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MANAGEMENT**

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Spring Creek Basin Herd Management Area Plan (HMAP) Revision

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CHAPTER 1

1.0 INTRODUCTION

1.1 Background

The 1985 San Juan and San Miguel Resource Management Plan (RMP) established and directed BLM to manage for wild horses within the Spring Creek Basin Herd Management Area (HMA). As a result of this decision, BLM developed and approved a Herd Management Area Plan (HMAP) in 1986 for the Spring Creek Basin HMA. This HMAP identified resource objectives as well as direction for the long-term management of wild horses within the HMA. Subsequently, in 1994 the HMAP was revised to incorporate current Ecological Site Inventory (ESI) data, changes in BLM wild horse policy, new strategic plan guidance for BLM and Colorado and updated management information.

In 2015, a new Resource Management Plan (RMP) was approved for the Tres Rios Field Office (TRFO), BLM. The new RMP directed BLM to revise and update the 1994 Spring Creek Basin HMAP, in order to incorporate specific goals, objectives and techniques for guiding the long-term management of wild horses within the HMA consistent with the resource direction contained in the new RMP.

1.2 Purpose and Need for the Proposed Action

Purpose: The BLM is proposing to revise the 1994 Spring Creek Basin HMAP. Herd Area Management Plans identify specific management actions, goals, objectives and monitoring for managing wild horses and/or burro herds and their habitat.

Need: The 2015 RMP directed BLM to revise the 1994 Spring Creek Basin HMAP. This revision will incorporate specific goals, objectives, and techniques for guiding the long-term management of wild horses within the HMA consistent with the resource direction contained in the new RMP.

1.3 Decision to be Made

The BLM will decide specific wild horse management actions to be implemented over the long-term within the Spring Creek Basin HMA which address the following: 1) appropriate management level (AML) of wild horses; 2) fertility control measures; 3) removal criteria for excess wild horses; 4) preferred removal techniques; 5) genetics; 6) population dynamics; 7) sustaining healthy productive rangelands; 8) sustaining healthy wild horse herds; and 9) range improvements.

1.4 Conformance with BLM Land Use Plan(s)

The proposed action is in conformance with the following desired conditions and management objectives contained in the approved Tres Rios Field Office Resource Management Plan & Record of Decision (February 27, 2015):

Desired Conditions

- 3.9.1 The Spring Creek Basin wild horse herd population is within an acceptable range.
- 3.9.2 Maintain adequate levels of genetic diversity, to avoid excessive levels of inbreeding.
- 3.9.3 Vegetation is diverse and provides enough cover in order to reduce salinity and to prevent sediment from reaching Disappointment Creek and the Dolores River.
- 3.9.4 The herd is managed via a combination of traditional and non-traditional methods including bait trapping, fertility control programs, or other methods accepted by the National Wild Horse and Burro program.
- 3.9.5 Vegetation within the HMA is in a stable or upward trend, including diverse species composition and reduced erosion to provide a resilient ecosystem.
- 3.9.6 The Gypsum Valley cat-eye and pygmy sagebrush populations are maintained.

Objectives

3.9.7 Within 5 years, revise the Spring Creek Basin HMAP (BLM 1994a) to incorporate specific goals, objectives, and techniques to guide management of the Spring Creek Basin HMA, including management of Gypsum Valley cat-eye and pygmy sagebrush.

1.5 Relationship to Statutes, Regulations, or Other Plans

- Wild Free-Roaming Horses and Burros Act of 1971; PL 92-195 as amended by PL-579 (FLPMA) and PL 95-514 (PRIA).
- Section 302(b) of Federal Lands Policy Management Act of 1976.
- Public Rangeland Improvement Act of 1978 (PL 95-514).
- Title 43 Code of Federal Regulations (CFR) Parts 4700

43 CFR § 4710.3-1

“Herd management areas shall be established for the maintenance of wild horse and burro herds. In delineating each herd management area, the authorized officer shall consider the appropriate management level for the herd, the habitat requirements of the animals, the relationships with other uses of the public and adjacent private lands, and the constraints contained in §4710.4. The authorized officer shall prepare a herd management area plan, which may cover one or more herd management areas.”

- Wild Horses and Burros Management Handbook (H-4700-1) which provides guidance for the protection, management and control of wild horse and burros in accordance with the 1971 Wild Free Roaming Horse and Burro Act, as amended, and the implementing regulations in 43 CFR 4700.

- Periodic Introduction of Wild Horses within the Spring Creek Basin Herd Management Area (HMA) in order to maintain genetic viability (CO-SJFO-01-053 EA). This environmental assessment analyzed the impacts of periodically introducing mares from outside HMA's in order to maintain the observed heterozygosity within the existing wild horse population.
- Spring Creek Basin HMA 2011 Wild Horse Gather Plan Environmental Assessment (DOI-BLM-CO-S010-2011-0062). This environmental assessment analyzed the impacts of using Porcine Zona Pellucida (PZP) vaccine for population control efforts within the HMA.
- Spring Creek Basin Herd Management Area Bait Trap Gathers Environmental Assessment (DOI-BLM-CO-S010-2015-0001 EA) analyzed the impacts of using bait trapping as BLM's preferred method for removing excess wild horses from the HMA.
- 2019 Land Health Evaluation Report for the Spring Creek Basin Wild Horse Herd Management Area (October 2019).
- 2019 Spring Creek Basin Herd Management Area, Wild Horse Carrying Capacity Analysis.

1.6 Scoping and Identification of Issues

The BLM Tres Rios Field Office conducted internal scoping to identify environmental issues and concerns associated with the Proposed Action. The issues identified for analysis are summarized below:

Wild Horses

- What is the Appropriate Management Level (AML) for wild horses within the Spring Creek Basin HMA?
- What would be the potential effects to the overall long-term health of wild horses in the HMA?
- What would be the potential effect to observed heterozygosity (**H_o**) of the wild horse population?
- What would be the potential effects from the use of fertility control methods for reducing population growth within the wild horse population?

Public Land Health Standards

- What would be the wild horses' population's impact in relation to the attainment or non-attainment of the Colorado Public Rangeland Health Standards within the Spring Creek Basin HMA?

1.7 Issues Considered but Eliminated from Further Analysis

Several potential issues pertaining to areas of critical environmental concerns (ACEC), air quality, paleontology, cultural resources, visual resources, recreation, fuels and fire management, geology, invasive species, vegetation, special status plant and animal species, wetlands and riparian zones, water quality, migratory birds, wildlife, land with wilderness characteristics and wilderness study areas were considered by the interdisciplinary team, but were dismissed from further analysis. The rationale for these conclusions can be found in the Interdisciplinary Team Checklist Contained in Appendix B.

CHAPTER 2

2.0 PROPOSED ACTION AND ALTERNATIVES

2.1 Alternative A – Proposed Action

The proposed action alternative would implement the following objectives for managing wild horses within the Spring Creek Basin HMA:

Table 2.1.1 Management Objectives

Management Objective(s)	Monitoring	Implementation
A. Control Population Numbers		
Manage the wild horse population within an Appropriate Management Level (AML) of between 50 - 80 adult wild horses to protect the range from deterioration associated with overpopulation.	Conduct population inventories on an annual basis or at least a minimum of every three years depending on funding.	The existing Appropriate Management level may be re-evaluated, and adjusted as needed, following analysis of resource conditions of the HMA.
Manage wild horses within the confines of the HMA boundaries.	Determine herd size and annual growth rate through population surveys.	A gather will be initiated when monitoring data indicates that excess wild horses must be removed from the HMA to prevent a deterioration in range ecological conditions that will adversely affect rangeland health.
	Utilization monitoring will occur at the existing long-term trend sites and/or at other randomly located points within the HMA.	Bait trapping techniques will be the preferred method for conducting gathers. In event that bait trapping efforts are unsuccessful a helicopter may be utilized to gather the remaining excess animals.
	Complete use pattern mapping of wild horse use within the HMA.	Emergency gathers would be initiated in the event of extreme environmental conditions such as drought and/or wildfire which limits forage and/or water availability resulting in potential negative
	Rangeland trend data will be collected at established long-term trend monitoring locations within the HMA.	

Management Objective(s)	Monitoring	Implementation
		<p>impacts to wild horse health and/or degradation in rangeland health conditions.</p> <p>A determination of excess wild horses will be based on at least one or more of the following monitoring triggers:</p> <p>Utilization: Average utilization levels on key forage upland species exceed 35% of the current year's growth for a period of 2 or more consecutive years.</p> <p>Use Pattern Mapping: Use pattern mapping shows that areas receiving an average utilization level of 35% or greater are expanding within the HMA.</p> <p>Rangeland Trend: Data collected at established long-term trend sites indicate a decline in range conditions.</p> <p>When wild horses stray outside of the HMA or onto private property.</p>
B. Additional Population Control Measures		
<p>On average strive to maintain a growth rate of less than 10 percent annually.</p> <p>Manage for a long-term sex ratio close to a natural ratio of 50% males and 50% females.</p>	<p>Annually monitor population growth.</p> <p>Assess the effectiveness of population control efforts by conducting post-fertility control monitoring of treated mares following the foaling season.</p>	<p>Continue the use of the immuno-contraceptive ZonaStat-H (native PZP) as the preferred method for reducing population growth.</p> <p>Other BLM approved fertility control methods such as PZP-22 and GonaCon-Equine may also be used for reducing population growth.</p> <p>Any new BLM approved population control vaccine formulations may be used as directed by the National Wild Horse and Burro Program. The use of any new fertility controls and/or population growth suppression methods would use the most current best management practices and humane procedures available for the implementation of new controls.</p>

Management Objective(s)	Monitoring	Implementation
		Introduced mares will not be administered fertility control measures until after they contribute at least 1 or more foals to the population.
C. Herd Age Dynamic		
<p>Manage wild horses to achieve as closely as possible the following relative age distribution:</p> <p>10 – 25% (ages 0-5) 50 – 80% (ages 6-15) 10 – 25% (age 16+)</p>	Document age classes of animals through annual census information and post-gather result.	<p>Maintain this information in an electronic BLM database with partners support.</p> <p>During any scheduled gathers and removals, use selective removal to help move the population closer to the desired age distribution.</p>
D. Selective Removal Criteria		
<p>Wild horses will be removed in conformance with BLM's selective removal strategy.</p> <p>Maintain or improve animal conformation within the HMA.</p>	Maintain photo records of wild horses released back into the HMA, and/or introduced from outside HMAs.	<p>Priorities for removal are as follows:</p> <ol style="list-style-type: none"> 1. Four years old and younger. 2. 11-19 years old. 3. 5-10 years old. 4. 20 years and older. <p>In selecting horses for return to the range post-gather, animal size, conformation and genetics will be the priority.</p>
E. Maintain Observed Heterozygosity within the Population		
Maintain adequate levels of observed heterozygosity within the population to avoid inbreeding by augmenting the resident population of animals from other similar HMAs.	<p>In the short-term (1-2 years):</p> <ul style="list-style-type: none"> • Monitor the rate of acceptance of introduced animals into existing bands. • Monitor introduced mares to document whether they successfully breed and reproduce within 2-years of release. <p>In the long-term (10+ years):</p> <ul style="list-style-type: none"> • Genetic diversity will be monitored with respect to observed heterozygosity (Ho; BLM 2010). <p>Maintain photo records of introduced animals and progeny from outside HMA's.</p>	<p>Periodically introduce 2-3 horses from outside HMAs every 4 – 8 years.</p> <p>Mares selected for introduction would be from herds which closely resemble and exhibit the same characteristics of those within the HMA.</p> <p>Only individual horses that exhibit good health and conformation will be selected for introduction.</p> <p>Introduced horses must have a negative Coggins Test.</p> <p>Introduced mares and their offspring will not be selected for removal during scheduled gather operations unless it is deemed an emergency due to drought and/or fire.</p>

Management Objective(s)	Monitoring	Implementation
		<p>Collect hair samples for DNA analysis from all horses released back into the HMA following gathers and removals to detect changes from existing baseline information.</p> <p>Previous genetic testing will be used as baseline information to evaluate observed heterozygosity.</p>
F. Sustain Healthy Populations of Wild Horses		
<p>Manage wild horses to maintain, under normal range conditions, average body condition class score of four or greater.</p>	<p>Visually observe wild horse body condition (Henneke Condition Class Method) throughout the year.</p> <p>Document average body conditions during periodic gathers and/or during population inventories.</p> <p>Regularly assess forage quality and quantity as well as available water sources within the HMA during periods of persistent drought conditions.</p>	<p>Maintain existing water developments to ensure water reliability and availability.</p> <p>Construct new water developments to improve water availability and improve distribution of wild horses within the HMA.</p> <p>Consider emergency removals when needed if animal body condition is less than a Henneke Condition Class Score 3 due to poor forage conditions.</p> <p>Consider emergency gathers in response to drought, wildfire or other unplanned/unforeseen events which significantly limit available forage or adequate water for sustaining a healthy wild horse herd.</p>
G. Ensure Rangeland Health		
<p>Manage wild horses within the HMA to maintain a thriving ecological balance while achieving or making significant progress toward meeting the Public Land Health Standards developed for Colorado.</p> <p>Limit utilization levels on key forage species by wild horses to no more than 35% of the current year's growth.</p> <p>Maintain or improve the trend in vegetation communities within the HMA.</p>	<p>Assess rangeland health approximately every 10 years.</p> <p>Continue to collect ecological condition monitoring data, and any other monitoring information as needed for assessing the health and productivity of existing vegetation communities.</p> <p>Utilization monitoring will occur at the existing long-term trend sites and/or at other randomly located points within the HMA.</p> <p>Develop use pattern maps of the HMA to identify over utilized areas within the HMA.</p>	<p>Conduct rangeland health assessments in accordance with the most recent BLM policies and direction.</p> <p>An evaluation report documenting the findings and conclusions of land health assessments will be prepared and made available to the public.</p> <p>Use pattern mapping and/or utilization monitoring will be collected on an annual basis or when visual observations indicate that utilization levels within the HMA are approaching 35%.</p>

Management Objective(s)	Monitoring	Implementation
	<p>Vegetation trend information will be collected at established long-term trend sites within the HMA.</p> <p>Continue to collect forage production information within the HMA.</p>	<p>Utilization levels would be monitored during the fall/winter period timeframe in order to capture the current year growth on forage plants.</p> <p>Trend monitoring would occur at a minimum of 5 to 10-year intervals.</p> <p>Identify and establish additional site-specific resource management objectives within the HMA as needed.</p> <p>Establish additional long-term monitoring sites within the HMA if it is determined additional locations are needed.</p> <p>Evaluate and adjust AML or identify management actions to address/resolve rangeland health issues if it is determined that Standards for Rangeland Health are not being achieved and it is determined that wild horses are a causal factor.</p> <p>Any adjustments to AML will be based on both resource condition and herd monitoring.</p>
H. Assure Riparian Area Health		
Maintain or improve existing riparian conditions of Wildcat Canyon.	Assess riparian functionality of Wildcat Canyon using the Proper Functioning Condition (PFC) method every 5-10 years.	<p>Maintain existing water sources or develop new water sources as needed to lessen impacts of wild horse use on riparian areas associated with Wildcat Canyon.</p> <p>Consider excluding wild horses from natural spring complexes.</p>
I. Disperse Wild Horse Use		
Disperse wild horse use throughout the Spring Creek Basin HMA so that on average no portions of the HMA receive greater than 35% utilization.	<p>Measure utilization of key forage species at existing key monitoring sites and/or at randomly located points throughout the HMA.</p> <p>Develop use pattern maps of the HMA to determine under-utilized and/or over-utilized areas of the HMA by wild horses.</p>	<p>Maintain or re-construct existing water developments to improve distribution and utilization of the HMA by wild horses.</p> <p>Assess the need for additional water developments for improving distribution of wild horses into under-utilized portions of the HMA.</p>

Management Objective(s)	Monitoring	Implementation
	Monitor movements of wild horses to determine use patterns, seasonal migrations and range of travel.	Use population inventories, on-the-ground observations, or other tracking methods, in conjunction with use pattern mapping, to monitor movements of wild horses within the HMA, and identify preferred use areas. Do not allow fencing within the interior of the HMA boundary that would restrict wild horse movements.
J. Fire Management		
Fire may be used as a management tool for resource benefits within the HMA.	Natural fire ignitions will be assessed as to if they are beneficial to the existing vegetation communities.	Natural fire ignitions occurring within the pinyon-juniper ecologic types may be allowed to burn as a prescribed natural fire. Natural fire ignitions within the salt desert shrub communities will be controlled.
K. Partnership Opportunities		
Provide partnership opportunities to stakeholders, organizations, other agencies, universities, adjacent landowners, and the interested public in monitoring efforts, existing range improvement maintenance activities, new range improvement construction and education activities associated with management of the HMA.	Maintain an updated interested public list for Spring Creek Basin HMA. Send all appropriate notices, links, e-mails and/or hard copies of all wild horse management documents to those on this list.	Continue to partner with volunteer groups in the management of wild horses within Spring Creek Basin HMA. Periodically review and update as needed any Memorandum of Understandings between the BLM and potential partners.
L. Education and Outreach		
Increase public awareness of wild horse issues and management efforts through public education and outreach programs.	Periodically request feedback from all partners and interested public as to effectiveness of public outreach efforts by BLM.	Develop and distribute informational brochures highlighting wild horses and associated management within the Spring Creek Basin HMA. Pursue educational outreach opportunities with local school groups, universities, advocacy groups and interested public. Develop and place informational signage and/or kiosks at the entrance of the HMA regarding wild horses and management actions.

Table 2.1.2 Monitoring Plan

Monitoring Item	How	Who	When
Manage Spring Creek Basin HMA within the established AML to protect the range from deterioration associated with overpopulation.	Population inventories and annual growth rate estimates may be conducted from the ground and/or aerial flights of the HMA.	BLM Resource Specialists will be the only ones allowed to engage in aerial surveys conducted by BLM. BLM, Volunteers and/or Partnership Organizations could coordinate herd size counting efforts on the ground to estimate horse herd size at a given time within the HMA.	Conduct population inventories on an annual basis when possible, or at a minimum of every three years.
Ensure all age classes are represented post gather.	Record ages of animals released post-gather.	BLM Resource Specialist, Volunteers and/or Partnership Organizations.	Every scheduled gather.
Maintain adequate levels of observed heterozygosity within the wild horse population.	Collect hair samples for DNA analysis from all horses released back into the HMA following gathers to detect changes from existing baseline genetic information.	BLM Resource Specialist, Volunteers and/or Partnership Organizations.	Every regularly scheduled gather.
Manage wild horses to achieve an average Henneke body condition class score of 4 or greater.	Visually observe wild horse body condition class (Henneke condition class method). Record average body condition and document other health conditions (i.e. lameness, clubfoot etc.).	BLM Resource Specialist, Volunteers and/or Partnership Organizations.	Population inventories, other site visits and scheduled gathers.
Manage for a long-term sex ratio close to a natural ratio of 50% males and 50% females.	Document number of mares/stallions during population inventory and post gathers.	BLM Resource Specialist, Volunteers and/or Partnership Organizations.	Population inventories and scheduled gathers.
Continually Assess Rangeland Health conditions within the HMA to determine if Public Land Health Standards developed for Colorado are being met.	Assess rangeland health following the procedures outlined in Technical Reference 1734-6 and/or the most recent rangeland health technical reference adopted by the BLM. Collect additional quantitative monitoring	BLM Resource Specialist, Volunteers and/or Partnership Organizations.	Approximately every 10 years for comprehensive Land Health Assessments.

Monitoring Item	How	Who	When
	data such as species composition, vegetation trend, vegetation cover, bare ground, utilization and vegetation production data and/or any other data as needed to assess Range Land Health conditions.		
Functionality of existing riparian areas associated with Wildcat Canyon.	Conduct a condition assessment of riparian areas associated with Wildcat Canyon	BLM Resource Specialist, Volunteers and/or Partnership Organizations.	Approximately every 5 years.
Manage for utilization levels of no more than 35% on average for key forage perennial grass and shrub species within the HMA.	<p>Collect utilization and/or use pattern mapping within the HMA.</p> <p>Utilization monitoring will occur at the existing long-term trend sites and/or at randomly located points within the HMA.</p> <p>Utilization pattern mapping will occur to identify the use areas of wild horses within the HMA.</p>	BLM Resource Specialists. Volunteers and/or Partnership Organizations may assist BLM in data collection.	Periodically within a 10-year period collect utilization and/or use pattern mapping data.
Maintain or improve vegetation trend within the HMA.	Evaluate vegetative trend by re-reading the established long-term trend monitoring sites within the HMA.	BLM Resource Specialists, Volunteers and/or Partnership Organizations may assist BLM in data collection.	A minimum of every 5 – 10 years for vegetation trend studies.
Maintain and/or improve an adequate amounts of forage quantity and quality for wild horses.	Periodically assess the forage capability of the HMA.	BLM Resource Specialists, Volunteers and/or Partnership Organizations.	Periodically within a 10-year period.

Proposed Water Catchments

Under the Proposed Action BLM would construct up to two new water catchments within the HMA. Please refer to Map 1 for proposed water catchment locations. Each water catchment would consist of a 25 x 100-foot above ground steel rain collection structure, polypropylene storage tanks, a short pipeline and a trough equipped with wildlife escape ramps. The estimated ground disturbance for each site is estimated to be ½ acre or less. Please refer to Figures 1 and 2 below for representative collection apron and storage tank. Following construction activities all areas of ground disturbance would be re-seeded with native species and monitored for the

occurrence of noxious weed species. Any infestations of noxious weeds would be treated using BLM approved herbicides.



Figure 1. Photo of catchment apron design.



Figure 2. Photo of 2,500-gallon storage tank.

2.2 Alternative B – No Action

The No Action Alternative would continue to implement the management objectives identified in the existing 1994 Spring Creek Basin Herd Area Management Plan (HMAP). Please refer to Appendix C for a description of management actions contained in the 1994 HMAP.

2.3 Alternatives Considered, but Eliminated from Further Analysis

Intrauterine Devices (IUDs) & Sterilization

An alternative for implanting IUDs in suitable mares and then returning them to the range was considered as a fertility control method for controlling population growth for the Spring Creek Basin HMA but was eliminated from further analysis. Since 2011, the use of the temporary fertility control vaccine ZonaStat-H (native PZP) has been effectively used on an annual basis for reducing population growth within the HMA. Therefore, these two additional methods for controlling population growth were not carried forward for analysis because it would have similar effects to that of the proposed action.

Sex Ratio adjustments of 30 - 40% Mares

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An alternative for implementing a management technique which would reduce the sex ratio of mares to represent no more than approximately 30 - 40 percent of the breeding population within the herd for helping to reduce population growth in the Spring Creek Basin HMA was considered but eliminated from further analysis. Since 2011, the use of the temporary fertility control vaccine ZonaStat-H (native PZP) has been effectively used on an annual basis for controlling population growth within the HMA. In addition, due to the small herd size, BLM has been periodically introducing mares from outside HMA's in order to maintain the heterozygosity of this herd. Therefore, reducing the ratio of mares to stallions would not be consistent with efforts to maintain or improve heterozygosity.

CHAPTER 3

3.0 AFFECTED ENVIRONMENT AND ENVIRONMENTAL EFFECTS

3.1 Wild Horses

3.1.1 Affected Environment

Spring Creek Basin Herd Management Area History

The Spring Creek Basin Wild Horse Herd Management Area (HMA) is located within the Spring Creek Basin portion of Disappointment Valley (Map 2) in San Miguel and Dolores Counties, Colorado. The HMA comprises approximately 21,000 acres of BLM administered public lands and approximately 932 acres of State lands for a total of 21,932 acres.

The majority of the HMA is a large open basin with silty clay loam soils derived from Mancos shale. The dominate vegetation communities consist of salt desert shrub and pinyon-juniper woodland types. Elevations in the basin range from 6,000 to 7,300 feet.

In compliance with the 1985 San Juan and San Miguel Resource Management Plan (RMP), BLM gathered all wild horses which occupied the Naturita Ridge and Spring Creek Basin Herd Areas in September 1985. To implement the RMP decision regarding wild horses, thirty-five head (17 males, 18 females) were released back into the Spring Creek Basin HMA forming the nucleus of the herd to be managed by the Tres Rios Field Office, BLM.

As a result of this RMP decision, the initial Spring Creek Basin Wild Horse Herd Management Plan (WHHMP) was written and approved in 1986, and subsequently revised in 1994. Both the 1986 and 1994 revised management plans established an Appropriate Management Level (AML) of wild horses between 35 – 65 adult horses within a range of 10% on either side of the maximum and minimum numbers which allowed for a total herd size ranging between 31 and 72 adult horses.

Observed Heterozygosity

A genetic analysis was completed following gathers in 2000 and 2007. The genetic analysis was conducted by E. Gus Cothran, Department of Veterinary Integrative Bioscience, Texas A&M University. The analysis concluded that the Spring Creek Basin herd likely derives from riding breeds of North American origin. Compared to other Colorado herds, samples from the 2000

Spring Creek Basin herd were most similar from those sampled from the Little Book Cliffs HMA located near Grand Junction, Colorado (Cothran 2001).

The results received from Dr. Cothran indicate that the herd is near the feral average for the number of genetic variants and below average for observed heterozygosity, but slightly above the critical level. Genetic similarity results indicate a herd with mixed ancestry from breeds primarily found in North America. Overall, genetic variability of the herd was low after the 2000 gather but improved to above critical level after the 2007 gather, indicating an improving trend. Periodic introduction of new breeding horses since 2001 has apparently increased observed heterozygosity, as expected.

The relatively small size of this herd poses challenges for maintaining genetic variability. These topics were addressed in the 1994 wild horse Herd Management Area Plan (HMAP) as well as in (EA CO-SJFO-01-053) which analyzed the need to periodically introduce mares into the Spring Creek Basin HMA. Because of history, context, and historic and future introductions, wild horses that live in the Spring Creek Basin HMA herd are not a truly isolated population. The National Academies of Sciences report to the BLM (2013) recommended that single HMAs should be considered as components of interacting metapopulations made up of many herds, connected by interchanges of individuals and genes due to both natural and human-facilitated movements. In the specific case of the Spring Creek Basin HMA, the ancestry of horses in this area is of mixed origin from several domestic breeds commonly used in the region. These animals are part of a larger metapopulation (NAS 2013) that has demographic and genetic connections with other BLM-managed herds in Colorado, and beyond.

Herds in the larger metapopulation have a background of shared domestic breed heritage, and natural and intentional movements of animals between herds. This background is very similar to that of many other herds managed by BLM. The herd's similarity to other BLM-managed herds has also been increased by historical introductions of breeding-aged, fertile horses from other HMAs in the recent past. In 1992 three stallions were obtained from a herd near Cody, Wyoming and released into the Spring Creek Basin HMA. In 2001, and again in 2008, young mares from the Sand Wash Basin HMA in northwest Colorado were released into the HMA. Under the action alternatives in this HMAP, management of the Spring Creek Basin HMA herd will continue to use wild horse introductions from other HMAs to augment observed heterozygosity, which is a measure of genetic diversity, the result of which will also be to reduce the risk of inbreeding related health effects. Introducing 3-5 fertile animals every generation (about every 8-10 years) is a standard management technique that can alleviate potential inbreeding concerns (BLM 2010).

The 2013 National Academies of Sciences report included evidence that shows that the Spring Creek Basin HMA herd is 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' (F_{st}) values between 183 pairs of samples from wild horse herds. F_{st} 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 F_{st} indicate that a given pair of sampled herds has a shared genetic background. The lower the F_{st} value, the more genetically similar are the two sampled herds. Values of F_{st} under approximately 0.05 indicate virtually no differentiation.

Values of 0.10 indicate very little differentiation. Only if values are above about 0.15 are any two sampled subpopulations (i.e. from two sampled herds) considered to have evidence of elevated differentiation (Frankham et al. 2010). F_{st} values for the Spring Creek Basin HMA herd had pairwise F_{st} values that were less than 0.05 with 7 other sampled herds (High Rock HMA, Nut Mountain HMA, and Twin Peaks HMA in California; Callaghan HMA in Nevada; South Steen HMA in Oregon; Great Divide Basin HMA and Little Colorado HMA in Wyoming), and F_{st} less than 0.085 with 139 additional sets of samples, including from Little Colorado HMA, Sand Wash Basin HMA, and West Douglas Herd Area. These results support the interpretation that Spring Creek Basin HMA horses are components in a highly connected metapopulation that includes horse herds in many other HMAs and several different states of origin.

Therefore, per recommendations from Dr. Cothran, the introduction of outside genetic material every 4 – 8 years in the form of wild horse mares from other HMA's has been implemented as a mitigation measure.

Fertility Control

BLM has identified fertility control as a method that could be used to protect rangeland ecosystems health and to reduce the frequency of wild horse gathers and removals. Since 2011, Tres Rios Field Office, BLM has implemented the use of the Porcine Zona Pellucida (PZP) Vaccine (ZonaStat-H) to slow population growth rates and increase the amount of time between gathers within the HMA. The Tres Rios Field Office, BLM in cooperation with a local wild horse advocacy group, maintains records of all the individual horses within the HMA. This information is used in planning and implementation of fertility control efforts by helping to identify specific mares selected for treatment, as well as tracking mares previously treated with PZP. Mares will be allowed to contribute at least one offspring to the population prior to being considered for fertility control treatments. In addition, mares introduced from outside HMA's are allowed to contribute at least one or more offspring prior to being considered for fertility control. PZP is administered remotely within the HMA using a CO₂ powered dart gun to deliver the vaccination at close range. Since 2011, the number of mares treated annually has varied depending on the population size at the time. As a result, the use of PZP has significantly reduced the population growth rate of this herd and has successfully increased the amount of time between needed gathers.

Wild Horse Carrying Capacity Analysis for Establishing Appropriate Management Level

In preparation for the HMAP revision, forage production data was collected in the Spring Creek Basin Herd Management Area (HMA) in 2016 and again in 2019 which were average production years based on precipitation. The purpose for this data collection was to help determine the amount of forage available to wild horses in order to establish an acceptable range of Appropriate Management Level (AML). The detailed analysis for establishing AML is contained in Appendix D (2019 Spring Creek Basin Herd Management Area, Wild Horse Carrying Capacity Analysis, Tres Rios Field Office, BLM).

In summary, data for key forage plant species production was collected on the dominant vegetation types within the HMA. The analysis of this data found there to be on average

approximately 3,248,263 pounds of total forage being produced on the silty salt desert, clayey salt desert and basin shale ecological types which comprise approximately 47% of the HMA.

BLM then allocated 35% of the total forage production to wild horses, which amounted to 1,136,892 total pounds. This amount was then converted to Animal Unit Months (AUMs) for a total of 1,246 AUMs which meets the yearlong forage demands of up to 80 adult horses.

Wild Horse Gathers

Since 1985, BLM has gathered and removed excess wild horses from the HMA using a helicopter. Since establishment of the HMA, gathers have occurred in 1985, 1991, 1995, 1998, 2000, 2005, 2007 and 2011.

In 2018, BLM completed the Spring Creek Basin Herd Management Area Bait Gathers Environmental Assessment (DOI-BLM-CO-S010-2015-0001 EA). This EA analyzed the direct and indirect impacts of using bait and/or helicopter trapping methods for removing excess wild horses over the next 10-years. This EA identified bait trapping as the preferred method for gathering and removing excess wild horses from the HMA.

Historic Livestock Grazing

Historically, the boundary of the Spring Creek Basin HMA coincided entirely within the Spring Creek Grazing Allotment (#17056) as well as a portion of the Disappointment Pasture lying just north of County Road 19Q of the Indian Valley Grazing Allotment (#17046) comprising approximately 4,000 acres of BLM administered lands. As a result, there were two separate grazing permittees (Charles P. Hughes & Perkins Brothers) authorized to graze livestock within the HMA.

In 1999, there was a partial transfer of 400 animal unit months (AUMs) associated with the 4,000 acres within the Disappointment Pasture from the Perkins Brothers to the National Mustang Association (NMA). As a result, that portion of the Disappointment Pasture lying north of County Road 19Q was removed from the Indian Valley Allotment and a new allotment created within the HMA called the Mustang Allotment (#08064). This new allotment was then permitted to NMA.

In 2003, NMA relinquished back to the BLM the 400 AUMs associated with the newly created Mustang Allotment to benefit wild horses within the HMA. Once the preference for this permit was relinquished, BLM made these AUMs unavailable to livestock grazing, as per direction contained in the 1986 San Juan/San Miguel Resource Management Plan (RMP) which directed BLM to reduce forage competition and/or conflicts between wild horses and livestock whenever feasible. Consequently, the Mustang Allotment was eliminated and closed to future livestock grazing.

Additionally, Charles P. Hughes was also historically authorized to graze 1,666 head of sheep from December 1st through April 30th on an annual basis within the Spring Creek Allotment (#17056). In 1999, responding to the permittees request, BLM approved a change in kind of livestock authorization from sheep to cattle use. As a result, the grazing permit was modified to

authorize 180 head of cattle with a grazing period of December 1 through February 28th every year in the allotment totaling 501 AUMs. Subsequently, in 2005, as part of the term grazing permit renewal process, Charles P. Hughes grazing permit was again modified by removing 175 AUMs from the permit leaving a total of 325 AUMs available for livestock grazing.

In 2012, Charles P. Hughes transferred the remaining grazing preference of 325 AUMs for the Spring Creek Allotment to the Serengeti Foundation. Subsequently, in 2015 the Serengeti Foundation relinquished the remaining 325 AUMs for this allotment back to the BLM. As a result of the combined grazing permit actions, a total of 901 AUMs authorized for livestock grazing was removed from the HMA to benefit the wild horse herd. Furthermore, in accordance with the direction contained in the 2015 Tres Rios Field Office Resource Management Plan, the Spring Creek Allotment was subsequently closed to future livestock grazing for the benefit of wild horses and watershed values.

Tres Rios Field Office Resource Management Plan Revision

In 2015, the Tres Rios Field Office approved a new Resource Management Plan (RMP). The new RMP directed BLM to revise and update the existing 1994 Wild Horse Herd Management Plan within a period of 5-years. Therefore, in order to support this effort, a Land Health Assessment was completed in 2019 for the purpose of evaluating existing land health conditions within the HMA to inform the development of a new wild horse herd management plan.

3.1.2 Direct and Indirect Effects

Alternative A - Proposed Action

Appropriate Management Level

The 2019 forage analysis determined that there is an adequate amount of sustainable year-round forage available in the HMA for maintaining a healthy wild horse herd level of between 50 – 80 adult horses, while leaving enough meet wildlife demands and adequate residual vegetative cover for watershed protection.

Currently, the number of adult wild horses within the HMA is at 65; this is at the upper limit of current AML. An increase in the upper limits of AML from 65 to 80 adult horses would result in an increase in the overall number of breeding horses within the HMA.

The proposed action would further reduce the possibility of inbreeding within the wild horse herd by periodically introducing horses from outside HMAs which exhibit similar characteristics and origins. In the short-term, the introduced horses would experience some levels of stress resulting from transportation and release into an unfamiliar environment. However, based on observations from past releases, introduced mares, especially, have been readily accepted into existing bands, and have went on to successfully reproduce.

Fertility Control

The proposed action would continue the use of fertility control efforts to slow population growth within the HMA. An extensive literature review regarding the direct and indirect effects of fertility control (contraceptives) vaccines on wild horses has been completed by BLM and can be found in Appendix E. As a result of this extensive review, the following is a summary of the potential effects on wild horses within the Spring Creek Basin HMA.

Fertility control measures have been shown to be a cost-effective and humane treatment to slow increases in wild horse populations or, when used in combinations with gathers, to reduce horse population size. Fertility control treatments may be associated with potential physiological, behavioral, demographic, and genetic effects, however, these potential 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.

The BLM has mainly used three vaccine formulations for fertility control of wild horse mares on the range which include ZonaStat-H, PZP-22 and GonaCon-Equine (GnRH Vaccine). References for the following summaries of effects are included in Appendix E.

Porcine Zona Pellucida (PZP) Vaccines

The ZonaStat-H vaccine will be applied using a remote delivery system (dart-delivered) at a relatively close range into the hip area of the mare. When applying ZonaStat-H, a primer with modified Freund's Complete adjuvant is given followed by a booster containing Freund's Incomplete adjuvant 2-6 weeks later. Subsequently, following the initial inoculations, only annual boosters are required. The PZP-22 formulation which is a pelleted PZP contraceptive would be administered using a large gauge needle on the end of a jab stick if selected animals are confined in a corral or via remote delivery system at relatively close range in field situations to insert the pellet under the skin in the hip of the mare. In addition to the pellet, the mare may also simultaneously receive a dose of the liquid PZP vaccine (i.e. ZonaStat-H) with modified Freund's Complete adjuvant which has been shown to improve efficacy of the PZP-22 vaccine.

PZP vaccines (ZonaStat-H & PZP-22) cause the mare's immune system to produce antibodies that are specific to zona pellucida proteins (PZP) on the surface of the mare's eggs. The antibodies bind to the mare's eggs surface proteins, and effectively block sperm from binding and causing fertilization. As a result, treated mare's do not become pregnant, but other ovarian functions remain generally unchanged to include regular estrus cycles throughout the breeding season. However, more recent studies have demonstrated that the PZP vaccine can cause effects on ovarian function.

In most cases, PZP contraception appears to be temporary and reversible, with most treated mares returning to fertility over time. The ZonaStat-H formulation of the vaccine tends to confer only one year of efficacy per dose and some studies have found that PZP-22 can confer multiple years of contraception, particularly when boosted with subsequent liquid PZP vaccination. In some cases, long-term infertility or permanent sterility could be a result for some number of wild horses receiving PZP vaccinations. The rate of long-term or permanent sterility following vaccinations with PZP is hard to predict for individual horses, but the outcome appears to

increase in likelihood as the number of doses increases. However, even if some number of mares become sterile as a result of PZP treatment, that potential result would be consistent with the contraceptive purpose which motivates its use within the Spring Creek Basin HMA.

Research on PZP has demonstrated that the efficacy for ZonaStat-H is approximately 90% or more for mares treated twice in the first year (primer & booster), while efficacy for PZP-22 given simultaneously with a liquid primer is approximately 60% to 85% for a one-year period. However, some mares may not respond to either of these vaccine formulations and will instead continue to conceive and foal normally. Additionally, if a mare is already pregnant, the PZP vaccine has not been shown to affect normal development of the fetus or foal, or the hormonal health of the mare with relation to pregnancy. Also, on-range observations from 20 years of application to wild horses indicate that effects on mares does not generally cause them to give birth to foals out of season or late in the year, though there may be some exceptions.

GnRH Vaccines

GonaCon-Equine is one of several vaccines that have been engineered to create an immune response to the gonadotropin releasing hormone peptide (GnRH). GnRH is a small peptide that plays an important role in signaling the production of hormones involved in reproduction in both sexes. When combined with an adjuvant, the vaccine stimulates a persistent immune response resulting in prolonged antibody production against GnRH, the carrier protein, and the adjuvant. The most direct result of successful GnRH vaccination in female mammals is that it has the effect of decreasing the level of GnRH signaling in the body, as evidenced by a drop in luteinizing hormone levels, and cessation of ovulation.

GonaCon-Equine can provide multiple years of infertility in horses. The lack of estrus cycling that results from successful vaccination has been compared to typical winter period of anoestrus in open mares. However, as anti-GnRH antibodies decline over time, concentrations of available endogenous GnRH increases, and treated animals usually regain fertility. Like PZP, in some cases not all mares will respond to the vaccine and will continue to become pregnant and give birth to foals. GonaCon has no apparent effect on pregnancies in progress, foaling success, or the health of offspring. Therefore, GonaCon can be injected while a mare is pregnant without affecting the pregnancy.

Additional Effects of PZP & GnRH Vaccines

Short-term direct effects to individual treated mares from vaccination may include some degree of inflammation, swelling and potential for abscesses at the injection site. However, these reactions generally heal within a period of 3 months. Mares treated with PZP vaccines tend to continue estrus cycles throughout the breeding season. Mares treated with GonaCon tend to cease estrus cycles, behaving like pregnant mares. Other than differences in reproductive behaviors, there is no difference from un-treated mares in how time is allocated between feeding, resting, travel, maintenance and social behaviors.

Long-term indirect effects on wild horses treated with fertility control would be an improvement in overall health of individual mares. Many treated mares would not experience the biological stress of reproduction, foaling and lactation as frequently as untreated mares. In addition,

fertility control may increase mare survival rates, leading to longer lifespan up to as much as 5-10 years. As a result, the changes in lifespan and decreased foaling rates could combine to cause changes in the overall age structure in a treated herd with greater prevalence of older mares. However, following resumption of fertility, the proportion of mares that conceive and foal could be increased due to their increased fitness.

In most HMAs, applying fertility control to a subset of mares is not expected to cause irreparable loss of genetic diversity. Wild horses in most herd management areas including the Spring Creek Basin HMA are descendants of a diverse range of ancestors coming from many breeds of domestic horses. As such, the Spring Creek Basin HMA does not contain unique or historically unusual genetic markers, compared to those in other HMAs. Past interchange between HMAs, either through natural dispersal or through assisted migration, as is the case for the Spring Creek Basin HMA in which mares from similar HMAs are periodically introduced, means that this HMA is genetically similar of other HMAs.

Gathers

The proposed action identifies the potential use of both bait trapping and helicopters for gathering and removing excess wild horses from the HMA. However, the proposed action identifies bait trapping as the preferred method for removal. The potential impacts for both bait trapping and/or the use of a helicopter for gathers are described in detail in Section 3.1.2.1 of the Final 2018 Spring Creek Basin Herd Management Area Bait Trap Gathers EA (DOI-BLM-CO-S010-2015-0001 EA). The impacts and design features analyzed and described in the above referenced environmental assessment are incorporated by reference into this document.

The direct and indirect impacts disclosed in the environmental assessment referenced above is summarized as follows: Bait trapping would provide BLM greater flexibility in targeting specific bands and/or horses for removal, increase the number of potential trap sites locations and increase flexibility in relation to seasonal timeframes for conducting gathers.

Impacts to individual horses could occur as a result of stress associated with gathers, 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. Injuries such as bruising, scrapes and/or cuts may occur from hitting panels, trailers or other trapping and handling equipment and/or temporary structures. In rare instances, mortality to individuals from these impacts may occur. Other impacts to individual wild horses include separation of members of individual bands and removal of horses from the population.

Population wide impacts could also occur during or immediately following implementation of both bait and/or helicopter gathers. These potential impacts include the displacement of bands during capture and the associated re-dispersal, modification of herd demographics (age and sex ratios), temporary separation of members or individual bands of horses, re-establishment of bands following release, and the removal of horses from the population. With exception of changes to herd demographics (removed individuals), direct population-wide impacts would be temporary in nature with most, if not all, impacts abating shortly following release.

Indirect impacts may occur to horses after the initial stress event and could include increased social displacement or increased conflict between studs. These impacts are known to occur intermittently during wild horse gather operations. Traumatic injuries could occur and typically involve biting and/or kicking bruises.

Heterozygosity

Due to the small herd size of the Spring Creek Basin HMA, the potential for inbreeding and loss of heterozygosity is of concern. Under Alternative A, the slightly larger number of breeding adults at the upper limit of AML (with a total of 80, compared to 65) could marginally improve measures of observed heterozygosity over time. However, if the herd were managed as an isolated population, then even an increase in the upper limits of AML (to 80) is not expected to prevent the loss of observed heterozygosity over time (BLM Handbook H-4700-1). However, rather than treat this herd as isolated, BLM recognizes that animals in the Spring Creek Basin HMA are part of a larger metapopulation of wild horses. Therefore, to address this concern, the periodic introduction of horses (generally mares) from outside HMA's into the Spring Creek Basin HMA, every 4-8 years is a standard management technique currently being implemented that can alleviate potential inbreeding concerns. Horses being selected for introduction into the HMA possess the same characteristics, traits and origins, thus preserving the long-term characteristics of the Spring Creek Basin Herd. As a result, these periodic introductions will help to reduce the potential for inbreeding and loss of heterozygosity of the herd.

Sustaining Healthy Populations

Continued maintenance of existing water developments will help to ensure that adequate water is available for wild horses during the summer months when water is usually limited. In addition, proposed new water developments will be placed in underutilized areas of the HMA which do not have reliable water sources. As a result, these new water developments would help to improve wild horse distribution across the HMA, allowing for a more uniform use of the available forage base. All areas of ground disturbance associated with construction would be re-seeded with native vegetation species appropriate for the site and then monitored for the occurrence of noxious weed species infestations. Any noxious weed infestations discovered will then be treated using the appropriate herbicides to prevent establishment.

The proposed action would provide for maintaining the wild free roaming characteristics of wild horses by not allowing fencing within the interior of the HMA boundary which may restrict their movement.

Emergency gathers would be initiated upon determination that adequate water and/or forage is not available to meet the demands of wild horses due to effects of persistent drought conditions and/or occurrence of wildfires. Temporarily removing wild horses from the range during these climatic events will alleviate the potential of undue suffering and/or death from malnutrition or dehydration.

Mitigation Measures:

There are no additional mitigation measures identified for this resource.

Alternative B - No Action

Appropriate Management Level

The no action alternative would maintain existing AML between 35 and 65 adult horses with a range of plus or minus 10 percent on either end. Therefore, the AML could range from 32 – 72 adult horses. However, this same alternative includes an emphasis for maintaining an average herd size of 50 adult horses.

Fertility Control

The no action alternative would allow for the use of the Porcine Zona Pellucida (PZP) vaccines for fertility control efforts to slow population growth within the HMA. The direct and indirect impacts for using this type of fertility control method was previously analyzed in the Spring Creek Basin HMA 2011 Wild Horse Gather Plan Environmental Assessment (DOI-BLM-CO-S010-2011-0062). However, this analysis did not analyze the impacts of using GnRH Vaccines (GonaCon-Equine) which is another type of temporary fertility control vaccine available to BLM for controlling population growth in wild horse herds. Therefore, under this alternative the GonaCon-Equine vaccine would not be available as a potential tool in controlling population growth within the HMA.

Gathers

The no action alternative would continue to use a bait trapping and/or the use of a helicopter for removing excess wild horses as per the 2018 Final Decision for the Spring Creek Basin Herd Management Area Bait Trap Gathers EA (DOI-BLM-CO-S010-2015-0001 EA).

Heterozygosity

Compared to Alternative A, the slightly lower maximum herd size would be expected to cause a relatively faster loss of observed heterozygosity. However, periodic introductions of horses from other HMAs should augment genetic diversity and maintain adequate levels of observed heterozygosity over time. The no action alternative would still allow for the periodic introduction of mares from outside HMAs every 4-8 years. As a result, these periodic introductions will help to reduce the potential for inbreeding and loss of heterozygosity of the herd.

Mitigation Measures:

There are no additional mitigation measures identified for this resource.

3.1.3 Cumulative Effects

Cumulative Impact Area (CIA)

The Spring Creek Basin HMA comprises approximately 21,000 acres of BLM administered public lands and approximately 932 acres of State lands for a total of 21,932 acres. The majority of the HMA is a large open basin with silty clay loam soils derived from Mancos shale. The dominant vegetation community is salt desert shrub. Elevations in the basin range from 6,000 to 7,300 feet. A ridge forming the north boundary of the HMA is comprised primarily of sandy, gravelly or cobbly clay loam soils derived from sandstones and shales with extensive rock out-crops and is dominated by pinyon-juniper vegetation types.

Past and Present Actions

Since 1986, BLM has managed wild horses within the Spring Creek Basin HMA. The initial 1986 Herd Management Area Plan (HMAP) established the initial AML along with specific management guidance to include goals and objectives for managing wild horses. The initial HMAP was then revised in 1994 with minor changes. Since 1986, excess wild horses within the HMA have been periodically gathered down to the low end of AML (35 horses) and removed using helicopters. The HMA was also permitted for domestic livestock grazing of sheep and then later cattle during the winter and spring periods on an annual basis. Over time, grazing permits within the HMA were voluntarily relinquished back to the BLM. In 2015, following completion of the new Tres Rios Field Office, RMP, the HMA was closed to all livestock grazing for the benefit of wild horses.

Due to the small number of wild horses in this HMA, BLM has periodically introduced wild horses from outside herd areas for genetic purposes since 1992. In addition, the use of the PZP vaccine as a fertility control technique on mares to slow population growth has been used on an annual basis since 2011 and has proven to be successful.

The BLM continues to work with various volunteers and/or volunteer organizations on an annual basis in the areas of fertility control efforts, water development projects, HMA boundary fence maintenance and/or reconstruction activities, vegetation monitoring, public outreach and education.

Reasonably Foreseeable Actions

In order to ensure that rangeland health conditions are being met and wild horse populations are in thriving ecological balance with the resource, periodic gathers to remove excess wild horses will occur, outside wild horses will be introduced into the HMA, existing range improvements maintained and new range improvements constructed that benefit wild horses.

Cumulative Effect Analysis

Alternative A - Proposed Action

The proposed action would manage for a wild horse herd between 50 – 80 adult horses which would result in a population that is in balance with available forage while ensuring that rangeland health standards are being met for the HMA. Implementing bait trapping as the preferred gather method for removing excess wild horses will provide more flexibility for targeting specific bands and/or individual horses for removal, provide more options for trap locations and more flexibility in seasonal timeframes for completing gathers. Periodically introducing mares from outside HMA's will help reduce the potential for inbreeding within the herd. New water developments will increase available water sources and improve distribution of wild horse use throughout the HMA. Monitoring herd health and habitat conditions will help to ensure that rangeland health standards are being met and horses are thriving in an ecological balance with the ecosystem. Coordinating and promoting opportunities for developing partnerships with advocacy groups and/or individuals in the management of wild horses will be beneficial to BLM. Public education and outreach efforts with the local community regarding wild horse management should help to build local support for the wild horse program.

Alternative B - No Action

The no action alternative would maintain wild horse herd sizes within the current AML. The use of a helicopter would continue to be the preferred method for removing excess horses from the HMA. Periodically introducing wild horses from outside HMA's will help reduce the potential for the chance of inbreeding within the herd. No additional water developments would be constructed for increasing the number of available water source or for improving wild horse distribution within the HMA. Monitoring herd health and habitat conditions will help to ensure that rangeland health standards are being met and the horses are thriving in an ecological balance with the ecosystem.

3.2 Colorado Public Land Health Standards

3.2.1 Affected Environment

In January 1997, the Colorado State Office, BLM approved the Standards for Public Land Health and amended all RMP's in the State to include these Standards. The Standards describe the conditions needed to sustain public land health and apply to all uses on public lands.

Standard 1: Upland soils exhibit infiltration and permeability rates that are appropriate to soil type, climate, landform, and geologic processes.

Standard 2: Riparian systems associated with both running and standing water function properly and have the ability to recover from major disturbances such as fire, severe grazing, or 100-year floods.

Standard 3: Healthy, productive plant and animal communities of native and other desirable species are maintained at viable population levels commensurate with the species habitats potential.

Standard 4: Special status, threatened and endangered species (federal and state), and other plants and animals officially designated by the BLM, and their habitats are maintained or enhanced by sustaining healthy, native plant and animal communities.

Standard 5: The water quality of all water bodies, including ground water where applicable, located on or influenced by BLM lands will achieve or exceed the Water Quality Standards established by the State of Colorado.

A land health assessment of exiting resource conditions within the HMA was completed in 2019. The assessment analyzed all available monitoring information to assess existing resource conditions within the HMA. An evaluation report was then prepared which contains the analysis and interpretations of the findings relative to the Colorado Public Land Health Standards to include an evaluation of the degree of achievement of these standards (2019 Land Health Evaluation Report, Spring Creek Basin Wild Horse Herd Management Area). The Final Evaluation Report and detailed analysis of monitoring data is contained in Appendix F.

The following is a summary of the conclusions from the assessment, as to whether existing conditions are resulting in the attainment, non-attainment, or if significant progress is being made towards attainment of the Standards to include causal factors if not meeting:

Standard 1: The analysis concluded that the Standard for upland soils is currently being met on the majority of the HMA. The analysis determined through line point intercept monitoring data, that existing bare ground and litter accumulations occurring on the dominant ecological sites either matches or nearly matches what is expected for these sites. In addition, the qualitative assessment completed by an interdisciplinary team of resource specialists also documented that soils appeared to be stable with no evidence of active erosion beyond what is expected for the ecological types evaluated.

Standard 2: Riparian Proper Functioning Condition Assessments (PFC) conducted in 2019 concluded that the Standard for riparian systems associated with Wildcat Canyon is not currently being met, but that wild horses are not the causal factor. The analysis determined that the Standard was not being met due to 1) persistent periods of extended drought resulting in a high mortality of individual cottonwoods along the streambanks; and 2) a large active head cut located at the mouth of Wildcat Canyon. The active head cut is a direct result of a small earthen reservoir that was constructed in the drainage bottom at the mouth of canyon which failed over time due to high run-off events associated with heavy rainfall events.

Standard 3: The analysis concluded that the Standard for healthy, productive plant and animal communities is currently being met. 1) long term vegetation trend data collected at key monitoring sites within the HMA indicated that there has been an upward trend in ecological range conditions between 2010 and 2017; 2) functional/structural groups (plant community characteristics) match or nearly match what is expected for the dominant ecological sites; and 3) annual above ground vegetation production matches or nearly matches what is expected for the majority of ecological sites.

Standard 4: The analysis concluded that the Standard for Special Status, Threatened or Endangered Species was currently being met. The indicators associated with the healthy plant and animal communities (Standard 2) were applied for assessing the health of special status, threatened and endangered species to include both plant and animals.

Standard 5: The analysis concluded that the Standard for water quality is currently being met. This determination was based on the findings of the State of Colorado's 303(d) list which identifies impaired waters. Based on this list the Spring Creek Tributary (COGULD03a_A) was not identified as an impaired water, nor was it identified for monitoring and evaluation.

3.2.2 Direct and Indirect Effects

Alternative A – Proposed Action

Under the proposed action it is anticipated that rangeland health standards for upland soils, healthy productive plant and animal communities, special status, threatened and endangered species and water quality would continue to be met.

The proposed action establishes an allowable utilization objective level of 35 percent for wild horses within the HMA. Utilization levels of between 25 – 35% on salt desert shrubland ranges have been shown to maintain forage productivity and prevent range degradation (Holechek et al. 2011). Therefore, it is anticipated that by limiting utilization levels by horses to no more than 35%, existing ecological conditions will be maintained and/or improved with the HMA.

The proposed action will initiate a gather to remove excess horses when one or more of the following conditions occur within the HMA. 1) average utilization levels on key forage species exceed 35% of current year's growth for a period of two or more consecutive years; 2) utilization pattern mapping shows that areas within the HMA receiving 35% utilization or greater are expanding; and 3) ecological conditions are declining (downward trend) as measured at long-term trend sites within the HMA. Removing excess horses from the range will help to prevent a deterioration in range conditions, loss of rangeland productivity and help to ensure that wild horse herds are in balance with their forage base and habitat.

Proposed water catchments will help to improve the distribution of horses within the HMA. Poor water distribution is a primary cause for poor livestock distribution on most ranges which can result in overgrazing around reliable water sources, while areas distant from water sources receive little to no use (Holechek et al. 2011). These additional water sources will help to improve wild horse distribution, reduce the potential for over utilization and make better use of forage in portions of the HMA that are distant from water.

The proposed action will continue to monitor rangeland health conditions within the HMA for ensuring the attainment of the Public Land Health Standards developed for Colorado. This monitoring will include the collection and analysis of both qualitative and quantitative data. Based on the findings of these monitoring efforts, removal of excess wild horses or adjustments to AML may occur for the purpose of maintaining good ecological conditions within the HMA.

Mitigation Measures:

Mitigation for stresses related to gather techniques will be to follow BLMs Comprehensive Animal Welfare Policy and any other national wild horse standard operating procedures and policies relating to gather operations. There are no additional mitigation measures identified for this resource.

Alternative B – No Action

The no action alternative allows for a maximum of 50% utilization during the growing season and 55% during the dormant season on key forage species within the HMA. These high allowable use levels combined with impacts from yearlong grazing by horses more than likely will lead to a degradation in range conditions and eventual loss of a reliable forage base within the HMA. Grazing intensity studies indicate that in general, grazing levels between 35% and 45% use of grazable forage will generally maintain forage production on semiarid rangelands (Holechek et al. 2011). However, in more-arid regions receiving 12 inches or less of mean average precipitation levels (such as the case in the Spring Creek HMA) may require utilization levels of between 25% and 40% to maintain forage productivity and prevent degradation of rangelands (Holechek et al. 2011).

3.2.3 Cumulative Effects

Cumulative Impact Area (CIA)

The Spring Creek Basin HMA comprises approximately 21,000 acres of BLM administered public lands and approximately 932 acres of State lands for a total of 21,932 acres. The majority of the HMA is a large open basin with silty clay loam soils derived from Mancos shale. The dominant vegetation community is salt desert shrub. Elevations in the basin range from 6,000 to 7,300 feet. A ridge forming the north boundary of the HMA is comprised primarily of sandy, gravelly or cobbly clay loam soils derived from sandstones and shales with extensive rock outcrops and is dominated by pinyon-juniper vegetation types.

Past and Present Actions

Since 1986, BLM has managed wild horses within the Spring Creek Basin HMA. The initial 1986 Herd Management Area Plan (HMAP) established the initial AML along with specific management guidance to include goals and objectives for managing wild horses. The initial HMAP was then revised in 1994 with minor changes. Since 1986, excess wild horses within the HMA have been periodically gathered and removed using helicopters. The HMA also was permitted for domestic livestock grazing of both sheep and then later cattle during the winter and spring periods. Over time, grazing permits within the HMA were voluntarily relinquished back to the BLM. In 2015, following completion of the new Tres Rios Field Office, RMP the HMA was closed to livestock grazing for the benefit of wild horses.

BLM has periodically introduced wild horses from outside herd areas into the HMA for genetic purposes since 1992 due to the small population size. In addition, the use of the PZP vaccine as a fertility control technique on mares to slow population growth has been used on an annual basis since 2011.

The BLM continues to work with various volunteers and volunteer organizations on an annual basis in the areas of fertility control, water development projects, HMA boundary fence maintenance, fence reconstruction activities and vegetation monitoring within the HMA.

Reasonably Foreseeable Actions

In order to ensure that rangeland health conditions are being met and wild horse populations are in thriving ecological balance with the resource periodic gathers to remove excess wild horses will occur.

Periodic introductions of wild horses from outside HMAs will continue as needed to increase heterozygosity within the herd.

The use of BLM approved fertility control measures will continue to be utilized in order to slow the growth rate of the wild horse herd.

Existing range improvements within the HMA will continue to be maintained, as well as construction of any new range improvements identified in the future which benefits the wild horse herd.

Cumulative Effect Analysis

Spring Creek Basin HMAP Revision

*DOI-BLM-CO-S010-2020-0009-EA
Tres Rios Field Office*

Alternative A - Proposed Action

The proposed action would establish an appropriate management level of wild horses that is in balance with available forage while ensuring that rangeland health standards are being met for the HMA. Wild horse distribution will be improved through the development of new water sources. A utilization limit of 35% will help to maintain good range conditions within the HMA. The periodic removal of excess wild horses will help to prevent range deterioration. Ongoing monitoring of exiting resource conditions within the HMA will help to ensure the attainment of the Public Rangeland Health Standards developed for Colorado.

Alternative B - No Action

Acceptable utilization levels of 50% during the growing season and 55% during the dormant season would continue to be implemented which overtime would lead to degraded range conditions.

CHAPTER 4

4.0 CONSULTATION AND COORDINATION

4.1 Persons, Agencies, and Organizations Consulted

The following table identifies the persons, agencies, and organizations that were consulted for the purposes of completing this EA.

Table 4-1: List of all Persons, Agencies and Organizations Consulted

Name	Purpose & Authorities for Consultation or Coordination	Findings & Conclusions
Jicarilla Apache Nation Kewa Pueblo The Navajo Nation Ohkay Owingeh Pueblo de Cochiti Pueblo de San Ildefonso Pueblo of Acoma Pueblo of Isleta Pueblo of Jemez Pueblo of Laguna Pueblo of Nambe Pueblo of Picuris Pueblo of Pojoaque Pueblo of San Felipe Pueblo of Sandia Pueblo of Santa Ana Pueblo of Santa Clara Pueblo of Taos Pueblo of Tesuque Pueblo of Zia Southern Ute Indian Tribe The Hopi Tribe	Consultation as required by the American Indian Religious Freedom Act of 1978 (42 USC 1531) and National Historic Preservation Act (16 USC 1531).	A tribal consultation letter was sent to 26 affiliated tribes regarding the proposed action. As a result of this consultation no tribes responded identifying any concerns or issues with the proposed action.

Name	Purpose & Authorities for Consultation or Coordination	Findings & Conclusions
Ute Indian Tribe (Uintah & Ouray Reservation) Ute Mountain Ute Tribe Ysleta del Sur Pueblo Tribe of the Zuni Reservation		

4.2 Summary of Public Participation

The Tres Rios Field Office, BLM initiated scoping for this project on January 16, 2019, by sending a scoping notice via email and/or through regular mail to those individuals and/or groups that had identified themselves as being interested in the management of the Spring Creek Basin HMA. The scoping notice was also posted and made available to the public on the BLM ePlanning website. In addition, to the scoping notices and publication on the ePlanning website, the BLM also issued a news release to local newspapers regarding this proposed project on January 29, 2020. The scoping period for submitting comments ended on February 19, 2020. As a result, BLM received a total of 27 separate comment documents in the form of letters, emails and/or through BLM's ePlanning website on the proposed action.

In addition, tribal consultation was initiated on December 17, 2019 requesting comment regarding this proposal in compliance with the National Historic Preservation Act and the American Indian Religious Freedom Act. As a result of this consultation, BLM did not receive any issues or concerns regarding the proposed action from any tribal entities.

The preliminary EA was made available to all interested public for a 30-day review and comment period on May 1, 2020. As a result, BLM received seventeen comment response letters from various individuals and organizations.

4.2.1 Comment Analysis

Most responses received were general comments being made in support of the management actions contained within the proposed action alternative as described in the environmental assessment. A few comments regarding use of State of Colorado Land Board land or RMP decisions are outside the scope of this project. Several specific comments and recommendations regarding the proposed fertility control techniques, resource monitoring and wild horse herd population management are addressed in detail below.

Regarding fertility control, one comment was specific to concerns in limiting the darting range for administering fertility control vaccinations to 30 yards or less because darting can be effective beyond a maximum of 30 yards depending on the experience and skill of individual darters. Another comment pertained to only using a jab stick for administering the fertility control vaccine PZP-22. The commenter identified that PZP-22 can now also be administered via a remote delivery system such as a dart gun.

Regarding resource monitoring, a comment identified that the frequency in monitoring land health conditions (every 10 years) and utilization levels (periodically) were not sufficient intervals to detect changes in annual variation of range condition to help inform fertility control or gathers necessary to reduce population size and subsequent range impacts. Therefore, the commenters recommendation was to manage the population of wild horses at the low end (50 horses) of the proposed AML to avoid exacerbating rangeland impacts given variable precipitation rates within the HMA.

4.2.2 List of Commenters

Many Ponies Outfit & Ranch
San Juan Mountain Association
San Miguel County
Cachuma Ranch
BettyAnn Kolner
BethAnne Weatherford
Tammy McCullough
Puller Lanigan
Tom Hutcheson
Melissa Warfield
Trish Friant
Eileen Hennessy
Latifia Rodriguez
Nancy Holmes
David Holmes
Colorado Parks and Wildlife
Karen Keene Day

4.2.3 Response to Public Comment

After consideration of the comments received regarding fertility control techniques, the proposed action and analysis has been modified to remove the minimum 30-yard distance requirement for administering fertility control vaccines via remote delivery system. In addition, the proposed action and analysis will include the option of using a dart gun for administering PZP-22 based on the ability for this vaccine to now be administered remotely. These changes will help BLM maintain flexibility in implementing its fertility control efforts within the Spring Creek Basin HMA.

The following response is directed at specific concerns raised pertaining to the frequency of completing land health assessments. A land health assessment is an estimation or judgement of the status of ecosystem structures, functions, or processes, within a specified geographic area at a specific point in time. The assessment characterizes the status of resource conditions which is then evaluated relative to existing land health standards. The basis of the assessment and subsequent evaluation in most instances are derived from a wide array of monitoring information which may include various forms of quantitative data collection from both long-term and short-term monitoring, inventories, qualitative assessments and professional knowledge to include knowledge

provided by State agencies, public land users and others. As a result, various types of monitoring information used in land health assessments may require multiple years between point in time data collection efforts, as is the case for long-term rangeland trend monitoring efforts. Therefore, the interval for conducting additional land health assessments could be as many as 10-years.

However, a comprehensive land health assessment is not required to make necessary adjustments in BLM's fertility control efforts or to initiate removal of excess wild horses from the HMA. Fertility control efforts within the HMA are ongoing and occur regardless of existing resource conditions. The proposed action establishes acceptable utilization levels to include trigger points for removal of excess wild horses based on utilization and long-term trend monitoring for preventing range degradation. Utilization monitoring will be collected periodically over the next 10-years within the HMA. Excess wild horses would be removed if average utilization levels within the HMA exceed 35% for two or more consecutive years, or there is a decline in range condition observed based on long-term trend monitoring. In addition, the proposed action also allows for emergency gathers based on climatic conditions such as persistent drought conditions which jeopardizes the health of wild horses and/or may lead to degradation of the range resource.

Regarding the comment for managing the population at the low end of AML (50 horses), BLM determined that the proposed AML of between 50 and 80 adult horses is in balance with the ecosystem within the HMA. The carrying capacity analysis (Appendix D) included in the environmental assessment established a very conservative carrying capacity by allocating no more than 35% of available forage as determined through clip and weigh forage production monitoring. The conservative approach for allocating forage was intended to account for variation in annual precipitation levels from year to year. In addition, the proposed action also allows for the removal of wild horses based on persistent drought conditions if they occur.

4.3 List of Preparers

The following individuals listed in the following table(s) aided in the preparation of this document.

Table 4-2: List of BLM Preparers

Name	Title	Responsible for the Following Section(s) and/or Review of this Document
Michael Jensen	Rangeland Management Specialist	Wild Horses, Public Land Health Standards
Nathaniel West	Wildlife Biologist	Wildlife
Brian Yaquinto	Archaeologist	Cultural
Jeff Christenson	Recreation Specialist	Recreation, Wilderness Study Areas, Lands with Wilderness Characteristics
Tracy Perfors	Planning & Environmental Specialist	National Environmental Policy Act Review
Benjamin Smith	Wild Horse & Burro Specialist	Colorado BLM - Review
Alan Shepard	Wild Horse & Burro Specialist, Branch Chief, On Range and Corral Operations Branch.	Washington Office BLM - Review

Krystle Wengreen	Wild Horse & Burro Specialist, On Range and Corral Operations Branch	Washington Office BLM - Review
Paul Griffin	Wild Horse & Burro Specialist	Washington Office BLM - Review