project Inspector assigned to the gather would be responsible for ensuring that contract personnel abide by the contract specifications and the SOPs (Appendix B). Ongoing monitoring of forage condition and utilization, water availability, aerial population surveys, genetic diversity, and animal health would continue.

Fertility control monitoring would be conducted in accordance with SOPs and policy (BLM 2010). Monitoring the herd’s social behavior when possible would be incorporated into routine monitoring. If radio collars are fitted to mares, then location data and survival and foaling outcomes could be associated with mare treatment histories. However, monitoring the possible effects of fertility control methods would not constitute a research study; objectives of any additional monitoring could include documenting anecdotal information about wild horse foaling histories, movements, and resource use patterns.

Weed Management Required Design Features

1. If vehicles and equipment are working in known noxious weed infestations, equipment will be washed prior to entering the project area to remove noxious weed propagules.
2. Hay/grass for working animals will be NDA certified weed-free.
3. Trap and holding sites will be inventoried for the presence of noxious weeds prior to being used. Any species found would be flagged and avoided or would be mechanically removed prior to use.

Wildlife Stipulations

1. The proposed project falls within known lambing habitat for Desert Bighorn sheep. Activities that may disturb and displace wildlife will not be authorized within a half mile of the known habitat from February 1 through April 30.

The following RDFs would be applied to be consistent with the Nevada and Northeastern California Greater Sage Grouse (GRSG) Approved Resource Management Plan Amendment and Record of Decision (GRSG Plan Amendment) Greater Sage-Grouse Conservation Plan (2015):

1. RDF Gen 12: Control the spread and effects of nonnative, invasive plant species (e.g., washing equipment, minimize unnecessary surface disturbance). All projects would be required to have a noxious weed management plan in place prior to construction and operations.
2. RDF Gen 13: Implement project site-cleaning practices to preclude the accumulative of debris, solid waste, putrescible wastes, and other potential anthropogenic subsidies for predators of GRSG.
3. RDF Gen 19: Instruct all construction employees to avoid harassment and disturbance of wildlife, especially during the GRSG breeding (e.g., courtship and nesting) season. In addition, pets shall not be permitted on site during construction.
4. RDF Gen 22: Load and unload all equipment on existing roads, pull outs, or disturbed areas to minimize disturbance to vegetation and soil.

2.4 Alternatives Considered but Dismissed from Detailed Analysis

1. Exclusive Use of Bait and/or Water Trapping

This Alternative involves the use of bait (feed) and/or water to lure horses into traps as the primary gather method. It would not be timely, cost-effective, or practical to use bait and/or water trapping as the primary gather method due to the size of the HMA and because the number of water sources on both public lands and other lands within and outside the Clan Alpine HMA would make it almost impossible to restrict wild horse access to the selected water trap sites to capture enough excess horses to reach low AML. Bait and/or water trapping may be used in strategic locations to assist in removals and fertility control treatments. As a result, this Alternative was dismissed from detailed analysis as the primary or exclusive capture method.

2. Remove or Reduce Livestock within the Clan Alpine HMA

This Alternative would involve no removal of excess wild horses and would instead remove or reduce authorized livestock grazing instead of gathering and removing wild horses within the HMA. This Alternative was not considered in detail because it is contrary to previous decisions which allocated forage for livestock use and would not be in conformance with the existing land use plan, nor does it achieve the purpose and need for this EA. Livestock grazing can only be reduced or eliminated through provisions identified within regulations (43 CFR 4100) and must be consistent with multiple use allocation set forth in the CRMP. This Alternative would exchange use by livestock for use by wild horses and would eliminate or reduce grazing to shift forage use to wild horses, which would not be in conformance with the CRMP and is contrary to the BLM's multiple-use mission as outlined in FLPMA. The BLM is required to manage wild horses and burros in a manner designed to achieve a thriving natural ecological balance between wild horse and burro populations, wildlife, livestock, and other uses.

Information about Congress' intent is found in the Senate Conference Report (92-242) which accompanies the 1971 WFRHBA (Senate Bill 1116): "The principal goal of this legislation is to provide for the protection of the animals from man and not the single use management of areas for the benefit of wild free-roaming horses and burros. It is the intent of the committee that the

wild free-roaming horses and burros be specifically incorporated as a component of the multiple-use plans governing the use of the public lands.”

Furthermore, simply re-allocating livestock AUMs would not achieve a thriving natural ecological balance. Wild horses over grazing which occurs year-round at springs and around water sources within the HMA, cannot be controlled by adjusting livestock numbers. Wild horses are unlike livestock which can be confined to specific pastures, limited to specific periods of use, and specific seasons-of-use to minimize impacts to vegetation during the critical growing season and to riparian zones during the summer months. Horses are present year-round and their impacts to rangeland resources differ from livestock, as livestock can be controlled through an established grazing system (confinement to specific pastures and limited period or season of use to minimize impacts to vegetation and riparian areas). This Alternative would also be inconsistent with the WFRHBA, which directs the immediate removal of excess wild horses and burros. This would only be a short-term solution as the horse population would soon increase to a point at which resources would degrade. Because there would now be more horses within the HMA producing a greater number of foals, future gathers would need to remove a greater number of excess wild horses.

3. Gather the Clan Alpine HMA to the AML Upper Limit

Gathering wild horses to achieve a post-gather population size at the upper level of AML range would result in AML already being exceeded with the next foaling season.

The upper levels of the AML range established for the Clan Alpine HMA represents the maximum population for which a thriving natural ecological balance can be maintained. The lower range represents the number of animals that should remain in the Clan Alpine HMA following a wild horse gather to allow for a periodic gather cycle of approximately every four years and to prevent the population from exceeding the established AML between gathers. The need to gather below the upper range of AML has been recognized by the IBLA, which has held that:

“...the term AML within the context of the statute to mean[s] that “optimum number” of wild horses which results in a thriving natural ecological balance and avoids a deterioration of the range.” (*Animal Protection Institute of America, 109 IBLA 112, 119 (1989)*).

Proper rangeland management dictates removal of horses before the herd size causes damage to rangelands. The optimum number of horses is fewer than the number that would cause damage. Removal of horses before range conditions deteriorate ensures that they enjoy adequate forage, and an ecological balance is maintained. (*Animal Protection Institute of America, 118 IBLA 63 (1991)*).

Additionally, gathering to the upper level of AML would result in the need to follow up with another gather within one year, and could result in overutilization of vegetation resources, damage to rangelands, and increased stress to wild horses. For these reasons, this alternative did not receive further consideration in this document.

4. Control of Wild Horse Numbers by Fertility Control Treatment Only

This alternative would require repeated gathers, so that a significant portion of the existing population (95 percent) is effectively contracepted in every year. Even under those unlikely circumstances, a long time period would be needed before the herd declines down to AML, due to wild horses' high adult survival rates (Ransom et al. 2016). Implementing fertility control treatments only, without removal of excess horses and was modeled using a three-year gather/treatment interval over a 10-year period.

This alternative would not bring the horse population to AML and the wild horse populations would continue to grow even further in excess of AML. Resource degradation would escalate and implementation of this alternative would result in significantly increased gather and fertility control costs without achieving a thriving natural ecological balance. Existing studies also indicate that management plans that rely exclusively on fertility control methods will not lead to the achievement of AML (i.e., Fonner and Bohara 2017). This alternative would not meet the purpose and need for the Proposed Action and therefore was eliminated from further consideration.

While the average population growth rate would be reduced as modeled in PopEquus, the actual size of the herd would not foreseeably reach AML through fertility control alone, and damage to the range associated with wild horse overpopulation would continue. Moreover, this Alternative would not meet the Purpose and Need for the Action and would be contrary to the WFRHBA. Based on preliminary modeling, this alternative would not result in attainment of the AML range for the Clan Alpine HMA and the wild horse population would continue to increase, albeit at a slower rate. Results from PopEquus using GonaCon without removals estimated a final population size of over 3,000 horses at the end of ten years, which would not achieve a thriving natural ecological balance (Appendix H).

5. Raising the Appropriate Management Level for Wild Horses

The BLM has established current AML ranges based on many years of data collection, resource monitoring, and multi-agency planning efforts. The current AMLs are based on established biological resource monitoring protocols and land health assessments and were reaffirmed in the 2001 CRMP. Delaying a gather until the AML can be reevaluated is not consistent with the WFRHBA, Public Rangelands Improvement Act, FLPMA, or the land use plan. Monitoring data collected within the Clan Alpine HMA does not indicate that an increase in AML is warranted at this time. On the contrary, such monitoring data confirms the need to remove excess wild horses to reverse downward resource trends and promote improvement of rangeland and riparian health. Severe resource degradation would continue to occur if excess animals are not removed, and even larger numbers of excess animals would ultimately need to be removed from the Clan Alpine HMA to achieve AML or to prevent the death of individual animals under emergency conditions. This Alternative was eliminated from further consideration because it is contrary to the WFRHBA, which requires the BLM to manage rangelands to prevent resources from deterioration associated with an overpopulation of wild horses and burros. In addition, raising the AML where there are known resource degradation issues associated with an overpopulation of wild horses does not meet the purpose and need of this EA to restore and maintain a thriving ecological balance. Once the AML has been achieved and the wild horse population has been managed at AML for sufficient time to monitor impacts, then changes to AML if appropriate

(either upward or downward) would be based on an analysis of monitoring data, including a review of wild horse habitat suitability, such as the condition of water sources in the Clan Alpine HMA. For the reasons stated above, this Alternative was eliminated from further consideration.

6. Wild Horse Numbers Controlled by Natural Means

This Alternative was eliminated from further consideration because it is contrary to the WFRHBA which requires the BLM to prevent range deterioration associated with an overpopulation of wild horses or burros. The Alternative of using natural controls to achieve a desirable AML has not been shown to be feasible in the past. As indicated by the consistent population growth in recent years (Table 2), wild horse populations in the Clan Alpine HMA are not effectively controlled by predators or other natural factors. Even in places in the western United States where predators such as mountain lions do eat horses and burros (i.e., Andreasen et al. 2021, Lundgren et al. 2022), they have not generally caused populations to decline (Andreasen et al. 2021). In addition, wild horses are long-lived species with documented survival rates that can exceed 95 percent (Ransom et al. 2016) and they do not self-regulate their population (NRC 2013).

This Alternative would result in a steady increase in the wild horse populations which would continue to exceed the carrying capacity of the range, eventually resulting in multiple years with catastrophic mortality of wild horses in the Clan Alpine HMA (NRC 2013). Some of the vegetative and water resources have already degraded because of the wild horse overpopulation, and wild horses are starting to show signs of malnutrition and starvation. The weaker animals, generally the older animals, and the females and foals, are the first to be impacted. It is likely that more of these animals would die from starvation and dehydration which could lead to a catastrophic die-off. Allowing horses to die of dehydration and starvation would be inhumane treatment and would be contrary to the WFRHBA, which mandates removal of excess wild horses.

This Alternative would also lead to increased irreparable damage to rangeland resources from excess wild horses, which is contrary to the WFRHBA, which mandates the BLM to “*protect the range from the deterioration associated with overpopulation*”, “*remove excess animals from the range so as to achieve appropriate management levels*”, and “*to preserve and maintain a thriving natural ecological balance and multiple-use relationship in that area*”. Wild burros and horses can be aggressive around water sources, and some wildlife may not be able to compete, which could lead to the death of individual animals. Wildlife habitat conditions are deteriorating as wild horse numbers above AML reduce herbaceous vegetative cover, damage springs, and increase erosion, and has resulted in irreversible damage to rangelands. For these reasons, this Alternative was eliminated from further consideration. This Alternative would not meet the purpose and need for this EA, which is to remove excess wild horses from within and outside the Clan Alpine HMA and to reduce the wild horse population growth rates to manage wild horses within established AML range.

7. Use of Alternative Capture Techniques Instead of Helicopter Capture

The BLM identified chemical immobilization, net gunning, and wrangler/horseback drive trapping as potential alternative methods for gather wild horses and burros. Net gunning techniques normally used to capture big game animals also rely on helicopters and may be

associated with high injury rates. Chemical immobilization is very specialized technique and strictly regulated. Currently the BLM does not have sufficient expertise to implement either of these methods and it would be impractical to use given the size of the project area, access limitations, and difficulties in approachability of the wild horses.

Use of wranglers on horseback drive trapping to remove excess wild horses can be somewhat effective on a small scale but due to the number of horses to be gathered, the large geographic size of the Clan Alpine HMA, and lack of approachability of the animals, this technique would be ineffective and impractical as a substitute for helicopter trapping. Wild horses often outrun and outlast domestic horses carrying riders. Helicopter assisted roping is typically only used if necessary and when the wild horses are in close proximity to the gather site. For these reasons, this method for gathering the Clan Alpine HMA horses was eliminated from further consideration.

8. Field Darting PZP Treatment as Exclusive Method of Population Control

Under this scenario, BLM would administer PZP in the one-year liquid dose inoculations by field darting the females as the sole method of population management. This method is currently approved for use and is being utilized by BLM in a small number of HMAs. This alternative was dismissed from detailed study for the following reasons, all of which are expected to limit the fraction of females in the herd that would be treatable via darting and, thus, would be insufficient to substantially control population growth: (1) the size of the proposed gather area at 604,380 acres is too large for exclusive use of this delivery method; (2) the area has a large wilderness area which restricts vehicular access/activities within the area; (3) the presence of water sources on both private and public lands inside and outside the HMA would make it almost impossible to restrict wild horse access to be able to dart animals over water consistently; (4) animal behavior limits their approachability/ accessibility; and (5) BLM would have difficulties keeping records of unmarked animals that have been treated due to common and similar colors and patterns in this herd. For these reasons, this alternative was determined to not be an effective or feasible method for managing wild horses within the gather area.

3.0 Affected Environment, Environmental Consequences, and Cumulative Impacts

The May 20, 2022 Phase I Council on Environmental Quality revisions at 40 CFR 1508.1(g) provide the following definitions:

Effects or impacts means changes to the human environment from the Proposed Action or alternatives that are reasonably foreseeable and include the following:

- (1) Direct effects, which are caused by the action and occur at the same time and place.
- (2) Indirect effects, which are caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable. Indirect effects may include growth inducing effects and other effects related to induced changes in the pattern of land use, population density or growth rate, and related effects on air and water and other natural systems, including ecosystems.

Cumulative effects, which are effects on the environment that result from the incremental effects of the action when added to the effects of other past, present, and reasonably foreseeable actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions.

Cumulative effects can result from individually minor but collectively significant actions taking

place over a period of time. Effects include those that are ecological (such as the effects on natural resources and on the components, structures, and functioning of affected ecosystems), aesthetic, historic, cultural, economic, social, or health, whether direct, indirect, or cumulative. Effects may also include those resulting from actions which may have both beneficial and detrimental effects, even if on balance the agency believes that the effects will be beneficial.

3.1 General Description of the Affected Environment

The Clan Alpine HMA encompasses 304,763 acres of public and private lands within the CCD Office in Churchill County, Nevada (Figure 1). The Clan Alpine HMA is unfenced at its boundaries, enabling horses to come and go from surrounding lands. Therefore, the gather area overlaps the following adjacent grazing allotments: Dixie Valley, Boyer Ranch, Cow Canyon, Clan Alpine, Frenchman Flat, and Mountain Well-LaPlata.

The gather area consists of a total of 604,380 acres. Topography varies from a large playa and sandy areas to rugged to deeply dissected canyons. Elevation varies from approximately 4,000 feet to 10,000 feet. Precipitation varies greatly within the Clan Alpine HMA from around 6-8 inches annually in the lower elevations affected by rain shadow to 15-20 inches annually in the higher elevations of the Clan Alpine Mountains Wilderness Area. Temperatures show similar variation with elevation, from 20 degrees to over 100 degrees Fahrenheit.

The nearby Dixie Valley Settlement area was settled in the around 1860 for mining, ranching, and farming. It is generally accepted that the wild horses of the Clan Alpine HMA are descendants of ranch stock that were turned out in the area.

Vegetation is typical of sagebrush steppe with co-dominance of shrubs and native perennial grasses (most have disappeared due to overgrazing from wild horses). Water is available through a variety of undeveloped streams, springs, and seeps scattered throughout the Clan Alpine HMA. In the areas around the Dixie Valley Settlement area, a few artesian wells flow year-round.

A more detailed description of the Clan Alpine HMA, history, and elements of the affected environment can be found in the 1993 HMAP (p. 3), which is incorporated into this assessment by reference. The HMAP explains the history, management revisions, and assumed horse origin. The document continues to be used for reference because the grazing management, horse AML, potential natural plant community, and the need to manage the horse population are all the same nowadays as in 1993. The management actions discussed in the HMAP are all still relevant now, as well: target specific age groups for removal, target a specific sex for removal, utilize fertility control techniques, potential use of gelding and mare sterilization. The horse population still needs to be kept within a limit to mitigate rangeland resource degradation and individuals need to be removed before they become unhealthy as conditions degrade.

3.2 Internal Scoping and Issue Identification

In accordance with the BLM Handbook H-1790-1, internal scoping was conducted by the BLM Stillwater Field Office Interdisciplinary (ID) team November 7, 2022 to identify potential resources which may be impacted by implementation of the Proposed Action and alternatives. Relative to the BLM's management of wild horses in the Clan Alpine HMA, the BLM

interdisciplinary team identified issues through internal scoping. For external involvement, refer to Section 1.8.

1. Impacts to individual wild horses and the population. Indicators for this issue include the following:

- Projected population size and annual growth rate
- Effectiveness of proposed fertility control application
- Impacts to animal health and condition

2. Impacts to vegetation/soils, riparian/wetland, and cultural resources. Indicators for this issue include the following:

- Forage utilization and alteration
- Impacts to vegetation/soils and riparian/wetland resources assessed by Proper Functioning Condition (PFC) (BLM 2021c)

3. Impacts to wildlife, migratory birds, and threatened, endangered, and special status species and their habitat. Indicators for this issue include the following:

- Displacement, trampling, or disturbance
- Competition for forage and water

Table 4 summarizes which of the supplemental authorities of the human environment and other resources of concern within the project area are present, not present, or not affected by the Proposed Action.

3.3 Supplemental Authorities

Table 4: Supplemental Authorities and Other Relevant Resources Brought Forward for Analysis

ELEMENTS		
NA- Not Affected, PI- Potentially Impacted, or NP- Not Present*	Resource	Rationale for Determination
NA	Air Quality <i>(The Clean Air Act of 1955, as amended)</i>	The proposed gather area is not within an area of non-attainment, or areas where total suspended particulate matter exceed Nevada air quality standards. Areas of disturbance would be small and temporary. Air quality and climate impacts caused by air pollutant emissions from vehicle-based gather activities are expected to be de minimis due to the short duration and small scale of such activities.
NP	Areas of Critical Environmental Concern <i>(Federal Land Policy and Management Act of 1976)</i>	There are no Areas of Critical Environmental Concern in the proposed Project Area.

ELEMENTS		
NA- Not Affected, PI- Potentially Impacted, or NP- Not Present*	Resource	Rationale for Determination
NA	Cultural Resources <i>(National Historic Preservation Act of 1966, as amended)</i>	In accordance with the SOPs for Gather and Handling Activities in Appendix III and Appendix A.10 of the State Protocol Agreement, gather facilities would be placed in previously-disturbed areas outside of known historic properties. Should gather facilities be proposed in undisturbed areas that do not have previous cultural resources inventory, class III cultural resource inventories would be conducted to identify historic properties. Historic properties would be avoided with the Standard Measures listed in the State Protocol Agreement V.B.D.2.a in compliance with Sections II.A-E and V.B.
NA	Environmental Justice <i>(Executive Order 12898)</i>	The Proposed Action would not disproportionately impact social values.
NP	Farmlands (Prime & Unique) <i>(Surface Mining Control and Reclamation Act of 1977)</i>	There are no prime or unique farmlands in the State of Nevada.
NP	Floodplains <i>(Executive Order 11988)</i>	There are no mapped Federal Emergency Management Agency 100-year floodplains in the project area.
PI	Weeds (i.e., Noxious, Invasive, Non-native, and Nuisance weed species) <i>(Federal Noxious Weed Act of 1974, as amended)</i>	Brought forward for analysis. Refer to Section 3.4.8.
PI	Migratory Birds	Brought forward for analysis. Refer to Section 3.4.4.
NP	Native American Religious Concerns <i>(Executive Order 13007)</i>	No known Native American Concerns. The BLM will ensure that all traditional, spiritual, or religious areas identified during ongoing consultation are avoided. In accordance with Executive Order 13007, Native American access to sacred and traditional sites would not be prohibited and tribes would be notified prior to gather and trap activities.
NP	Threatened, Endangered, or Candidate Plant Species <i>(Endangered Species Act of 1973, as amended)</i>	No known Threatened or Endangered plant species occur in the project area.
NA	Threatened, Endangered, or Candidate Animal Species	Dixie Valley Toad occurs in the project area in a wetland complex on Department

ELEMENTS		
NA- Not Affected, PI- Potentially Impacted, or NP- Not Present*	Resource	Rationale for Determination
	<i>(Endangered Species Act of 1973, as amended)</i>	of Defense Land. Gather operations would not directly impact the species as this area will be avoided. Removing horses would, over time, result in an increase in water quality, water flow, riparian vegetation, and a decrease in erosion all of which would benefit Dixie Valley Toad.
NP	Wastes (hazardous or solid) <i>(Resource Conservation and Recovery Act of 1976, and Comprehensive Environmental Response, Compensation, and Liability Act of 1980)</i>	Any hazardous materials would be transported, stored, and used following the Nevada State Environmental Commission's Handbook of Best Management Practices. All wastes generated would be disposed of off-site following all local, state, and federal regulations. Any release of hazardous materials or hydrocarbons would be contained, remediated, and disposed of following all local, state, and federal regulations.
NA	Water Quality (drinking/ground) <i>(Safe Drinking Water Act of 1974, as amended and Clean Water Act of 1977)</i>	Gather activities would not impact water quality. Reduction in the number of WH&B might result in an improvement in water quality in the long term.
NA	Wetlands / Riparian Zones <i>(Executive Order 11990)</i>	Gather activities would not impact wetland/riparian zones. Reduction in the number of WH&B might result in an improvement in riparian functionality in the long term.
NP	Wild and Scenic Rivers <i>(Wild and Scenic Rivers Act of 1968, as amended)</i>	There are no Wild and Scenic Rivers in or around the proposed gather area.
PI	Wilderness/Wilderness Study Area (WSA) <i>(Federal Land Policy and Management Act of 1976 and Wilderness Act of 1964)</i>	The Stillwater and Jobs Peak WSAs are directly northwest and west, and the Desatoya Wilderness is directly southeast of the proposed gather area, so would not be affected. The Clan Alpine Mountains Wilderness is within the HMA and is brought forward for analysis in section 3.4.9.
NP	Cave and Karst Resources	There are no cave and karst resources present in the analysis area.
NA	Fuels / Fire Management	The Proposed Action would not change the fire management in the analysis area.
PI	Special Status Species: Animals	Refer to Section 3.4.5.

ELEMENTS		
NA- Not Affected, PI- Potentially Impacted, or NP- Not Present*	Resource	Rationale for Determination
PI	General Wildlife and Migratory Birds	Refer to Section 3.4.4.
PI	Special Status Species: Plants	Refer to Section 3.4.6.
NA	Geology / Mineral Resources	There would be no modifications to mineral resources through the proposed project area. Mining claims or mineral development may occur within the project area. Impacts to minerals are not anticipated.
NA	Climate Change/Greenhouse Gas Emissions	Greenhouse gas emissions related to the proposed actions would be less than 35 tons, the equivalent of 8 passenger cars driven for one year. These emissions would not be expected to change the current course of climate change and so would have a negligible impact on climate impacts in Nevada.
NA	Lands / Access / Rights-of-Way	The project, as proposed, would not affect access to public lands. Any pending or authorized land and realty actions would not be substantially affected by the Proposed Action.
NA	Lands with Wilderness Characteristics (LWC)	Areas released from Wilderness Study Area (WSA) and identified as Lands With Wilderness Characteristics (LWC) will be managed per the inventory to meet the non-impairment standard for future consideration as Wilderness or commensurate with existing resources.
PI	Livestock Grazing/Rangeland Management <i>(Taylor Grazing Act of 1934, National Environmental Policy Act of 1969 Endangered Species Act of 1973, Federal Land Policy and Management Act of 1976, and the Public Rangelands Improvement Act of 1978)</i>	Refer to Section in section 3.4.1.
NA	Paleontology <i>(Paleontological Resources Protection Act, P.L. 111-011, HR 146)</i>	Areas designated with Potential Fossil Yield Classification of 3 through 5 would be avoided.

ELEMENTS		
NA- Not Affected, PI- Potentially Impacted, or NP- Not Present*	Resource	Rationale for Determination
		Proposed trap sites would occur on deposits with a low to very low potential to contain significant fossil resources.
NA	Recreation	The Proposed Action could have a small affect to recreationalists, but the gather would be temporary.
NA	Socioeconomics	Not affected.
PI	Soils	Refer to Section 3.4.3.
NP	Trails and Travel Management	No travel management routes or plan in place in project area.
PI	Vegetation	Refer to Section 3.4.2.
NA	Visual Resource Management (VRM) <i>(FLPMA 1976, NEPA 1969)</i>	In 2012, the BLM published a visual resources inventory (BLM 2012b). The report recommended the project area and surrounding lands as VRM Class IV. The objective of this class is to provide for management activities which require major modifications of the existing character of the landscape, consistent with the resource allocations for the area. The Proposed Action complies with current guidelines and policy for VRM IV.
NA	Water Quantity, Surface/Ground	Project would not impact water quantity.
PI	Wild Horses and Burros <i>(Wild and Free Roaming Horses and Burros Act of 1971, as amended)</i>	Refer to Section 3.4.7.
NP	Woodland / Forestry	Not present as a resource use.

NP = not present in the area impacted by the Proposed or alternative actions
NA = present, but not affected to a degree that detailed analysis is required
PI = present and may be impacted to some degree. Will be analyzed in affected environment and environmental impacts.
(NOTE: PI does not mean impacts are likely to be significant in any way).

3.4 Past, Present, and Reasonably Foreseeable Future Actions

Past actions considered are those whose impacts to one or more of the affected resources have persisted to present day. For all resources, the past actions considered were analyzed back for 10 years. Present actions are those occurring at the time of this evaluation and during implementation of the Proposed Action. Past, Present, and Reasonably Foreseeable Future Actions (RFFAs) constitute those actions that are known or could reasonably be anticipated to occur within the analysis area for each resource, within a time frame appropriate to the expected

impacts from the Proposed Action. The past, present, and RFFAs applicable to the assessment area are identified in the following Table 5.

Table 5: Past, Present, and Reasonably Foreseeable Future Actions

Project Name	Project Status	Approximate Total Acres/Miles of Disturbance
Tungsten Mountain Geothermal Plant	Past	~106 acres and gen-tie line
Comstock Geothermal Exploration Project (Renewable Energy)	Future	49
Annual CCD Integrated Pest Management including 2022 and 2023 projects (Veg Management)	Present	320
Ormat Dixie Hope/Meadows Slim Well 22D-8 GDP (Renewable Energy)	Present	On existing well pad
August 2022 Geothermal Lease Sale (Renewable Energy)	Present	n/a- lease sale
Terra-Gen Power Legacy Wells Reclamation (32-6), 62-21, & 76-28) (Renewable Energy)	Present	n/a
Dixie Valley Geothermal Power Plant	Present	81
Dixie Valley Community Gravel Pit	Present	5
Ormat Dixie Meadows Gravel Pit	Present	10
Right-of-ways to include approximately 12 powerlines, 8 roads, 4 material sites, 2 telephone lines, 2 water facilities, and 11 other non-energy facilities	Present	N/A
Proposed Greenlink North 525kV transmission line right-of-way (NVN 099862) based on project area.	Future	110.8 miles
Churchill County Parcel land acquisition	Present, Future	
Clan Alpine Mountains Wilderness	Present, Future	128,362
Proposed Range Improvements-Dixie Valley Allotment	Future	5
Navy BRIDGE Temperature Probe	Future	0
Clan Alpine & New Pass Fuels Treatment	Future	16,000

3.5 Cumulative Effects Study Area (CESA)

The Council on Environmental Quality regulations that implement NEPA defines a cumulative impact as “The impact on the environment which results from the incremental impact of the action when added to other past, present, or reasonably foreseeable future actions.” Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time (40 CFR 1508.1(g)(3)).

Table 6: Cumulative Resource Boundaries

The areas of analysis for each resource analyzed in the EA are provided below under each specific resource section (**Sections 3.4.1 through 3.4.11**). Each area of analysis was chosen to include the extent of direct and indirect effects from the Proposed Action and No Action Alternative. The temporal scope for effects includes definitions for the intensity, duration, and context. These definitions are further defined below.

Resource	Direct and Indirect Analysis Area	CESA Analysis Area
Air Quality	Project Area	Project area plus five-miles beyond the project area. This includes the hydrographic/air basin. These three basins are identified by the Nevada State Engineer and Nevada Department of Environmental Protection uses them as study areas for air permitting and other air purposes.
Environmental Justice	Churchill County with Blockgroups 320019501001, 320019501002, 320019503011, 320019503012, 320019503013, 320019503021, 320019503022, 320019503023, 320019503024, 320019503025, 320019504001, 320019505001, 320019505002, 320019506001, 320019506002, 320019506003, 320019507001, 320019507002, 320019507003, 320019507004	EJ effects would not have a greater extent than the direct and indirect analysis area identified
Livestock	Project Area	Impacts to livestock grazing are constrained by specific management within each livestock grazing allotment, any livestock grazing allotment with wild horses removed could have a cumulative effect.
Vegetation and Soil	Project Area	Allotment wide because possible impacts would be from horse and livestock grazing. Both of these are

		managed within the HMA and grazing allotment boundaries.
Wilderness/WSA	Project Area	Wilderness/WSA effects would not have a greater extent than the direct and indirect analysis area identified
Wetlands/Riparian Zones	Project Area	Wetland/Riparian Zone effects would not have a greater extent than the direct and indirect analysis area identified
Wild Horse and Burros	Project Area	Project Area- The management unit for wild horses is the Clan Alpine HMA and the project area for this gather was determined by the horses that have migrated outside of the HMA boundary.
Sensitive Wildlife Species	Project Area	Project Area plus five-miles beyond the project area due to sensitive species habitat extent
Sensitive Plant Species	Project Area	Project Area plus five-miles beyond the project area due to sensitive species habitat extent

3.4 Description of Affected Resources/Issues

Table 4 lists the elements of the human environment subject to requirements in statute, regulation, or executive order which were considered for detailed analysis. The BLM has discussed all the resources mentioned below and has either incorporated and analyzed them within this EA or provided an explanation of why they were not analyzed in detail. Resources that may be affected by the Proposed Action and Alternatives were identified to be analyzed in detail. Resources that are not present or not affected by the Proposed Action and Alternatives were considered but eliminated from further analysis.

3.4.1 Livestock Grazing Affected Environment

The gather project area encompasses all or parts of grazing allotments: Hole in the Wall, Boyer Ranch, Cow Canyon, Clan Alpine, Dixie Valley, and Frenchman Flat. Six different operators hold grazing permits on these allotments. The HMA crosses three of those allotments: Cow Canyon, Clan Alpine, and Dixie Valley. Table 7 lists the allotments, wild horse and livestock AUMs, and livestock season of use information for those portions included in the HMA.

Table 7: Allotments and wild horse and livestock AUMs within the HMA

Allotment	Season of Use	Wild Horse AML	Wild Horse AUMs	% of HMA in Allotment	Permitted Use Within HMA (AUMs)	Actual Use AUMs Within HMA (average annual since 2017)
Clan Alpine	Cattle Edwards Pasture: September 1 – June 30th Cattle Cherry Valley Pasture: July 1 – August 31 Sheep Edwards Pasture: December 1 – March 15	253-405	4,860	49%	2,546 total AUMs (1,346 cattle AUMs, 1,200 sheep AUMs)	2,169 total AUMs (1,346 cattle AUMs, 823 sheep AUMs)
Dixie Valley	Cattle Even Years: June 1 – February 28 Cattle Odd Years: March 1 – October 31	247-395	4,750	31%	2,614 total AUMs	2,554 total AUMs
Cow Canyon	Cattle Upper Pasture: October 1 – April 15	112-179	2,148	20%	1,636 total AUMs	1,636 total AUMs

Environmental Consequences to Livestock Grazing

Alternative 1

The effort to rapidly reduce the wild horse population via gather and removal, paired with any number of population growth suppression methods, would be a relatively fast way to mitigate or pause the ongoing degradation of Clan Alpine HMA rangelands. Population growth suppression methods would slow growth enough to extend the intervals between maintenance gathers, meaning that additional negative impacts to the range would manifest more slowly and there would be increased time for recovery. Any gains in rangeland health resulting from proper livestock grazing management and development of range improvement projects would not be as quickly undone by the year-round horse population.

Livestock have grazed in allotments within the HMA since the late 1800s. Today, it is a widespread public land use in the cumulative impact assessment area. A variety of range improvement projects have been implemented through the years to improve grazing management and rangeland health. These include spring exclosures, cattle guards, wells, vegetative treatments, spring developments, and water pipelines. Past livestock grazing activities affected the vegetation resources within the impact assessment area by eliminating or greatly reducing the primary understory plants. However, these grazing permits were renewed in 2017 and grazing management was modified with an objective to increase rangeland health.

The present-day implementation of livestock grazing systems, changes to livestock numbers, and range improvements has reduced past impacts and improved vegetation understory conditions in

the higher elevation areas. In the lower elevations of the Clan Alpine Allotment and nearby allotments with very similar plant communities, the primary understory plants are few in number or absent altogether and a change in livestock management would likely not improve the understory conditions due to the plant community dynamics in this disturbance response group and associated ecological sites. Sustained heavy grazing or overgrazing, such as that which would result from a wild horse population far above the AML, can create conditions that favor increased density of non-forage shrubs (such as Wyoming big sagebrush) and crowd out preferred forage grasses (NRCS 2003). Proposed future seeding projects may assist in improving the understory component in the lower elevations.

Livestock grazing is expected to continue at similar stocking rates and utilization of the available vegetation (forage). The BLM would also continue to manage the HMA and wild horse grazing as outlined above in order to achieve ecological balance.

Alternative 2

Gathering and removing excess wild horses without additional population growth suppression efforts would result in shorter intervals between removals than if the growth rate was reduced. The situation would likely remain much the same as it is currently, especially if gathers cannot occur as frequently as needed (three to five years (BLM 2001)). Overuse of and damage to rangeland resources could continue at the same rate as currently and little would be gained to improve the ecological balance. Any gains resulting from proper livestock grazing management and development of range improvements could be undone and even exceeded by wild horse overuse. Livestock herd size may need to be reduced, seasons of use shortened, and/or the use select range improvements, such as water developments, discontinued.

Alternative 3

Alternative 3's impacts to livestock grazing would be similar to those of Alternative 1 and it would be the fastest approach to pausing further rangeland degradation and starting recovery. Longer intervals between gathers at the same time that the population is growing substantially more slowly would translate to increased time for land health recovery. Improved land health resulting from proper livestock grazing management and development of range improvement projects would not be as quickly undone by the year-round horse population, and some areas may even be unused entirely, providing an opportunity for faster recovery and return to livestock use.

Alternative 4 (No Action)

Horse populations generally double every four to five years so under this alternative, in five years there would be close to 4,000 horses inside and outside the HMA, which would cause many native plants to disappear, depriving many native wildlife species of essential food and cover. This would eventually lead to the deaths of the majority of the horse herd through malnutrition and in some areas, dehydration.

Wild horses are currently using more than their forage allocation both inside and outside the Clan Alpine HMA and are contributing to heavy to severe utilization of vegetation in some areas. Between 2020 and 2022, a total of 74 key forage transects were studied in the gather area, many within the HMA and some just outside of that boundary (Appendix I). Many of these sites, which

experience use by both livestock and wild horses, demonstrated heavy vegetation utilization (81-94 percent) and signs of horse presence, notably outside of livestock seasons of use (i.e., while livestock were absent). Expected perennial grass species were absent from some sites' transects, which can be attributed to grazing pressure. This means the monitoring team walked 0.25 miles without finding at least ten perennial, good to high value forage grasses and either could not complete the transect or had to complete it using poor forage value successional species such as Bluegrass (*Poa spp.*) or Cheatgrass (*Bromus tectorum*). The direct impacts of Alternative 4 include increased damage to the rangelands, increasing wild horse population, and reduced quantity and quality of forage and water for horses and wildlife.

Cumulative Effects

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

A series of livestock grazing decisions since the Taylor Grazing Act have resulted in reductions in livestock numbers, changes in seasons of use, and other grazing management practices that promote rangeland health within grazing allotments. Other management changes have also resulted in restrictions on when, where, and how long livestock can graze to minimize potential impacts to rangeland health.

When horse numbers exceed the established AML, overall impacts to forage are higher, as more forage is consumed in the same time periods. This does not allow the livestock grazing systems to function as they have been designed, as while livestock are removed for the scheduled rest periods, wild horses remain on the range year-round, continuously grazing forage through these rest periods, and the horses are present in higher numbers than the range can sustain.

Removing excess wild horses as described in Alternatives 1, 2, and 3 would reduce grazing pressure on forage plants, allowing them to complete their annual growth cycle, strengthening root structure, and maintaining or increasing vigor and reproductive abilities. Livestock operations and grazing systems would function properly, and forage plants would receive the intended rest from grazing during scheduled rest periods. Forage quality and production for livestock grazing would be expected to be maintained.

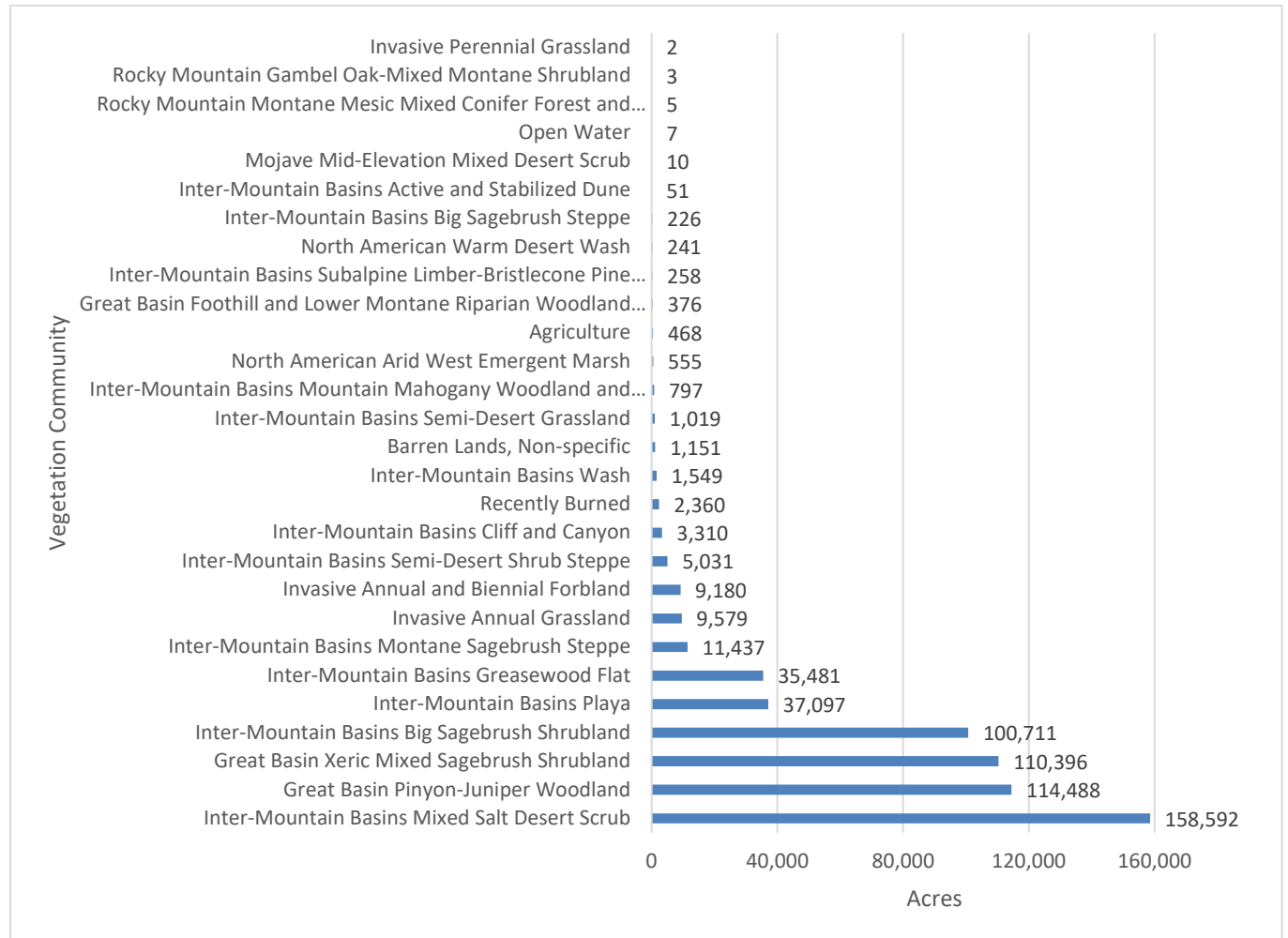
Implementation of Alternative 4 would result in continued increases in wild horse numbers, and competition for forage and water would become even more prevalent among horses, wildlife, and potential future livestock. Plant communities that are still recovering from the effects of past heavy horse grazing would be the most vulnerable to further degradation. As wild horse numbers increase, plant communities would experience an even greater serious decline in condition, forage quality, and annual production. Livestock operators would need to make changes to grazing management, including reducing the size of herds and thus their income, which could in turn negatively affect the local economy.

3.4.2 Vegetation

Affected Environment

The dominant vegetation communities across the gather area are Inter-Mountain Basins Mixed Salt Desert Scrub (158,592 acres), Great Basin Pinyon-Juniper Woodland (114,488 acres), Great Basin Xeric Mixed Sagebrush Shrubland (110,396 acres), and Inter-Mountain Basins Big Sagebrush Shrubland (100,711 acres), according to the Southwest Regional Gap Analysis Project (SWReGAP) (Figure 3.)

Figure 3: Acres of SWReGAP vegetation communities in the gather area



In 1997, in accordance with 43 CFR 4180 2(b), BLM Nevada adopted rangeland health standards and guidelines for livestock grazing management, which were developed in coordination with the resource advisory councils. The approved standards for rangeland health for the Sierra Front-Northwestern Great Basin Area Resource Advisory Council, under which these three allotments were evaluated, are:

Standard 1. Soils: Soil processes will be appropriate to soil types, climate, and landform.

Standard 2. Riparian/Wetlands: Riparian/wetland systems are in properly functioning condition.

Standard 3. Water Quality: Water quality criteria in Nevada or California State Law shall be achieved or maintained.

Standard 4. Plant and Animal Habitat: Populations and communities of native plant species and habitats for native animal species are healthy, productive, and diverse.

Standard 5. Special Status Species Habitat: Habitat conditions meet the life cycle requirements of special status species.

A land health assessment was completed in 2017 for the Dixie Valley Allotment. Plant and animal habitats and special status species habitats were not meeting standards in Dixie Valley due to livestock, wild horses, and drought. Riparian areas and wetlands were not meeting standards due to livestock and weeds. Soils and water quality were meeting standards.

A land health assessment was completed for the Clan Alpine Allotment in 2016. Riparian areas and wetlands were not meeting standards due to hoof action causing lateral bank erosion, upland vegetation encroachment into the channel, insufficient stabilizer plant species, and downcutting in meadows. Plant, animal, and special status species habitats were not meeting standards due to a combination of drought, historic and current livestock grazing, wild horse utilization, and a higher frequency wildland fire regime. Soils and water quality were meeting standards.

A land health assessment was completed for the Cow Canyon Allotment in 2016. Plant, animal, and special status species habitat were not meeting standards due to a combination of drought, historic and current livestock grazing, and wild horse utilization. Riparian areas and wetlands were not meeting standards due to invasive weeds and some soil surface punching occurring from hoof action. Soils and water quality were meeting standards.

Key species utilization transects conducted in 2021 (Appendix I) revealed many areas within the HMA as having perennial forage grasses absent from the site when they were expected to be present based on ecological potential. Areas immediately outside the HMA were also shown to have trace perennial forage and documented sign of horse dung.

Vegetation measurements were taken using key species method (BLM, 1999). Vegetation utilization measurements from 2021 show trace, no key species present, and 81-94 percent utilization (i.e., heavy utilization) in the southern part of the HMA. In the excluded Draw Fire burn area, utilization was 0-5 percent. In Shoshone Pass, trace occurrences of key species were found. There was 81-94 percent utilization at the convergence of Deep and Cow Canyons and 21-40 percent utilization on the northwest side of the HMA.

Vegetation utilization measurements from 2022 shows utilization on the south end, outside the HMA, range between 0-5 percent to 61-80 percent. Utilization in the southern end of the HMA range between 6-20 percent and 21-40 percent. In the excluded Draw Fire burn area, utilization was 6-20 percent. In Shoshone Pass, utilization was 0-5 percent and 6-20 percent. At the

convergence of Deep and Cow Canyons, utilization was 0-5 percent and 6-20 percent. Utilization in Cherry Valley was 21-40 percent and 41-60 percent. Utilization near Railroad Ridge was 6-20 percent and 21-40 percent. Other high elevation utilization measurements show 6-20 percent and 41-60 percent.

The 1993 HMAP prescribes thresholds of no more than 55 percent utilization on key grass species and 40 percent on “interim” grass species year-round throughout the HMA. The HMAP provided Indian ricegrass, Idaho fescue, and needlegrass as examples of key grass species, while examples of “interim” species are bottlebrush squirreltail and Sandberg’s bluegrass (BLM 1993). The 1992 Clan Alpine FMUD also specifies a 55 percent maximum utilization level on upland key species in the HMA (BLM 1992) and a range of 41-60 percent (i.e., moderate utilization) throughout the Clan Alpine Allotment. Where utilization was 61-80 percent outside of the HMA (i.e., more than half of available forage on key species was consumed), land health and competition among horses, livestock, and wildlife would be a concern. Data points collected from 2020 through 2022 that do not approach or exceed the 55 percent threshold do not necessarily preclude the need to remove excess horses, as excess horses putting additional pressure on rangeland resources will eventually yield readings of over 55 percent due to plants’ decreased resilience.

Wild horse utilization and trailing due to increasing numbers is occurring within and surrounding the Clan Alpine HMA and is reducing vegetative cover and vigor, particularly in those areas near water sources and areas in low elevations with gradual sloped topography. The reduction of vegetative cover and increased trampling resulting from higher wild horse numbers has led to increased soil disturbance, which negatively impacts the establishment of plants and the root abilities of native vegetation. Changes to vegetation can also potentially accelerate runoff and subsequent soil erosion.

Wild horses generally prefer perennial grass species as forage when available. Shrubs are important wildlife forage, but wild horses can also eat a high volume of shrubs, per capita, when more palatable foods are not extensively available (Nordquist 2011). The mosaic of plant communities found throughout the analysis area also support a wide variety of wildlife species that use the various habitats for food and water, thermal protection, escape cover, and reproduction.

The current overpopulation of wild horses is continuing to contribute to areas of moderate to severe vegetation use, trailing, and trampling damage in upland areas. The current wild horse overpopulation is preventing the BLM from managing for rangeland health at a thriving natural ecological balance, as well as making it difficult to develop a multiple use relationship on BLM-administered lands in the area. This overpopulation has resulted in observed past and present degradation of upland vegetation areas.

The relative quantity of vegetative cover removed by grazing and trampling also affects soil properties. In general, vegetative cover provides shading for soils, which increases their ability to retain moisture, reduces soil erosion by intercepting precipitation and reducing surface wind velocities, and provides organic input into the soil (Beever and Herrick 2006).

Environmental Consequences to Vegetation Alternatives 1-3

Impacts associated with the action alternatives would consist of disturbance to soil surfaces and vegetation immediately in and around the temporary gather site(s) and holding facilities. Impacts would be created by vehicle traffic and hoof action as a result of concentrating horses and could be locally high in the immediate vicinity of the gather site(s) and holding facilities. Generally, these sites would be small (generally less than 0.5 acre) in size and located in previously disturbed sites. Any impacts would remain site specific and isolated in nature. Impacts would be minimal as herding would have a short-term duration.

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

At the much broader spatial scale of the proposed gather area, the action alternatives would reduce the wild horse population to within the established AML, resulting in decreased pressure on vegetative resources within the uplands and riparian areas. This would allow for native species recovery, resulting in a lesser likelihood of invasive species and improve riparian and upland functionality within the HMA.

Impacts of implementing the action alternatives would be reduced concentrations of wild horses, leading to reduced soil erosion, vegetation trampling, and utilization of areas most frequented in the HMA by wild horses.

Alternative 4

Under Alternative 4, wild horses would not be gathered and removed from the Clan Alpine HMA. There would be no impacts associated with gather activities such as disturbed vegetation. Not removing excess horses would result in a continued increase in the number of wild horses above AML, resulting in increased utilization of vegetation and trampling. This would have compounding impacts on upland vegetation. Initial impacts would be seen in sites that are already close to crossing an ecological threshold, or on sites that are near water sources. The increased grazing pressure from horse numbers in excess of the high AML range would result in a decrease in native perennial species, and an increase in bare ground, erosion, or shrubs tolerant of disturbance (e.g., rabbitbrush) that have lower forage value and provide fewer ecosystem goods and services (Chambers et al. 2014). These changes would decrease the stability, biodiversity, vigor, and production of native plant communities within the HMA.

Cumulative Impacts to Vegetation

Under Alternatives 1, 2, and 3, wild horse numbers would be reduced, and maintained within the AML range, which would result in decreased impacts to vegetation throughout the HMA. While removal of excess wild horses may not be able to restore plant communities that have lost functional/structural groups and seed bank, maintaining the number of horses in the HMA within AML would help prevent areas with low perennial bunchgrasses from declining further. Generally, the removal of grazing pressure from excessive numbers of wild horses would lessen

the impacts to perennial grasses and shrubs, allowing them to better recover from natural disturbances such as fire and drought, and to compete with non-native annual grasses and forbs such as cheatgrass (*Bromus tectorum*) and halogeton (*Halogeton glomeratus*).

Alternative 4, the no action alternative, would result in an increase in wild horse numbers and increased disturbance to native vegetation and soils, which could lead to increased damage to upland vegetation. Plant communities that have been and may be impacted by wildfires, drought, and annual invasive weeds would be more vulnerable to losing native perennial grasses and shrubs, due to the high amount utilization and trampling from excessive wild horses. The constant overuse of rangeland vegetation would decrease the ability of plants to complete their growth cycle and recover from grazing. As a result, many sites that have been previously disturbed may irreversibly transition from native perennial plant communities to invasive annuals plant (e.g., cheatgrass) communities making these communities more vulnerable to fire. This change in functional/structural groups would have a negative impact on the vegetation resources in the HMA, further affecting other aspects of these sagebrush ecosystems such as soils and wildlife.

Maintaining a balance of grazing animals and controlling the timing and amount of forage that is consumed each year by all grazing animals is crucial to maintaining healthy upland plant communities within the analysis area. Year-round grazing on the upland vegetation from excess wild horses does not allow upland sites to recover from past disturbances and those areas are in danger of trending downward in ecological health.

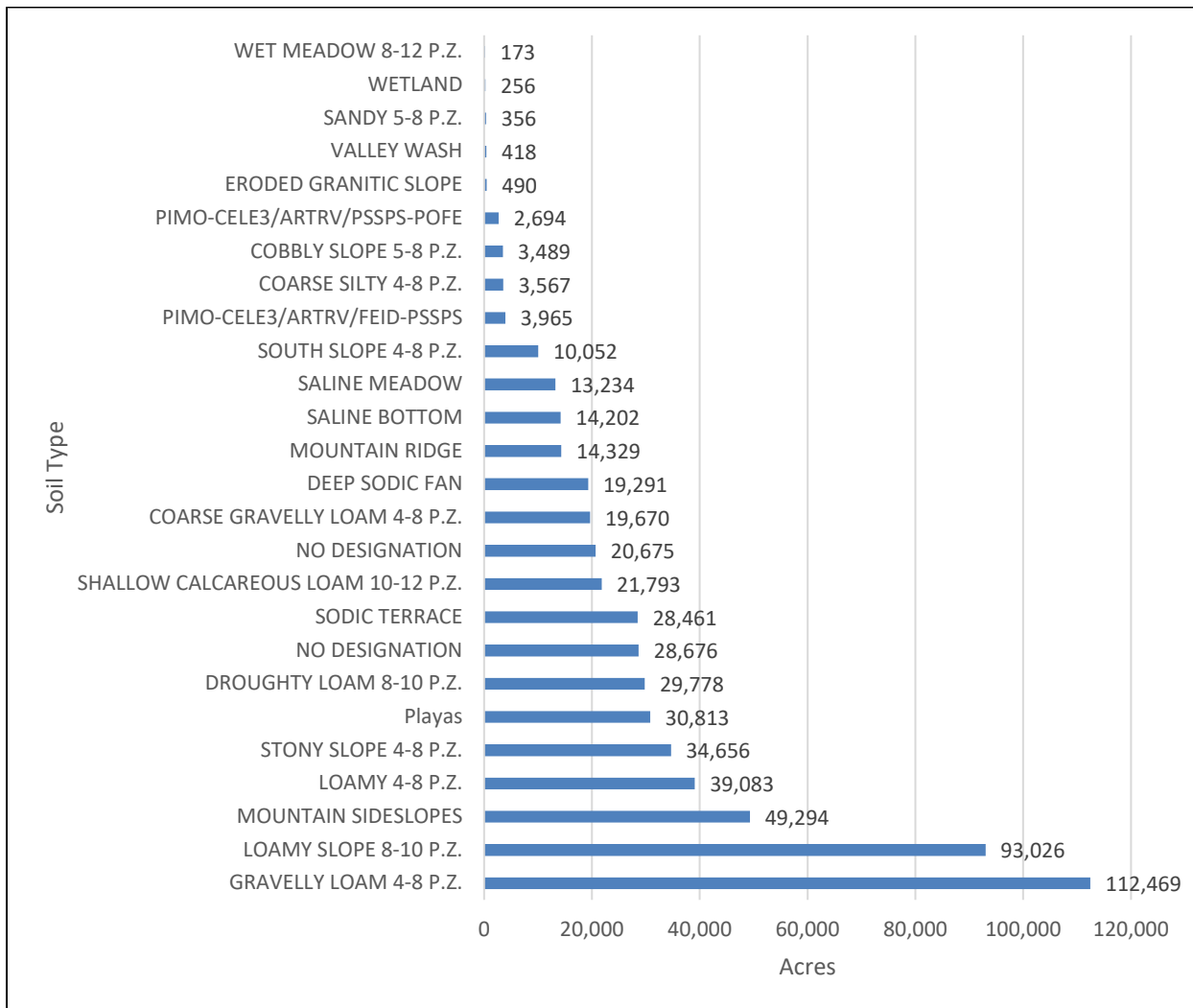
3.4.3 Soil

Affected Environment

Soils within the HMA are typical of the Great Basin and vary with elevation. Soils range in depth and type and are typically sandy loams, stony loams, and silt loams. Soil development generally occurred under low precipitation regimes resulting in relatively slow development of soils.

The dominant soil types are gravelly loam, loamy slope, mountain side slopes, loam, and stony slopes (Figure 4).

Figure 4: Soil types found in the gather area



Prior to the Taylor Grazing Act, livestock grazing practices resulted in significant impacts to soil resources. The soil tolerance was exceeded and the soil medium for plant growth was not maintained. As a result, historic livestock grazing activities prior to the Taylor Grazing Act had significant impacts on the vegetation resources within the impact assessment area by eliminating or greatly reducing the primary understory plants.

While the present grazing management effort has helped reduce past historic soil impacts and improved current soil resource conditions, the current overpopulation of wild horses is resulting in areas of heavy vegetation utilization, trailing, and trampling damage, and prevents BLM from managing public lands within the Clan Alpine HMA for land health standards and for a thriving natural ecological balance.

Aerial assessment indicates trailing by horses between limited water sources and foraging areas. Trailing and hoof action by horses has the potential to accelerate erosion following intense summer convection storms or rapid snow melt through increased soil compaction and associated

losses of vegetative cover. Horse utilization and trailing are occurring in BLM allotments outside the HMA, decreasing vegetative cover while altering vegetative composition, particularly in areas of water sources and low elevation, gradually sloped topography. Changes in vegetative composition can reduce soil infiltration rates, which increases runoff and consequently soil erosion, as well as decreased soil productivity.

Environmental Consequences to Soil

Alternative 1

Alternative 1 could result in short-term impacts to soils at gather site locations and temporary holding facilities. These sites would likely occur in previously disturbed areas and are typically less than 0.5 acres. Some soils within these sites could become devoid of vegetation and be susceptible to soil erosion, however these areas are of limited size and are expected to recover within a short period of time. The long-term beneficial impacts to soil resources that would occur because removing excess horses to within the established AML range would outweigh any short-term effects to soils at trap sites and holding areas. Pairing removal of excess horses with one of the population growth suppression methods described in Alternative 1 would be a fast way to pause or slow down degradation of rangeland resources in the Clan Alpine HMA, including the compaction and erosion of soils, due to the decrease in the wild horse population in the HMA and surrounding analysis area. This would lead to increased soil functionality and increased soil processing resulting in increased soil development.

Alternative 2

Gathering and removing excess wild horses without additional population growth suppression efforts would result in shorter intervals between removals than if the growth rate was reduced. The situation would likely remain much the same as it is currently, especially if gathers cannot occur as frequently as needed (three to five years (BLM 2001)). Erosion and compaction of soils could continue at the same rate as currently and little would be gained to improve the ecological balance.

Alternative 3

Alternative 3's impacts to soils would be similar to those of Alternative 1 and it would be the fastest approach to pausing further degradation and starting recovery. Longer intervals between gathers at the same time that the population is growing substantially more slowly would translate to increased time for soil and land health recovery. Improved soil health would not be as quickly undone by the year-round horse population, and some areas may even be unused entirely, providing an opportunity for faster recovery.

Alternative 4

The no action alternative would result in the continuation and worsening rates of erosion due to the trailing and hoof action by an increasing overpopulation of wild horses. Compaction and soil loss are likely to accelerate as wild horse populations continue to grow.

Soil as a land health indicator could be at risk of moderate to extreme departure from desired condition.

Cumulative Impacts to Soil Alternatives 1-3

Cumulative effects to soils under Alternatives 1-3 would be minimal and temporary. Some areas such as trap sites and holding facilities would experience some trampling, however these areas are generally small and are typically places in previously disturbed areas. Once animals are removed from these sites, soils are expected to recover. Reducing the population of wild horses to within the established AML range under Alternatives 1-3 would significantly reduce the long-term damage to soils resulting from trampling and overgrazing of vegetation.

Alternative 4

Under Alternative 4, wild horse populations would continue to increase and upland sites would become overgrazed by horses, resulting in the loss of vegetative cover and litter to protect the soil surface. There would also be a decrease in biological soil crusts and an increase in soil erosion and bare ground. These sites typically produce lower amounts of plant biomass and cover, recruit fewer cohorts, and provide little soil stability.

3.4.4 General Wildlife and Migratory Birds

Affected Environment

Nevada Department of Wildlife's Wildlife Action Plan (WAPT 2012) identifies 22 key habitat types within Nevada. The predominant key habitat types found within the gather area include Sagebrush (\approx 36 percent or 222,381 acres), Intermountain Cold Desert Scrub (\approx 33 percent or 200,503 acres), Lower Montane Woodlands and Chaparral (\approx 19 percent or 115,294 acres), Desert Playas and Ephemeral Pools (\approx 6 percent, or 37,080 acres), Grasslands and Meadows (\approx 3 percent or 19,798 acres). Other key habitats are sparsely distributed in small acreages throughout the gather area, and these are Barren Landscapes (\approx 3500 acres), Cliffs and Canyons (\approx 3300 acres), Marshes (\approx 555 acres), Agricultural Lands (\approx 469 acres), Intermountain Coniferous Forest and Woodlands (\approx 264 acres), Mesquite Bosques and Desert Washes (\approx 242 acres), Intermountain Rivers and Streams (\approx 92 acres), Sand Dunes and Badlands (\approx 51 acres), Springs and Springbrooks (\approx 15 acres), Mojave Warm Desert and Mixed Desert Scrub (\approx 10 acres), Lakes and Reservoirs (\approx 7 acres).

Wildlife species in the general area include mammals, birds, reptiles, amphibians, and invertebrates. Biological diversity varies according to topography, plant community, proximity to water, soil type, and season. Because intensive plant and animal surveys have not been completed, abundance and distribution of most wildlife species can only be inferred from available habitat. For additional information about potential wildlife species that may be present within the gather area, refer to CRMP (BLM 2001). The wildlife resource is discussed beginning on page WLD-1 and includes general national policies, RMP-level decisions, implementation-level decisions, administrative actions, activity plans, and additional references.

Big Game

The gather area contains 60,407 acres of year-round mule deer (*Odocoileus hemionus*) habitat, 87,447 acres of crucial winter range and 45,715 of critical summer range in the Clan Alpine, Augusta, and Desatoya ranges, which equates to approximately 32 percent of the analysis area. Mule deer generally browse on forbs, grasses, and shrubs depending on the time of year. For instance, forbs and grasses are most important in spring and summer while shrubs are most utilized during winter and the dry summer months. Factors affecting mule deer across Nevada's

range include loss of plant vigor, pinyon-juniper encroachment, overgrazing, invasive species, fire, drought, mining and other anthropogenic developments, and migration corridor impediments (Wasley 2004).

The gather area contains 440,447 acres of year-round and 3,926 acres of agricultural pronghorn antelope (*Antilocapra Americana*) habitat which equates to approximately 74 percent of the analysis area. Pronghorn primarily eat forbs and shrubs with grasses being the least preferred forage. Vegetation height, cover, and community type, as well as elevation, topography, and distance to water all influence pronghorn antelope habitat selection.

Migratory Birds

Management for these species is based on IM 2008-050 dated December 18, 2007 (BLM 2007).

Numerous species of migratory and non-migratory birds, including raptors, utilize habitat such as trees, shrubs, cliffs, and other upland vegetation within the project area for shelter, nesting, and foraging. Desert shrub habitats provide nesting structure, protection from predators, and thermal cover for passerines, as well as foraging habitat for raptors. Rock outcroppings/crevices provide nesting, roosting, and protection from predators for some bird species, and rocky ledges provide a nesting substrate and protection from predators for several raptor species. Generally, migratory bird species occur in higher concentrations in riparian areas. Typically, the nesting season is when these species are most sensitive to disturbance, which occurs from March 1-July 31.

In general, monitoring data within the allotments show declining occurrence or absence of perennial grass species and a transition to shrub dominated states in the uplands. Riparian areas are scarce throughout the analysis area but are essential habitat for bird species of the arid and semiarid west and provide important stopping points for neotropical migratory birds passing through the desert. The current overpopulation of wild horses is also contributing to areas of heavy vegetation use, and trailing and trampling damage in uplands and riparian-wetland areas.

Environmental Consequences to Wildlife and Migratory Birds Alternatives 1-3

Because of physiology, wild horses primarily eat native bunchgrasses when available; consequently, dietary overlap between horses and mule deer, as well as pronghorn, has been documented as minimal (1 percent). However, shrubs, including sagebrush, can represent a large part of wild horses' diet throughout the year. Dietary overlap of wild horses with desert bighorn sheep has been documented around 50 percent when averaged throughout the year (Hanley & Hanley 1982; Hansen et al. 1977). However, native plant communities can only sustain a certain level of grazing utilization. The upper limit of the AML range is the maximum number of wild horses that can be maintained to achieve a thriving natural ecological balance and not adversely impact the plant community in combination with other multiple uses such as wildlife and livestock grazing. These Action Alternatives would also help in achieving and maintaining the wild horse populations within AML and remove all excess wild horses, thus vegetative health within key habitats would be promoted.

When AML is exceeded and maintained over time, overutilization of vegetation and water sources by wild horses occurs, decreasing plant diversity and in turn changing habitat structure

(Beever and Brussard 2000; and references therein). This is currently occurring in parts of the project area. Beever et al. (2008) conducted a study of vegetation response to removal of horses in 1997 and 1998. The paper concluded that horse-removed sites exhibited 1.1–1.9 times greater shrub cover, 1.2–1.5 times greater total plant cover, 2–12 species greater plant species richness, and 1.9–2.9 times greater cover and 1.1–2.4 times greater frequency of native grasses than in horse-occupied sites.

Effects of wild horses are not uniform across the landscape. For instance, wild horses would most utilize areas of the Clan Alpine HMA that have more grasses because they are primarily grazers. However, when wild horses are substantially over AML, they would also overgraze shrub species such as winterfat, budsage, and four-wing saltbush, which takes away available forage for browsers such as mule deer. While impacts to water from wild horses are different than cattle due to behavior (wild horses tend to not linger at a source), decreased cover and diversity of grasses and shrubs as well as decreased mammal burrow density have been documented from wild horses at water sources (Beever and Brussard 2000; Ganskopp and Vavra 1986). Small mammals are a prey base for many species. Thus, less prey can negatively affect raptors and carnivores that may inhabit the area. Overall, under the Action Alternatives, it is expected that increased understory plant species and cover, healthier wet meadows throughout the Clan Alpine HMA, and maintaining less competition for forage would benefit species dependent on these key habitats for food, water, and cover. Additionally, species that prey on wildlife that inhabit these plant communities, such as golden eagles, and other raptors may benefit from an increased prey base over time.

Direct short-term impacts from gather activities include transient, localized disturbance to wildlife and birds from the presence of people, vehicles, helicopters and wild horses at the trap locations and temporary holding facilities during gather operations.

Implementation of Alternatives 1, 2, and 3 would provide the greatest benefit to wildlife. The habitat would be able to recover and improve, and there would be less competition for resources between wild horses and wildlife populations. Specifically, shrub, native grass, total plant cover and species richness would increase, and invasive species would decrease (Beever et al. 2003, 2008). Riparian areas and meadow function would also improve as well as their associated perennial grasses and forbs and other species, increase hiding cover, and result in the overall improvement of habitat quality for wildlife species.

Alternative 4

Over-utilization of forage by free-roaming wild horses would continue to occur if population numbers stay above or increase above the current level of above high AML for excess wild horses that are not completely removed from the area. Key Habitats could become further degraded would decrease forage and cover for wildlife species. Over time it is expected that the diversity and abundance of species that inhabit the project area would further decrease, which may in turn decrease the prey base for wildlife species that forage in the area.

The direct impacts of Alternative 4 would be to eliminate the short-term impacts from gather activities, including disturbance to wildlife from the presence of people, vehicles, helicopters, and wild horses at the trap locations and temporary holding facilities during gather operations.

Indirect impacts from this Alternative would be the continued degradation of wildlife habitats, including reduced quantity and quality of vegetation and degradation of riparian areas, meadows, and water resources necessary for wildlife. In the long term, this Alternative would lower the occurrence of native grasses, increase the presence of invasive species, and decrease vegetative cover (Beever & Aldridge 2011).

Cumulative Impacts to General Wildlife and Migratory Birds

When combined with the effects from past, present, and RFFAs, cumulative effects from the Action Alternatives to key habitats, and in wildlife, are expected to be negligible or positive. This is because the Action Alternatives would help accomplish the objectives of enhancing and/or maintaining resilient plant communities and watersheds by decreasing overutilization of vegetative resources by excess wild horses; generally increasing plant diversity; and improving and maintaining wet meadows, springs, and riparian areas that are so crucial to wildlife in the project area.

Maintaining a balance of grazing animals and controlling the timing and amount of forage that is consumed each year by wild horses is crucial to maintaining healthy upland plant communities that provide important wildlife forage and cover. By removing excess wild horses, as described in Alternatives 1, 2, and 3, cumulative impacts to wildlife habitat are expected to be beneficial.

Cumulative impacts of Alternative 4 would result in an increase in wild horse numbers and increased disturbance to plant communities and watersheds by increasing over utilization of vegetative resources ultimately causing a shift in the functional/structural groups. Potentially causing a transition from perennial plant communities to invasive annual plant communities further affecting wildlife habitat and forage for wild horses. Ecological degradation would continue to occur and increase as climate change and other land uses compound these effects.

3.4.5 Sensitive Species: Animals **Affected Environment**

Per the BLM Special Status Species manual 6840, BLM special status species are: (1) species listed or proposed for listing under the Endangered Species Act (ESA), and (2) species requiring special management consideration to promote their conservation and reduce the likelihood and need for future listing under the ESA. Bureau sensitive species lists are reviewed and updated every five years by each State Director (BLM 2008). Additionally, all federal candidate, proposed, and delisted species in the five years following delisting are designated as Bureau sensitive species (BLM 2008). Many of these species as well as other wildlife species of concern are also discussed in the Nevada Department of Wildlife WAPT (WAPT 2012). Within the CCD, 138 species were designated as BLM sensitive by the Nevada BLM State Director in 2017. The Nevada BLM Sensitive Species List contains a complete list of species and associated habitats that have the potential to be found in or near the allotment for the CCD (Appendix G). These sensitive species include birds, reptiles, amphibians, mammals, fish, invertebrates, and plants. A few of the important special status animal species that occur or have the potential to occur in the gather area include desert bighorn sheep (*Ovis canadensis*), multiple bat and lizard species, and pale kangaroo mouse (*Microdipodops pallidus*). Some of these species are described in further detail below and a complete list of sensitive animal species can be found in Appendix G.

Desert Bighorn Sheep

There are approximately 232,304 acres of occupied year-round habitat for desert bighorn sheep and approximately 1,759 acres of lambing habitat within the gather area. Key habitats for desert bighorn include sagebrush communities, grasslands and meadows, riparian areas, and springs. They prefer rough, rocky, and steep terrain, require freestanding water in summer months or during drought, and mainly eat grasses, forbs, and shrubs. They occupy a variety of plant communities including alpine meadow to shrub-grasslands depending on the season, however, forage, water, and escape terrain are the most important components of their habitat (Van Dyke et al. 1983). The main limiting factors to the desert bighorn's habitat within the gather area are water availability and poor forage conditions.

Greater Sage-grouse

The GRSG is a BLM Sensitive Species as a result of a 2015 decision by the United States Fish and Wildlife Service to not list the species under the Endangered Species Act. GRSG are a landscape-scale species that are seasonally mobile and annually have a large home range (Stiver et al. 2006). Specific factors that limit population expansion of GRSG include loss of vegetation cover, degradation of riparian areas, and degradation of wet meadows. Chick recruitment is diminished in areas lacking an abundance of succulent vegetation or available clean water. The presence of wild horses is associated with a reduced degree of greater sage-grouse lekking behavior (Muñoz et al. 2020). Moreover, increasing densities of wild horses, measured as a percentage above AML, are associated with decreasing greater sage-grouse population sizes, measured by lek counts (Coates et al. 2020).

The HMA falls almost entirely within the boundary of the Clan Alpine GRSG Population Management Unit. The HMA contains lands classified as General Habitat Management Areas (GHMA), Other Habitat Management Areas (OHMA), and unclassified (typically non-habitat) (Figure 3, Map Sage-Grouse Habitat Types). GHMAs are BLM-administered lands where special management would apply to sustain GRSG populations in adjacent areas. OHMAs are BLM-administered lands identified as unmapped habitat within the planning area and contain seasonal or connectivity habitat areas.

GRSG and their habitat are present within the HMA. There are currently no active or pending leks (strutting grounds vital to mating) within the HMA. Early brood-rearing consists of upland sagebrush sites relatively close to nest sites, typically characterized by high species richness, with an abundance of forbs and insects. Late brood-rearing habitat are characterized by succulent forbs next to or intermixed with sagebrush. Hens typically move their chicks to more mesic conditions, such as higher elevation sagebrush communities, wet meadow complexes, or agricultural fields. Based on telemetry detections and visual observations GRSG use portions of the HMA year-round. Degradation of riparian and wetland habitats from continuous use by excess wild horses is one reason these birds are at risk.

Bats

Eight sensitive species of bats are known to inhabit Key Habitats within the project area. These include long-eared myotis (*Myotis evotis*), western small-footed myotis (*Myotis ciliolabrum*), fringed myotis (*Myotis thysanodes*), little brown bat (*Myotis lucifugus*), Townsends's big-eared

bat (*Corynorhinus townsendii*), spotted bat (*Euderma maculatum*), silver-haired bat (*Lasionycteris noctivagans*), and western red bat (*Lasiurus blossevillii*) Bats have specific needs for roosting, nesting, and foraging. Roosting habitats include crevices in rock cliffs and rimrock, abandoned mines, abandoned structures, and in trees with loose bark such as junipers. There are known abandoned mine lands located within the Clan Alpine HMA. Foraging habitats include open grasslands, shrub-steppe, riparian areas, open water sources including water troughs, and in and around trees (BLM 2012a). In general, the long-term persistence of North American bat species is threatened by the loss of clean, open water, modification or destruction of roosting and foraging habitat, and disturbance or destruction of hibernacula for hibernating species. Chemicals in the environment that affect bats or their prey are also threats. Bats may be minimally affected by wild horses, but the decline in plant community health, especially riparian areas, could negatively affect foraging conditions.

Environmental Effects to Sensitive Animals

Alternative 1-3

Impacts would generally be the same to BLM designated sensitive species as described in the environmental consequences section under Section 3.4.4 General Wildlife and Migratory Birds. Maintaining proper AML should also help maintain habitat conditions that, over time, may benefit sensitive species that utilize these key habitats by providing a diverse vegetation structure that provides for multiple life cycle requirements that any given species may need to successfully reproduce. If the Proposed Action is successful, decreasing competition for forage by wild horses from current levels would benefit sensitive species dependent on these key habitats for food, water, and cover. Additionally, sensitive species such as golden eagle or burrowing owl that prey on wildlife that inhabit the analysis area should benefit from a robust prey base and proper functioning water sources.

Impacts of Alternative 4 (No Action)

Overutilization by wild horses would continue to occur as the population numbers continue to increase. Special status species habitat would continue to degrade and competition for forage and habitat would continue to increase and potentially cause a decline in wildlife populations. There is a quantified relationship showing that increased wild horse density, as a percentage of AML, is associated with increasing reductions to Greater sage-grouse lek counts (Coates et al. 2020).

Cumulative Impacts to Sensitive Animal Species

When combined with the effects from past, present, and RFFAs, cumulative effects from the Action Alternatives to key habitats, and in turn sensitive species, are expected to be negligible or positive. This is because the Action Alternatives would help accomplish the objectives of enhancing and/or maintaining resilient plant communities and watersheds by decreasing overutilization of vegetative resources by excess wild in some wet meadow areas; generally increasing plant diversity; and improving and maintaining wet meadows, springs, and riparian areas that are so crucial to multiple species in the project area.

Cumulative impacts of Alternative 4, no action, would result in an increase in excess wild horses, decreasing the quality of wildlife habitat by further degrading the existing vegetation and possibly resulting in a reduction of perennial plant communities to a more dominant invasive

annual state. Wet meadows would be further degraded resulting in further habitat loss to special status species. This would be compounded with drought and other activities in the area.

3.4.6 Sensitive Species: Plants

Affected Environment

Within the CCD, 138 species were designated as BLM sensitive by the Nevada BLM State Director in 2017. Of these special status species, there are five BLM sensitive plant species that have been found within or adjacent to the Clan Alpine gather area, more specifically in the proposed gather area. These species include Lahontan Basin buckwheat (*Eriogonum rubricaulle*), Lahontan beardtongue (*Penstemon palmeri* var. *macranthus*), and Reese River phacelia (*Phacelia glaberrima*).

Lahontan Basin Buckwheat

Habitat for this annual plant includes dry, open, light-colored, strongly alkaline shrink-swell clay soils on bluffs and badlands derived from fluviolacustrine silt, volcanic ash, or diatomite deposits, sometimes perched on dark basaltic slopes, in the shadscale, mixed-shrub, and lower sagebrush zones. Known locations of this plant are found throughout western Nevada.

Lahontan Beardtongue

Habitat for this perennial plant includes washes, roadsides, and canyon floors, particularly on carbonate-containing substrates, usually where subsurface moisture is available throughout most of the summer; unknown if restricted to calcareous substrates.

Reese River Phacelia

Habitat for this annual plant includes open, dry to moist, alkaline, nearly barren, sometimes scree-covered, whitish to brownish shrink-swell clay soils derived from fluviolacustrine volcanic ash and tuff deposits, generally on the steeper slopes of low hills, bluffs, and badlands in the shadscale-greasewood, sagebrush, and lower pinyon-juniper zones.

Wild horse utilization and trailing due to increasing numbers is occurring within and surrounding the Clan Alpine HMA and is reducing vegetative cover and vigor, particularly, in those areas near water sources and areas in low elevations with gradual sloped topography. The reduction of vegetative cover and increased trampling resulting from higher wild horse numbers has led to increased soil disturbance, which negatively impacts the establishment of plants and root abilities of native vegetation. Changes to vegetation can also potentially accelerate run off and subsequent soil erosion. Utilization and range health indicator data illustrate wild horse grazing impacts. While special status species are often found in highly specific types of soils and vegetation communities, these general assessments echo the conditions of the area as a whole and most likely also impacting areas that special status plant species are found. In many cases, trampling and grazing of these special status species by horses are likely to occur further impacting these species.

Environmental Consequences to Sensitive Plant Species

Impacts of Alternatives (1-3)

Under Action Alternatives 1, 2, and 3, wild horse numbers would be reduced, and maintained within the AML range and all excess wild horses would be removed, which would result in a

decrease in over utilization of resources by horses, thus decreasing the overall negative ecological impacts on special status plant species throughout the Clan Alpine HMA. The potential direct impacts associated for these alternatives would be localized, short term impacts from placement of traps and herding wild horses with a helicopter on or across the habitat of a special status plant species during the gather activities. However, design features in the Proposed Action that are applicable to all gather alternatives would mitigate these impacts. Specifically, the BLM would not construct trap locations or temporary holding facilities within known occupied habitat for sensitive plant species.

Additional indirect impacts to special status plants from the action alternatives could include the reduced risk of habitat degradation and increased plant vigor and growth. Maintaining the wild horse populations within AML would decrease competition for available cover, space, forage, and water between horses and special status species. Reduced trampling and consumption of general vegetation and special status plant species would result in increased plant vigor, production, seedling establishment, diversity, and ecological health of special status species habitat, particularly near wet meadow/riparian areas.

Impacts of Alternative 4

While no direct or indirect effects of gather operations would occur, direct impacts of sensitive plant species would likely include grazing and trampling of special status species under the no action alternative. Indirect impacts of Alternative 4 would result in an increase in wild horse numbers and therefore increased utilization and disturbance to native vegetation and soils. Over time this degradation would further impact ecological health within and outside the HMA as seen in the current monitoring data for the analysis area. This would likely lead to increased damage to upland and riparian vegetation, which includes sensitive plant species and their habitat that occur in the analysis area.

Cumulative Impacts

Impacts of Alternatives 1, 2, and 3

Past and present impacts to special status plants in the gather area are generally related to mining, energy development, road development, grazing, dispersed recreation, wild horses and burros, and climate change. All of these activities and events would be expected to continue into the foreseeable future. Cumulative impacts associated with the Proposed Action from gather operations would be expected to be negligible based on the incorporated design features. Long-term impacts from removing excess wild horses within and outside of the HMA would be expected to decrease the amount of trailing and trampling damage to special status plants.

Impacts of Alternative 4

Past and present impacts to special status plants in the action area would be the same as those analyzed for the Action Alternatives. Cumulative impacts from the no action alternative would be the continued trailing and trampling of special status plants by wild horses. As the wild horse population continues to grow into the future, trailing use would continue to increase as populations increase if no gathers/removals occur in the future. Ecological degradation would continue to occur and increase as climate change and other land uses compound these effects.

3.4.7 Wild Horses

Affected Environment

The majority of the horses are in reasonable health, although there are individual animals that rated lower than a 3 Henneke body condition score (Henneke et al. 1983) in late winter, which indicates that they were not able to find sufficient forage to maintain a healthy weight. The continued growth of the herd over time and observed ratios of foals to adults indicate that the herd would maintain high reproductive rates in the absence of fertility control. As the population increases, competition for resources, especially forage and water in drought years, would likely lead to even more animals in poorer body conditions.

The lack of forage in the Clan Alpine HMA has resulted in wild horses emigrating beyond the HMA boundary in search of nutrition. As resources continue to be depleted, animals will continue to leave the HMA. For years, horses have been observed damaging private fencing installed by the Bench Creek Ranch to access forage on private land and use private water sources.

The Proposed Action is necessary because an overpopulation of wild horses is resulting in overuse of upland and riparian vegetation and the degradation of both horse and wildlife habitat. Native bunchgrasses, the primary forage for wild horses and many wildlife species, are being overgrazed to the point at which most of them have disappeared from the HMA. Many rodents require these grasses and these rodents in turn provide a prey base for many raptors and small carnivores. Pronghorn, deer, and bighorn sheep all require native vegetation and they in turn support carnivores. Riparian areas, which are critical for many species of native wildlife, are also being degraded as a result of the wild horse overpopulation.

Genetic Diversity

Because of history, context, periodic natural movements, and human-caused introductions, wild horses in the Clan Alpine herd are not a truly isolated population. The National Academies of Sciences report to the BLM (NRC 2013) recommended that a given wild horse range or HMA should not be considered an isolated genetic population. Rather, managed herds of wild horses should be considered as components of interacting metapopulations, connected by interchange of individuals and genes due to both natural and human-facilitated movements. The Augusta and Desatoya HMAs are separated from Clan Alpine by fences, but those probably do not serve as actual barriers to genetic interchange because at least a small number of horses are likely to cross those over the timescale of horse generations (i.e., at least several probably cross and breed during any 8- to 10-year interval). Terrain minimizes movement and interbreeding with horses in the New Pass-Ravenswood HMA, but again it is quite probable that some horses move from herd to adjacent herd over time scales that matter for genetic exchange. Therefore, while these barriers between HMAs make it appropriate for the gather project area to not extend into adjacent HMAs, it is extremely likely that the genetic condition and relatedness of Clan Alpine horses is similar to that of herds in neighboring HMAs. Serological and electrophoretic analysis of horse blood samples from two locations in the Clan Alpine HMA was completed in 1988 and did not identify any unique genes being present at that time (Bowling 1988).

As is commonly done during modern gathers, more comprehensive baseline genetic information would be obtained through analysis of hair follicle samples during the first gather after a decision authorizing any action alternative, and then periodically in subsequent gathers (as per BLM

2010). In contrast to blood-based genetic analyses, the modern methodology amplifies DNA from hair follicles to characterize genetic diversity in herds, based on a suite of microsatellite loci. Even though no baseline data about this type of genotypes are yet available for the horses in the Clan Alpine herd, the BLM is in a position to make some reasonable inferences that the level of genetic diversity in the Clan Alpine horses is likely to be relatively high. Specifically, the New Pass-Ravenswood herd and the Augusta HMA were both sampled prior to the National Academies of Science report (NRC 2013) that analyzed genetic diversity across BLM-managed herds. The 2013 National Academies of Sciences report included evidence that shows that the Augusta and New Pass-Ravenswood herds were not genetically unusual, with respect to other wild horse herds. Specifically, Appendix F of the 2013 NAS report is a table showing the estimated 'fixation index' (Fst) values between 183 pairs of samples from wild horse herds. Fst is a measure of genetic differentiation, in this case as estimated by the pattern of microsatellite allelic diversity analyzed by Dr. Cothran's laboratory. Low values of Fst indicate that a given pair of sampled herds has a shared genetic background. The lower the Fst value, the more genetically similar are the two sampled herds. Values of Fst under approximately 0.05 indicate virtually no differentiation. (Frankham et al. 2010). Fst values for the Augusta HMA herd had pairwise Fst values that were less than 0.05 with 110 other sample sets. Fst values for the New Pass-Ravenswood HMA herd had pairwise Fst values that were less than 0.05 with 146 of the 183 other sampled sets. These values are indicative of incredibly high levels of co-relatedness with other managed wild horse herds. It is extremely likely that genetic monitoring results from the Clan Alpine herd will be comparable. Along with genetic connectivity, the relatively high herd sizes over time are very likely to have resulted in high levels of observed heterozygosity in this herd. Once hair follicle samples have been analyzed after the first gather envisioned under Alternatives 1-3, those results are extremely likely to confirm the interpretation that Clan Alpine HMA wild horses are components in a highly connected metapopulation that includes horse herds in many other HMAs.

Diet

Numerous studies identify dietary overlap of preferred forage species and habitat preference between horses/burros, cattle, and wildlife species in the Great Basin ecosystems for all seasons (Ganskopp 1983; Ganskopp and Vavra 1986, 1987; McInnis 1984; McInnis and Vavra 1987; Smith et al. 1982; Vavra and Sneva 1978). A strong potential exists for exploitative competition between horses and cattle under conditions of limited forage (water and space) availability (McInnis and Vavra 1987).

Although horses and cattle are often compared as grazers, horses can be more destructive to the range than cattle due to their differing digestive systems and grazing habits. The dietary overlap between wild horses and cattle is much higher than with wildlife, and averages between 60 and 80 percent (Hanley 1982; Hansen et al. 1977; Hubbard and Hansen 1976; Krysl et al. 1984; McInnis and Vavra 1987). Horses are cecal digesters while most other ungulates including cattle, pronghorn, and others are ruminants (Beever 2003; Hanley and Hanley 1982). Ruminants, especially cattle, must graze selectively, searching out digestible tissue (Olsen and Hansen 1977). Horses, however, are one of the least selective grazers in the West because they can consume high fiber foods and digest larger food fragments (Beever 2003; Bauer et al. 2017; Hanley and Hanley 1982).

Wild horses can exploit the high cellulose of graminoids (grasses and grass-like plants), which have been observed to make up over 88 percent of their diet (Hanley 1982; McInnis and Vavra 1987). However, this lower quality diet requires that horses consume 20-65 percent more forage than a cow of equal body mass (Hanley 1982, Menard et al. 2002). With more flexible lips and upper front incisors, both features that cattle do not have, wild horses trim vegetation more closely to the ground (Beever 2003; Menard et al. 2002; Symanski 1994). As a result, areas grazed by horses may retain fewer plant species and may be subject to higher utilization levels than areas grazed by cattle or other ungulates.

Wild horses compete with wildlife species for various habitat components, especially when populations exceed AML and/or habitat resources become limited (i.e., reduced water flows, low forage production, dry conditions, etc.). Smith (1986a, b) determined that elk and bighorn sheep were the most likely to negatively interact with wild horses. Hanley and Hanley (1982) compared the diets of wild horses, domestic cattle and sheep, pronghorn antelope, and mule deer and found that horse and cattle diets consisted mostly of grasses, pronghorn and mule deer diets consisted mostly of shrubs (>90 percent), and sheep diets were intermediate. Due to different food preferences, diet overlap between wild horses, deer, and pronghorn rarely exceeds 20 percent (Hanley and Hanley 1982; Hansen et al. 1977; Hubbard and Hansen 1976; Meeker 1979).

There is growing concern about limited water and forage available to wild horses and burros, livestock, and wildlife in the desert climate of the Great Basin. Heavy use of forage near available water and competition between wild horses, livestock, and wildlife for limited forage and water has increased. In addition, wild horses and burros can have an impact on native wildlife around water sources (Gooch et al. 2017, Hall et al. 2016, Crist et al. 2019). On multiple occasions, game camera photographs taken within this district have shown mule deer leaving a water source as wild horses approach.

As reviewed in Appendix C, wild horses have been observed digging ‘wells’ in intermittent stream beds where subsurface water is available within 2 meters of the surface (Lundgren et al. 2021). The BLM is not aware of published studies that document wild horses or burros in the western United States causing similar or widespread habitat amelioration on drier upland habitats such as sagebrush, grasslands, or pinyon-juniper woodlands. Increasing competition at the water source can increase animal stress and lead to emergency conditions where a failure to act may result in the suffering or death of individual horses.

PopEquus Population Modeling

The Alternatives were modeled using Version 1.0.1 of the PopEquus population model (Folt, et al. 2023). The purpose of the modeling was to analyze and provide a range of potential outcomes for various management options. Appendix H features the results of the model, which include population sizes, average population growth rates, costs, and average gather, removal, and treatment numbers. In short, Alternatives 1 and 3 produced the shallowest growth curves, while the No Action Alternative produced a curve that is substantially steeper and illustrates the population reaching several thousand over the course of ten years. Alternative 2 is illustrated by regular rises and falls in the population, as is expected from a gathers-only management approach.

Environmental Consequences to Wild Horses

Impacts of Alternative 1

Under Alternative 1, wild horses would be released back to the range to achieve a post-gather sex ratio of 60 percent males to 40 percent females at low AML for the potential breeding population; this would be approximately 367 males and 245 females. Under this Alternative, competition, among males, for females would be expected to increase while recruitment age for reproduction among males would be expected to decrease. These effects would be slight, as the proposed sex ratio is not an extreme departure from normal sex ratio ranges (refer to review in Appendix C). Modification of sex ratios for a post-gather population favoring males would further reduce growth rates in combination with fertility control, because there would be a lower number of females present in the herd than if the sex ratio was closer to 50:50.

Although some fertility control treatments may be associated with potential physiological, behavioral, demographic, and genetic effects, those impacts are generally minor and transient, do not prevent overall maintenance of a self-sustaining population, and do not generally outweigh the potential benefits of using contraceptive treatments in situations where it is a management goal to reduce population growth rates (NRC 2013, Garrott and Oli 2013; Appendix C). At logistically feasible levels of application, fertility control vaccine methods would not be expected to prevent the BLM from ensuring that there would be self-sustaining populations of wild horses in the Clan Alpine HMA. Even with repeated booster treatments of the vaccines, it is expected that most mares would eventually return to fertility, though it is possible that some individual mares treated repeatedly may remain infertile. Once the herd size in the Clan Alpine HMA is at AML and population growth seems to be stabilized, BLM can make adaptive determinations as to the required frequency of new and booster treatments. Available information about genetic diversity and relatedness to other herds gives no indication for concern about maintenance of self-sustaining population in the HMA, particularly as fertile animals can be introduced into the herd if the results of hair follicle-based genetic diversity monitoring indicate that would be warranted. Although treated individuals may experience long-lasting contraceptive effects, even including sterility in some cases, that does not of itself cause significant negative impacts at the level of the population, which is the object of BLM management.

Impacts of Alternative 2

Alternative 2 would have similar impacts to Alternative 1, except that there would be no impacts to individual females from administering a contraceptive vaccine.

Impacts Common to Alternatives 1 and 3

Contraception

All fertility control methods in wild animals are associated with potential risks and benefits, including effects of handling, frequency of handling, physiological effects, behavioral effects, and reduced population growth rates (Hampton et al. 2015). Contraception by itself does not remove excess horses from an HMA's population, so if a population exceeds AML, contraception alone would result in some continuing environmental effects of overpopulation. Successful contraception reduces future reproduction, though it can marginally increase survival rates in treated individuals.

Successful contraception would be expected to reduce the frequency of gather activities, as well as wild horse management costs to taxpayers. Bartholow (2007) concluded that the application of 2- or 3-year contraceptives to females could reduce operational costs in a project area by 12 to 20 percent, or up to 30 percent in carefully planned population management programs. He also concluded that contraceptive treatment would likely reduce the number of wild horses that must be removed in total, with associated cost reductions in the number of private placements and total holding costs. Population suppression becomes less expensive if fertility control is longer-lasting (Hobbs et al. 2000). BLM acknowledges that some females treated four or more times with ZonaStat-H PZP fertility control vaccine may become sterile (Nuñez 2018). Applying one booster dose of GonaCon to previously treated mares should lead to four or more years with relatively high rates (80 percent or more) of additional infertility expected (Baker et al. 2018), with the potential for additional infertility until the immune response to the vaccine wears off. Given that GonaCon-equine is formulated and intended to cause long-lasting contraceptive effects, it is reasonable to hypothesize that additional boosters would increase the effectiveness and duration of the vaccine. However, even if some number of mares become sterile as a result of PZP or GonaCon vaccine treatments, that potential result would be consistent with the contraceptive purpose and statutory authority that motivates BLM's potential use of these vaccines. Contraceptive treatments may be associated with potential physiological, behavioral, demographic, and genetic effects, detailed in Appendix C. However, those concerns do not generally outweigh the potential benefits of using contraceptive treatments in situations where it is a management goal to reduce population growth rates (Garrott and Oli 2013) to ensure rangeland health and allow for a thriving natural balance.

If darting is used to deliver fertility control vaccines, wild horses may experience transient behavioral effects that result from being approached by humans, and transient discomfort at the dart injection site. Most horses in the HMA are expected to be too flighty at present to approach close enough for darting. Over time, those wild horses that can be repeatedly approached and/or darted may increase their flight distance.

Fertility Control Vaccines and Physical Sterilization

Fertility control vaccines (also known as immunocontraceptives) meet the BLM requirements for safety to females and the environment (EPA 2009a, 2012). Because they work by causing an immune response in treated animals, there is no risk that vaccines or physical sterilization methods would cause hormones or toxins to be taken into the food chain when a treated animal dies. Refer to Appendix C for a detailed analysis of various fertility control techniques that may be employed in the Clan Alpine HMA and their potential effects.

Impacts of Alternative 3

Implementation of Alternative 3 would result in the need to gather and remove fewer excess wild horses in the future than Alternatives 1 or 2. Alternative 3 would be similar to Alternative 1 except that some females could be physically sterilized and up to 25 percent of males could be gelded to bring the population to mid-AML. At no time would the sex ratio exceed roughly 60 percent males.

Effects of Sterilization

Various forms of fertility control can be used in wild horse herd management. These can help with the goals of maintaining herds at or near AML, reducing fertility rates, and reducing the frequency of gathers and removals. The WFRHBA specifically provides for sterilization (16 U.S.C. 1333 Section 3.b.1) as a management tool for achieving appropriate management levels. Fertility control measures have been shown to be a cost-effective and humane treatment to slow population increases in wild horse herds or, when used in combination with gathers, to reduce herd size (Bartholow 2004; de Seve and Boyles-Griffin 2013; Fonner and Bohara 2017). Appendix C includes a review of peer-reviewed scientific literature and details the expected impacts of sterilization.

Population growth suppression becomes less expensive if fertility control is long-lasting (Hobbs et al. 2000), such as with mare sterilization and neutering. Here, 'mare sterilization' could mean survival removal of ovaries (ovariectomy) or a minimally invasive method that prevents eggs from reaching the uterus (see Appendix C); by comparison, 'spaying' domestic dogs and cats usually involves surgical removal of ovaries and uterus. Here, 'neutering' is defined to be the sterilization of a male either by removal of the testicles (castration, also known as gelding) or by vasectomy, where the testicles are retained but no sperm leave the body as a result of severing or blocking the vas deferens or epididymis.

Impacts Common to Alternatives 1, 2, and 3

Various impacts to wild horses and burros as a result of gather activities have been observed for over forty years. Under Alternatives 1, 2, and 3, impacts to wild horses would be both direct and indirect, affecting both individual animals and the population as a whole.

In any given BLM wild horse and/or burro gather, gather-related mortality averages only about one half of 1 percent (0.5 percent), which is very low compared to the mortality rates typical in wild animal capture efforts (Scasta 2020). Approximately another six-tenths of 1 percent (0.6 percent) of the captured animals could be humanely euthanized due to pre-existing conditions and in accordance with BLM policy (GAO 2008, Scasta 2020). These data affirm that the use of helicopters and motorized vehicles has proven to be a safe, humane, effective, and practical means for the gather and removal of excess wild horses from the public lands. The BLM also avoids gathering wild horses by helicopter during the six weeks prior to and following the peak foaling season (March 1 through June 30).

Impacts to Individual Horses

Individual, direct impacts to animals include the handling stress associated with the roundup, capture, sorting, handling, and transportation of the animals. The intensity of these impacts varies by individual animal and is indicated by behaviors ranging from nervous agitation to physical distress. When being herded to trap site corrals by the helicopter, injuries sustained by animals may include bruises, scrapes, or cuts to feet, legs, face, or body from rocks, brush, or tree limbs. Rarely, animals would encounter barbed wire fences and would receive wire cuts. These injuries are very rarely fatal and are treated onsite until a veterinarian can examine the animal and determine if additional treatment is indicated.

Other injuries may occur after an animal has been captured and is either within the trap site corral or the temporary holding corral, during transport between facilities, or during sorting and

handling. Occasionally, animals may sustain spinal injuries or fractured limbs but based on prior gather statistics, serious injuries requiring humane euthanasia occur in less than one animal per every 100 captured. Similar injuries could be sustained if animals were captured through bait and/or water trapping, as the animals still need to be sorted, aged, transported, and otherwise handled following their capture. These injuries result from kicks and bites, or from collisions with corral panels or gates.

To minimize the potential for injuries from fighting, the animals are transported from the trap site to the temporary holding facility where they are sorted as quickly and safely as possible, then moved into large holding pens where they are provided with hay and water. On many gathers, no wild horses are injured or die. On some gathers, due to the temperament of the horses, they are not as calm and injuries are more frequent. Overall, direct gather-related mortality averages less than 1 percent (GAO 2008, Scasta 2020).

Indirect individual impacts are those which occur to individual animals after the initial event. These may include miscarriages in females, increased social displacement, and conflict between males. These impacts, as with direct individual impacts, are known to occur intermittently during wild horse and burro gather operations. An example of an indirect individual impact would be the brief 1- to 2-minute skirmish between older males which ends when one male retreats. Injuries typically involve a bite or kick with bruises which do not break the skin. Like direct individual impacts, the frequency of these impacts varies with the population and the individual. Observations following capture indicate the rate of miscarriage varies but can occur in about 1-5 percent of the captured females, particularly if the females are in very thin body condition or in poor health.

A few foals may be orphaned during a gather if a dam (mother) rejects a foal, a foal becomes separated from its dam and cannot be matched up following sorting, the mother dies or must be humanely euthanized during the gather, the foal is ill or weak and needs immediate care that requires removal from the mother, or the mother does not produce enough milk to support the foal. On occasion, foals are gathered that were previously orphaned on the range (prior to the gather) because the mother rejected them or died. These foals may be in poor, unthrifty condition. Every effort is made to provide appropriate care to orphan foals. Veterinarians may administer electrolyte solutions or orphan foals may be fed milk replacer as needed to support their nutritional needs. Orphan foals would be taken to the Northern Nevada Correctional Center to receive additional care. Despite these efforts, some orphan foals may die or be humanely euthanized if the prognosis for survival is very poor.

In some areas, gathering animals during the winter may avoid the heat stress that could be associated with a summer gather. By fall and winter, foals are of sufficient body size and age to be weaned. Winter gathers are often preferred when terrain and higher elevations make it difficult to gather wild animals during the summer months. Under winter conditions, horses are often located in lower elevations due to snow cover at higher elevations. This typically reduces the distance between animal concentrations and trap sites, reducing the potential for fatigue and stress. Deep snow can tire animals as they are moved to the trap but helicopter pilots allow the animals to travel slowly at their own pace. Trails in the snow are often followed, reducing the stress to the trap site. On occasion, trails can be plowed in the snow to facilitate the safe and

humane movement of animals to a trap. Wild horses may be able to travel farther and over terrain that is more difficult during the winter, even if snow does not cover the ground. Water requirements are lower during the winter months, making distress from heat exhaustion extremely rare. By comparison, during summer gathers, animals may travel long distances between water and forage and become more easily dehydrated.

Through the capture and sorting process, animals are examined for health, injury, and other defects. Decisions to humanely euthanize animals in field situations would be made in conformance with BLM policy. The BLM Policy for Animal Health, Maintenance, Evaluation and Response Permanent Instruction Manual 2021-007 is used as a guide to determine if animals meet the criteria and should be euthanized. Animals that are euthanized for non-gather related reasons include those with old injuries (broken or deformed limbs) that cause lameness or prevent the animal from being able to maintain an acceptable body condition (greater than or equal to BCS 3); old animals that have serious dental abnormalities or severely worn teeth and are not expected to maintain an acceptable body condition; and animals that have serious physical defects such as club feet, severe limb deformities, or sway back. Some of these conditions have a causal genetic component and the animals should not be returned to the range to prevent suffering, as well as to avoid amplifying the incidence of the problem in the population.

Wild horses not captured may be temporarily disturbed and move into another area during the gather operation. Except for changes to herd demographics from removals, direct population impacts have proven to be temporary in nature with most, if not all, impacts disappearing within hours to several days of release. No observable effects associated with these impacts would be expected within one month of release, except for a heightened awareness of human presence.

It is not expected that genetic diversity would be unduly impacted by the action Alternatives. Baseline genetic diversity sampling would be completed during gather operations. Furthermore, periodic, ongoing genetic monitoring is included in Alternatives 1-3. That genetic monitoring would inform the BLM as to whether genetic diversity, as measured by observed heterozygosity, is acceptable, or whether any mitigating actions would be needed (BLM 2010). If monitoring of observed heterozygosity levels, as measured from genetic monitoring samples, indicates that genetic diversity should be increased, the BLM may consider introducing outside animals to the herd. Under Alternatives 1-3, management of the Clan Alpine herd could continue to use wild horse introductions from other HMAs to augment observed heterozygosity, the result of which would also be to reduce the risk of inbreeding-related health effects. Introducing a small number of fertile animals every generation (about every 8-10 years) is a standard management technique that can alleviate potential inbreeding concerns (BLM 2010).

Even if it is the case that repeated treatment with a fertility control vaccine may lead to prolonged infertility or even sterility in some females, most wild horses have only a low risk of loss of genetic diversity if logistically realistic rates of contraception are applied to females. Roelle and Oyster-McCance (2015) used the VORTEX population model to simulate how different rates of female sterility would influence population persistence and genetic diversity in populations with high or low starting levels of genetic diversity, various starting population sizes, and various annual population growth rates. Their results showed that the risk of the loss of

genetic heterozygosity is extremely low except in cases where all of the following conditions are met: starting levels of genetic diversity are low, initial population size is 100 or less, the intrinsic population growth rate is low (5 percent per year), and very large fractions of the female population are permanently sterilized. None of those conditions are likely to be risk factors in the Clan Alpine HMA.

By maintaining the wild horse population within the AML range, there would be a lower density of wild horses across the HMA, reducing competition for resources and allowing wild horses to utilize their preferred habitat. Maintaining population size within the established AML would be expected to improve forage quantity and quality and promote healthy, self-sustaining populations of wild horses in a thriving natural ecological balance and multiple use relationship on the public lands in the area. Deterioration of the range associated with wild horse overpopulation would be avoided. Managing wild horse populations in balance with the available habitat and other multiple uses would lessen the potential for individual animals or the herd to be affected by drought and would avoid or minimize the need for emergency gathers, which would reduce stress to the animals and increase the success of these herds over the long term.

Water/Bait Trapping

Bait and/or water trapping generally requires a long window of time for success. Although the trap would be set in a high probability area for capturing excess animals residing within the area and at the most effective time periods, time is required for the animals to acclimate to the trap and/or decide to access the water/bait.

Trapping involves setting up portable panels around an existing water source or in an animal area, or around a pre-set water or bait source. The portable panels would be set up to allow animals to go freely in and out of the corral until they have adjusted to it. When the animals fully adapt to the corral, it is fitted with a gate system. Allowing the animals time to acclimate creates a low-stress trap in the end. During this acclimation period, the animals would experience some stress from perceived restricted access to the water/bait source by the surrounding panels.

When actively trapping animals, the trap would be checked daily. Wild horses would be either removed immediately or fed and watered for up to several days prior to transport to a holding facility. Existing roads would be used to access the trap sites.

Gathering excess animals using bait/water trapping could occur at any time of the year and would extend until the target number of animals is removed to relieve concentrated use by animals in the area, reach AML, to implement population control measures, or to remove animals residing outside HMA boundaries. Generally, bait/water trapping is most effective when a specific resource is limited, such as water during the summer months. For example, in some areas, a group of animals may congregate at a given watering site during the summer because few perennial water resources are available nearby. Under those circumstances, water trapping could be a useful means of reducing the number of animals at a given location, which can also relieve the resource pressure caused by too many animals. As the proposed bait and/or water trapping in this area is a low-stress approach to gathering of animals, such trapping can continue into the foaling season without harming the females or foals.

Impacts to individual animals would be similar to those for helicopter gathers and could occur as a result of stress associated with the gather, capture, processing, and transportation of animals. The intensity of these impacts would vary by individual and would be indicated by behaviors ranging from nervous agitation to physical distress. Mortality of individual animals from these activities is rare but can occur. Mortality rates from water/bait trapping wild horses are comparable or even slightly above those observed for helicopter drive trapping (Scasta 2020). Other impacts to individual animals include separation of members of individual bands and removal of animals from the population.

Indirect impacts can occur to animals after the initial stress event and could include increased social displacement or increased conflict between males. These impacts are known to occur intermittently during gather operations. Traumatic injuries could occur and typically involve bruises caused by biting and/or kicking. Animals may potentially strike or kick gates, panels, or the working chute while in corrals or traps, which may cause injuries. These impacts, like direct individual impacts, are known to occur intermittently during gather operations. Since handling, sorting, and transportation of animals would be similar to those activities under helicopter drive trapping, the direct and indirect impacts would be expected to be similar as well. Past gather data shows that euthanasia, injuries, and death rates for both types of gathers are similar.

GPS Radio Collaring and Tail Tagging

Using GPS-enabled radio-telemetry devices to monitor horses that are returned to the Clan Alpine HMA could lead to better understandings about horse resource use, habitat preference, home range, and movement patterns, as well as measures of individual survival and foaling rates. Based on numerous studies that have used modern radio collars with remote releases and tags to study the ecology of wild ungulates and equids in particular, the current design of these devices has minimal effects on the animals wearing them. The impact of radio collars and tags is very minimal. For example, from March 2015 into 2020 researchers at the U.S. Geological Survey conducted a preliminary study on captive wild horses and burro jennies to determine proper fit and wear of radio collars (Schoenecker et al. 2020). The condition of wild horses wearing radio collars was compared to non-collared controls and documented with photographs. In addition, both collared individuals and controls were observed for 80 minutes each week for 14 weeks to quantify any impact of the collar on their behavior and health. At the end of the study period (2020) the collars were removed. Analyses indicate that mares had almost no impact in terms of rubbing or wear from radio collars and behavior of collared and uncollared mares did not differ (Schoenecker et al. 2020). There was also no impact of radio tags on behavior or wear.

Although they are unlikely, there are some possible effects from the use of collars on horses. All collars would have two independent mechanisms to cause the collars to be mechanically released from the animals: a drop-off mechanism set to release on a pre-determined date (usually 24-30 months after placement) and a triggerable drop-off mechanism that can be engaged with an ultra high frequency (UHF) signal. On stallions, on rare occasions, a collar over an ear has been observed, so no stallions would be collared. There have been no reports that the BLM is aware of, of a wild horse being caught by the collar on vegetation. All collared mares would be monitored at least once per month, to confirm that no abrasions are occurring. Collars may be fitted too tightly, or a horse may grow, tightening the collar. If these situations are observed, the remote-release function would be deployed remotely. If the remote-release drop-off failed, the

collar would be removed after capturing the animal through approved methods part of the Proposed Action. Serious neck abrasions or sores have not been reported in the wild where BLM-managed wild horses have been collared recently (e.g., Collins et al., 2014; Schoenecker et al., 2020). If neck abrasions or sores caused by a collar are observed and have not healed within 4 weeks of when it is sighted, the collar's remote release would be deployed or the horse would be captured as soon as possible to remove the collar.

No effects are expected from the tail tags (King et al. 2022); however, it is possible that they may form an irritation to individuals should vegetation get tangled in the tail. In this case it is expected that the tag would ultimately rip out of the hair (leaving no injury) as the horse rubs it. Similarly, the BLM's observation has been that tail tags eventually fall off the animal as the tail hair grows out, typically within a year.

Transport, ORCs, ORPs, and Adoption Preparation

During transport, potential impacts to individual animals can include stress, as well as slipping, falling, kicking, biting, or being stepped on by another animal. Unless animals are in extremely poor condition, it is rare for an animal to die during transport.

Recently captured animals, generally females, in very thin condition may have difficulty transitioning to feed. A small percentage of animals can die during this transition; however, some of these animals are in such poor condition that it is unlikely they would have survived if left on the range.

During the preparation process, potential impacts to animals are similar to those that can occur during transport. The chance of injury or mortality during the preparation process is low but possible.

Mortality at ORCs averages approximately 5 percent (GAO-09-77, Page 51), which includes animals euthanized due to a pre-existing condition, animals in extremely poor condition, animals that are injured and would not recover, animals that are unable to transition to feed, and animals that die accidentally during sorting, handling, or preparation.

ORPs, known formerly as long-term holding pastures, are designed to provide excess horses with humane, and in some cases lifelong, care in a natural setting off of public rangelands. Animals are maintained in grassland pastures large enough to allow free-roaming behavior and with the forage, water, and shelter necessary to sustain them in good condition. Females and sterilized males (geldings) are segregated into separate pastures. About 37,000 animals in excess of the current adoption or sale demand (because of age or other factors such as economic recession) are currently located on private land pastures in Oklahoma, Kansas, Iowa, Missouri, Montana, Nebraska, Utah, Wyoming, and South Dakota. The establishment of ORPs is subject to a separate NEPA and decision-making process. Located mainly in mid- or tallgrass prairie regions of the United States, these ORPs are highly productive grasslands compared to more arid western rangelands. These pastures comprise about 400,000 acres (an average of about 10-11 acres per animal). Of the animals currently located in ORPs, less than 1 percent are age 0-4 years, 49 percent are age 5-10 years, and about 51 percent are age 11+ years.

Potential impacts to animals from transport to adoption, sale, or ORPs are similar to those previously described. One difference is when shipping animals for adoption, sale, or ORPs, animals may be transported for up to a maximum of 24 hours. Immediately prior to transportation, and after every 24 hours of transportation, animals are offloaded and provided a minimum of 8 hours on-the-ground rest. During the rest period, each animal is provided access to unlimited amounts of water and two pounds of good quality hay per 100 pounds of body weight with adequate space to allow all animals to eat at one time.

A small percentage of the animals may be humanely euthanized if they are in very poor condition due to age or other factors. Animals residing on ORP facilities live longer, on the average, than animals residing on public rangelands, and the natural mortality of animals in ORP averages approximately 8 percent per year, but can be higher or lower depending on the average age of the animals pastured there (GAO 2008).

Horses remaining or Released Back into the Clan Alpine HMA following Gather Under Alternatives 1, 2 and 3:

The horses that are not captured may be temporarily disturbed and may move into another area during the gather operations. Except for changes to herd demographics, the direct population-wide impacts from a gather have proven, over the last 20 years, to be temporary in nature with most if not all impacts disappearing within hours to several days of when animals are released back into the HMA.

No observable effects associated with these impacts would be expected within one month of release, except for a heightened awareness of human presence, and possible changes in specific band composition. There is the potential for the animals that have been desensitized to vehicles and human activities to return to areas where they were gathered if released back into the HMA. The horses that remain in the HMA following the gather would maintain their social structure and herd demographics (age and sex ratios) as the proposed gathers would mainly be targeting specific individuals or bands. No observable effects to the remaining population from the gather would be expected.

Some animals may be treated with BLM approved contraceptives or other BLM approved birth control methods and released back into the HMA. These animals would be expected to quickly assimilate back into their home ranges and join bands of animals remaining in the HMA. These animals may be held in corrals for 30 days to receive a booster for contraceptives or other contraceptive procedures.

There may be some animals with certain characteristics that may be desirable to maintain in the population these animals may also be released. Inbreeding is not thought to be an issue within the HMA, however if monitoring shows that levels of genetic diversity are determined to be an issue, a few horses from other HMAs may be released into the HMA.

Impacts of Alternative 4 (No Action)

Under Alternative 4, there would be no active management to control the population size within the established AML at this time. If there is no gather, animal populations would continue to grow. Without a gather and removal now, the horse population could reach 7,157 horses in 10

years at an average rate of increase of 15 percent per year. However, limited forage and/or water resources would likely cause a mass die-off of wild horses and native wildlife through starvation and/or dehydration before the population reached this level.

Grazing use by wild horses would continue to exceed the amount of available forage. Competition between wildlife, livestock, and wild horses for limited forage and water resources would continue (NRC 2013). Damage to rangeland resources would continue or increase, potentially to the point of irreversible loss of native perennial vegetation that provides forage and wildlife habitat. Over time, the potential risks to the health of individual animals would increase, and the need for emergency removals to prevent their death from starvation or thirst would also increase. Over the long term, the health and sustainability of the wild horse population is dependent upon achieving a thriving natural ecological balance and sustaining healthy rangelands. Allowing wild horses to die of dehydration or starvation would be inhumane and would be contrary to the WFRHBA which requires that excess animals be immediately removed when necessary to achieve a thriving natural ecological balance. Allowing rangeland damage to continue to result from wild horse overpopulation would also be contrary to the WFRHBA which requires the BLM to “protect the range from the deterioration associated with overpopulation”, “remove excess animals from the range so as to achieve appropriate management levels”, and “to preserve and maintain a thriving natural ecological balance and multiple-use relationship in that area.”

Cumulative Effects

Impacts Common to Action Alternatives (1, 2, and 3)

The cumulative effects associated with the capture and removal of excess animals includes gather-related mortality of less than 1 percent of the captured animals (GAO 2008, Scasta 2020), about 5 percent per year associated with transportation, short-term holding in off-range corrals, adoption, or sale with limitations, and about eight (8) percent per year associated with ORPs (GAO 2008). In general, animals actually have higher annual survival rates on ORPs when effects of age are controlled for, because adequate forage and water are available. The higher apparent mortality rate is due to the tendency for younger animals to be adopted, so the animals on the ORPs are older than the average animal on the range; older adult wild horses have lower survival rates general (Ransom et al. 2016). This compares with natural mortality on the range ranging from about 5-8 percent per year for foals (animals under age 1), about 5 percent per year for horses ages 1 to 15, and 5-100 percent for animals ages 16 and older (Garrott and Taylor 1990; Jenkins 2000, Ransom et al. 2016). By comparison, in situations on the range where forage and/or water are limited, mortality rates increase, with the greatest impact to young foals, nursing females, and older animals. Animals can experience lameness associated with trailing to/from water and forage, foals may be orphaned (left behind) if they cannot keep up with their dam, or animals may become too weak to travel. After suffering, often for an extended period, the animals may die. If these conditions arise, BLM would need to conduct emergency gathers to prevent the wild horses from suffering from dehydration or starvation.

While humane euthanasia and sale without limitation of healthy animals for which there is no adoption demand are authorized under the WFRHBA, the BLM does not include those methods in management. Congress prohibited the use of appropriated funds for this purpose between 1987 and 2004 and again since 2010.

The other cumulative effects which would be expected under the Action Alternatives would include continued improvement of upland vegetation conditions, which would in turn benefit native wildlife and wild horse populations as forage (habitat) quality and quantity are improved over the current level. Benefits from a reduced horse population would include fewer animals competing for limited forage and water resources. Cumulatively, there should be more stable horse populations, healthier rangelands, healthier horses, and fewer multiple use conflicts in the area over the short and long-term. Over the next 15 to 20 years, continuing to manage wild horses within the established AML range would achieve a thriving natural ecological balance and multiple use relationship on public lands in the area.

Cumulative Impacts of Alternatives 1 and 3 (Proposed Action)

Application of fertility controls and adjustment of sex ratios to favor males should slow population growth and result in fewer gathers and less frequent disturbance to individual wild horses and the herd's social structure. However, return of wild horses back into the HMA could lead to decreased ability to effectively gather horses in the future as released horses learn to evade the helicopter.

Cumulative Impacts of Alternative 2

Because no population growth suppression methods would be done, more horses would need to be removed in the future as a result of a greater rate of population increase, compared to Alternatives 1 or 3.

Cumulative Impacts of Alternative 3

Impacts would be similar to Alternative 1 except that some released mares could be sterilized, or stallions neutered. It is expected that permanent sterilization of female animals would require fewer animals to be gathered for vaccine treatment or re-treatment than if only contraceptive vaccines were used, because the mares treated with contraceptive vaccines can return to fertility after one or more years.

Cumulative Impacts of Alternative 4 (No Action)

Under the No Action Alternative, the wild horse population could reach over three thousand wild horses in four years. Movement outside the Clan Alpine HMA and onto private lands would be expected as greater numbers of wild horses search for food and water for survival and impact larger areas of public lands. Heavy to excessive utilization of the available forage would continue and the water available for use could become increasingly limited. Ecological plant communities would be further damaged to the extent that they are no longer sustainable, and the wild and horse population would be expected to crash periodically (NRC 2013).

Emergency removals could be needed to prevent individual animals from suffering or death caused by insufficient forage and water. These emergency removals could occur as early as a few years from now. During emergency conditions, competition for the available forage and water increases. This competition generally impacts the oldest and youngest animals as well as lactating females first. These groups would experience substantial weight loss and diminished health, which could lead to their prolonged suffering and eventual death. If funding and off-range facility space are not available, it is possible that the BLM would not be in a position to help

starving animals via emergency gathers. If emergency actions are not taken, widespread wild horse death by starvation is possible and the remaining population could become severely skewed toward a higher frequency of males, as they are generally the strongest and healthiest portion of the population. An altered age structure would also be expected.

Cumulative impacts of increasing wild horse herd sizes would result in irreversible loss of native vegetation, forgoing the opportunity to improve rangeland health, and forgoing the opportunity to properly manage wild horses in balance with the available forage and water and other multiple uses. Attainment of site-specific vegetation management objectives and Standards for Rangeland Health would not be achieved. AML would not be achieved and the opportunity to collect the scientific data necessary to re-evaluate AML levels in relationship to rangeland health standards would be lost.

3.4.8 Weeds (i.e., Noxious, Invasive, Non-native, and Nuisance weed species)

Affected Environment

Noxious weeds are defined by the Nevada Department of Agriculture as any species of plant which is, or is likely to be, detrimental or destructive and difficult to control or eradicate. Control of these species is regulated by state and federal law. An invasive species is any non-native plant that easily multiplies and causes multiple negative impacts on the natural ecosystem or landscape. A nuisance weed, as defined by the Nevada Department of Agriculture, is any plant which is seen as bothersome and is ordinarily found throughout the state. These nuisance weeds have varying levels of negative impact and are not regulated by the state. Any of these categories of weeds may be a non-native species, meaning it originated in an area outside the local geography. Non-native species frequently lack the ecological control mechanisms from where they originated and can become invasive in new landscapes. All of these species can be analyzed together with regard to the alternatives in this environmental assessment.

Several noxious weeds have been found in both the project area and the cumulative impact area, including but not limited to Salt Cedar and Russian Knapweed. Because a comprehensive weed inventory has not been completed for the entire area, we would expect the cumulative and project area of analysis to be typical of the CCD and it may have undetected weed populations.

Grazing, especially at heavy and severe intensities, can alter plant community dynamics in many ways. One of these changes includes an increase in noxious, invasive, non-native, and nuisance weed species compared to more desirable species. When horses exceed the upper AML, we would expect to see an increase in these weedy species. At the most severe levels of grazing, even noxious weed species may be consumed by malnourished animals in search of forage. Many of these species are toxic to wild horses, and this toxicity can be even more dangerous when animals are in a weakened condition.

Impacts Common to Action Alternatives (1, 2, and 3)

Under the three alternatives that aim to lower the wild horse population, it is expected that there would be a positive influence in reducing the weed population and spread. This would also mitigate the danger that noxious weeds could poison the wild horses if the grazing persists into more severe levels. Removal of excessive grazing pressure may create a short-term increase in weedy annual species but would allow for a long-term plant community change towards

perennial species through the process of succession. This would be a favorable change in land health.

Gather operations create a potential to introduce new weed species into the specific trap, viewing, and holding areas through equipment, hay for domestic work horses, and vehicles. However, stipulations under the Proposed Action which include surveying for noxious weed species at gather sites and limiting feed to certified weed free feed would minimize these impacts.

Impacts under Alternative 4

Under the No Action Alternative, heavy grazing by wild horses would continue to alter the plant community in a way that spreads weed species. As the grazing becomes severe, these weed species may be consumed by wild horses that have no other available forage. Under stressful conditions, such as drought and lack of forage, these species, some of which are toxic, could harm horses. Over the long term, this spread in weedy species would deteriorate the total forage production of rangeland within the HMA and limit the carrying capacity. These annual species are also more susceptible to changes in forage production and would be severely limited in times of drought endangering the wild horses.

Cumulative Impacts to Weeds

Cumulative impacts common to Action Alternatives (1, 2, and 3)

Under the alternatives that would lower the horse population, a positive influence in reducing the weed population and spread would be expected, both over a longer time frame and also from a larger area perspective. This would also mitigate the danger that noxious weeds could poison the wild horses if the grazing persists into more severe levels.

Cumulative impacts under Alternative 4

Under the No Action Alternative, it would be expected to see a spread and proliferation of weed species as well as an increased threat to wild horses under times of severity. The cumulative effect of no action would enlarge this trend to a broader area and impact additional areas beyond the HMA and immediate vicinity. The problem would continue to spread within and outside the Clan Alpine HMA until the population was brought under control.

3.4.9 Wilderness Areas

Affected Environment

The Clan Alpine Mountains Wilderness is rugged and mountainous. Elevations range from 3,600 feet in Dixie Valley up to the central ridge of the range, which rises to nearly 10,000 feet and includes Mount Augusta (9,974 ft), Healy Peak (8,845 ft), and Shaley Peak (8,812 ft). The proposed project area includes 128,362 acres of wilderness within the Clan Alpine Mountains Wilderness.

The Wilderness Act of 1964 established a “National Wilderness Preservation System to be composed of federally owned areas designated by Congress as ‘wilderness areas’, these shall be administered for the use and enjoyment of the American people in such manner as will leave them unimpaired for future use and enjoyment as wilderness, and so as to provide for the

protection of these areas, the preservation of their wilderness character, and for the gathering and dissemination of information regarding their use and enjoyment as wilderness.” The Wilderness Act of 1964 mandates that wilderness areas are managed in a manner that maintains or enhances the areas’ Wilderness Characteristics. Wilderness Characteristics include untrammelled, natural, undeveloped, and outstanding opportunities for solitude or a primitive and unconfined type of recreation.

Environmental Effects

Alternatives 1-3

The action alternatives 1-3 include helicopter overflights under 100 feet to herd wild horses in areas that overlap with wilderness. All temporary trap sites are located outside of the wilderness boundaries. The Minimum Requirements Decision Guide (MRDG) identifies the use of helicopter overflights within wilderness as the minimum tools required to conduct the action alternatives 1-3.

The Wilderness Act defines “untrammelled” as a place where ecological systems are unhindered and free from intentional actions of modern human control or manipulation. Herding wild horses within wilderness for capture is a trammeling activity, as it is a human manipulation of the natural processes or conditions that exist within the wilderness boundary. In this case, the presence of wild horses is the natural condition, as legislated by the Wild Free-Roaming Horses and Burros Act of 1971 (P.L. 92-195), and as a result of the presence of wild horses in the affected wilderness areas prior to their designation as wilderness. The action alternatives 1-3 would negatively impact the untrammelled quality of wilderness character because the action alternatives are a trammeling action as an anthropocentric management approach is being taken to manage wild horse populations.

No motorized vehicles, no landing of aircraft, and no temporary installments would be located within wilderness, therefore the undeveloped character of wilderness would not be affected. Any dart-based delivery of fertility control vaccines would need to be conducted without benefit of motorized vehicles to access lands within the wilderness. The action alternatives 1-3 would impact the opportunity for solitude and primitive recreation during the gather activities throughout the indefinite duration of this proposal. The impact to solitude or primitive and unconfined recreation is expected to occur as a result of the presence and noise of a helicopter used for the duration of the gather. The entirety of the wilderness areas would not be negatively impacted as the action is ephemeral by nature, though this quality of wilderness character would be negatively impacted for the duration of gather and monitoring operations where the presence and sound of helicopter use is prevalent.

The action alternatives 1-3 aim to remove excess wild horses to reduce their population to low AML for the proposed area overlapping the wilderness. By removing the excess wild horses, the natural quality of wilderness character may be preserved and enhanced by reducing the degradation caused by excess animals within the wilderness. Removing the excess horses may reduce or eliminate the impact of excess animals competing with native wildlife for forage utilization, excess trampling of native vegetation and reduce trampling watersheds and other riparian areas within the wilderness areas.

Alternative 4

The No Action Alternative would not result in direct impacts from gather operations. The opportunities for solitude and primitive recreation, untrammled, and undeveloped qualities of wilderness character would not be affected. However, the natural quality of wilderness character may be indirectly impacted. If the wild horse population exceeds its AML, there are potential herd health and impacts to the landscape. Excess horses may compete with native populations of wildlife, overgraze riparian areas, and trample native vegetation at and near springs and other water sources. For these reasons, the natural quality of wilderness character would not be preserved and would potentially degrade.

Cumulative Impacts

Impacts to wilderness from past actions such as road development/improvement, grazing, range improvements, recreation, and off-highway vehicle use have been accounted for within the designation of the Wilderness boundary and BLM wilderness management plans.

Impacts from present and future actions are similar and should be limited to outside of the Wilderness boundary. Horse gather operations have occurred in the past and would likely continue into the reasonably foreseeable future. Impacts of these operations usually have temporary negative impacts to solitude during operations but have long term beneficial effects to naturalness.

Alternative 1 (Proposed Action)

The cumulative impacts from the Proposed Action, in addition to past, present, and reasonably foreseeable future actions, would have temporary negative impacts to solitude during operations but would have beneficial impacts to naturalness.

Alternative 2

Cumulative impacts are similar to those described in the Proposed Action.

Alternative 3

Cumulative impacts are similar to those described in the Proposed Action.

Alternative 4

The cumulative impacts from the No Action Alternative, in addition to past, present, and reasonably foreseeable future actions would have no temporary negative impacts to solitude during operations but would have negative impacts to naturalness.

3.4.10 Socioeconomics

Socioeconomics are considered to be the value placed on the Clan Alpine wild horses that may contribute to local economies. At this time, there are no registered guided tours or known sales of commercial pictures being sold to increase the value to the communities from the wild horses that reside within or outside the Clan Alpine HMA. It is acknowledged that some people who drive through the general area may stop and view or photograph the horses and BLM may not be fully aware of the magnitude of socioeconomic impacts from those activities.

The overpopulation of wild horses can negatively affect wildlife enthusiasts who hunt,

photograph, and guide big game animals. Some big game animals may have left the area or be in poor condition due to the overpopulation of wild horses. Although grazing permits have not been recently reduced as a direct result of the overpopulation, the resource degradation caused by excess horses on the land, as well as impacts from recent drought, have cumulatively placed a strain on many agriculture-related businesses in the area.

Based on available information, it is not possible to quantify the revenue or losses attributable to the Clan Alpine wild horses. It is recognized that for local industries, the excess horses negatively impact resources and many businesses that rely on healthy range conditions and healthy wildlife. It is also recognized that any revenue brought by tourism and photography of wild horses in the HMA is unknown.

4.0 Mitigation Measures and Suggested Monitoring

Proven mitigation and monitoring are incorporated into the Proposed Action through SOPs, which have been developed over time. These SOPs (Appendix B, D, E, and F) represent the “best methods” for reducing impacts associated with gathering, handling, and transporting wild horses and collecting herd data. Hair follicle samples would be collected to establish a genetic baseline for the wild horses from the Clan Alpine HMA; additional samples would be collected during future gathers (in 10-15 years) to determine trend. If monitoring indicates that genetic diversity (as measured in terms of observed heterozygosity) is not being adequately maintained, a small number of fertile mares and /or stallions from HMAs in similar environments may be added every generation (every 8-10 years) to avoid inbreeding depression and to maintain acceptable genetic diversity. Samples may also be analyzed to increase the BLM’s understanding about genetic ancestry in this herd, or other characteristics. GPS radio collars and/or tail tags may be used to facilitate monitoring of wild horse spatial use patterns and demographic rates. Ongoing resource monitoring, including climate (weather), and forage utilization, population inventory, and distribution data would continue to be collected.

Required Design Features (RDF)

The following RDFs would be applied to be consistent with the Greater Sage-Grouse Conservation Plan (BLM 2014b):

1. RDF Gen 12: Control the spread and effects of nonnative, invasive plant species (e.g., washing equipment, minimize unnecessary surface disturbance). All projects would be required to have a noxious weed management plan in place prior to construction and operations.
2. RDF Gen 13: Implement project site-cleaning practices to preclude the accumulative of debris, solid waste, putrescible wastes, and other potential anthropogenic subsidies for predators of GRSG.
3. RDF Gen 19: Instruct all construction employees to avoid harassment and disturbance of wildlife, especially during the GRSG breeding (e.g., courtship and nesting) season. In addition, pets shall not be permitted on site during construction.

4. RDF Gen 22: Load and unload all equipment on existing roads, pull outs, or disturbed areas to minimize disturbance to vegetation and soil.

5.0 List of Preparers

The following list identifies the interdisciplinary team members' areas of responsibility.

Table 8: BLM Preparers/Reviewers

Name	Title	Project Expertise
John Axtell	WH&B Specialist; Wildlife Biologist	Wild Horses & Burros
Elizabeth Freniere	Project Co-lead; Rangeland Management Specialist	Wild Horses & Burros, Livestock Grazing
Mark Mazza	Project Co-lead; Assistant Field Manager	Livestock Grazing, Invasive and Non-native Species, Noxious Weeds, Soils
Stacy Sylvester	Rangeland Management Specialist	Migratory Birds, Threatened or Endangered Species, Sensitive Species Animals, General Wildlife
Jonathan Gordon	Wildlife Biologist	Migratory Birds, Threatened or Endangered Species, Sensitive Species Animals, General Wildlife
Jason Wright	Archaeologist	Cultural Resources, Native American Religious Concerns, Paleontology, Visual Resources
Dave Schroeder	Environmental Compliance Specialist	Wastes, Hazardous or Solid; Geothermal Resources
Cassandra Rivas	Natural Resource Specialist	Sensitive Species Plants
Sabrina McCue	Rangeland Management Specialist	Soils, Vegetation
Garrett Swisher	Wild Horse & Burro Specialist	Socioeconomics
Donald Shannon	Fire Ecologist	Fire Management
Kenneth Depaoli	Geologist	Geology, Mineral Materials
Melanie Hornsby	Planning and Environmental Coordinator / Military Liaison	NEPA Compliance
Niki Cutler	Hydrologist	Farmlands (Prime & Unique), Floodplains, Water Quality (Surface/Ground), Wetlands/Riparian Zones, Water Quantity (Surface/Ground)
Paul Amar	Outdoor Recreation Planner	Recreation, Travel Management, Wilderness/WSA, Lands with Wilderness Characteristics
Mike Withrow	Outdoor Recreation Planner	Recreation, Travel Management, Wilderness/WSA, Lands with Wilderness Characteristics
Katy Paiva	Realty Specialist	Land Use Authorization, Access
Frank Giles	State Air Resource Specialist	Air Quality, Climate Change/GHG Emissions

5.1 Persons, Groups, or Agencies Consulted

- Churchill County
- Fallon Naval Air Station
- Fallon Paiute-Shoshone Tribe
- Lovelock Paiute Tribe
- Nevada Department of Wildlife
- Yomba Shoshone Tribe
- United States Fish and Wildlife Service

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