BLM

Stillwater Field Office, Nevada

FINAL ENVIRONMENTAL ASSESSMENT

Desatoya Mountains Habitat Resiliency, Health, And Restoration Project

DOI-BLM-NV-C010-2011-0513-EA

U.S. Department of the Interior
Bureau of Land Management
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Stillwater Field Office
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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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1.0 INTRODUCTION/PURPOSE & NEED

1.1 Introduction

The Bureau of Land Management (BLM), Carson City District, Stillwater Field Office is proposing a landscape-scale, multi-year, integrated habitat restoration and maintenance project on BLM lands within the Desatoya Mountain Range and adjoining BLM administered lands in Churchill and Lander Counties, Nevada (See Appendix G, Map 1). The project area encompasses approximately 230,000 acres, which includes about 6% of the Clan Alpine grazing allotment (~23,400 acres) and about 99% of the Porter Canyon and Edwards Creek grazing allotments (~206,600 acres). Additionally, 192,755 acres of the Desatoya sage-grouse population management unit (PMU) (38% of the PMU), 3,091 acres of the Reese River PMU (0.2% of the PMU), 136,400 acres of the Desatoya Herd Management Area (HMA) (84% of the HMA), and 34,195 acres of the Desatoya Wilderness Study Area (WSA) (67% of the WSA) are within the project boundary (See Appendix G, Map 2).

Within the project area, up to approximately 32,705 acres of ground disturbing treatments are proposed over a ten year period including pinyon/juniper removal and thinning; wet meadow and spring rehabilitation/protection (includes fencing, pipelines, and troughs); rabbitbrush control using mowing followed by herbicide treatment and reseeding; a site-specific fuels treatment utilizing prescribed fire, herbicide, and seeding; and continuous excess wild horse removal (including utilizing water/bait trapping methods). Additionally, researchers at the University of Nevada Reno (UNR) have set up a long term experimental watershed on private land within Porter Canyon to measure the hydrologic changes associated with pinyon/juniper tree removal. Portions of the UNR experiment would be expanded to BLM lands within Porter and Dalton Canyons (See Appendix G Map 3). Specific details are described in the Proposed Action.

Table 1. Legal description of the Project area (Also See Maps 1& 3 Appendix G).

Township	Range	Section (s)	Principal Meridian
17	38	1-5, 9-15	Mount Diablo Meridian
17	39	5-9, 18	Mount Diablo Meridian
18	37	9, 16-17, 20-21	Mount Diablo Meridian
18	38	1-4, 9-14, 22-27, 32-36	Mount Diablo Meridian
18	39	3-10, 17-18, 20, 29-32	Mount Diablo Meridian
19	38	26-27, 34-36	Mount Diablo Meridian
19	39	10-12, 13-16, 21-24, 31-34	Mount Diablo Meridian

The Desatoya Herd Management Area (HMA) is situated within the administrative jurisdiction of the BLM Carson City and Battle Mountain District Offices. The BLM proposes to reduce the existing population to within the appropriate management level (AML) range through the use of helicopter drive-trapping and bait/water trapping. As part of proposed population management within the HMA, the BLM is proposing to enter into a cooperative agreement with Smith Creek Ranch LLC in which permanent or semi-permanent corrals would be constructed around one or more water sources (public or private land) to enable bait/water trapping of wild horses for the purpose of maintaining the population within the AML range. This would be accomplished by removing excess wild horses and treating mares with a contraceptive to slow the rate of

population increase following the attainment of the AML through a helicopter gather during the summer 2012. See Proposed Action Section 2.4 for details.

This Environmental Assessment (EA) has been prepared to analyze possible impacts of the Desatoya Mountains Habitat Resiliency, Health, and Restoration project. This EA is a site-specific analysis of potential impacts that could result with the implementation of the proposed action and no action alternatives. The EA assists the BLM SFO during project planning, ensuring compliance with the National Environmental Policy Act (NEPA), and in making a determination as to whether any "significant" impacts could result from the analyzed actions. "Significance" is defined by NEPA and is found in Chapter 40 of the Code of Federal Regulations (CFR) §§1508.27. An EA provides evidence for determining whether to prepare an Environmental Impact Statement (EIS) or a statement of "Finding of No Significant Impact" (FONSI). Should a determination be made that implementation of the proposed actions would not result in "significant environmental impacts", a FONSI would be prepared to document that determination, and a Decision Record issued providing the rationale for approving the chosen alternative.

1.2 Background

In March 2010, the USFWS published the 12 month findings for petitions to list the greater sage-grouse under the Endangered Species Act (1964) (ESA)). In these findings, greater sage-grouse (*Centrocercus urophasianus)* were found to be warranted but precluded by higher priority listing actions, and were given a priority ranking of 8. Sage-grouse are currently a BLM designated Sensitive Species. BLM Manual 6840 (Special Status Species Management) directs the BLM to improve the condition of habitat as well as mitigating, minimizing, or eliminating threats affecting the status of BLM Sensitive Species in order to avoid full listing under the ESA.

The *BLM National Sage Grouse Habitat Conservation Strategy* was finalized in 2004 (USDI 2004). The Strategy calls for managing public lands in a manner that would maintain, enhance, and restore sage-grouse and sagebrush habitats while continuing to provide for multiple uses of lands under BLM stewardship.

Within portions of the project area, wildland fire has not been allowed to exhibit the long-term natural role of creating a diverse vegetation community, which has led to an increased risk of detrimental fire effects to natural plant communities. The increasing dominance of pinyon/juniper (PJ) in these areas is apparent from the presence of young PJ expanding into sagebrush communities and increasing density in woodland sites. Encroaching PJ is affecting the density, patch size, and health and vigor of sagebrush and woodland vegetation communities by crowding out the understory plant components necessary for wildlife that depend on these habitats.

In passing the Wild Free-Roaming Horses and Burros Act of 1971 (WFRHBA) (Public Law 92-195), Congress found that: "Wild free-roaming horses and burros are living symbols of the historic and pioneer spirit of the West." The Act states that wild free-roaming wild horses (and burros) are to be considered in the area where presently found in 1971, as an integral part of the natural ecosystem of the public lands. The Secretary was directed to "manage wild free-roaming

wild horses and burros in a manner that is designed to achieve and maintain a thriving natural ecological balance[1] on the public lands". To achieve this balance, the BLM has established appropriate management levels and manages and controls wild horse population size within HMAs that have been designated for their long-term management. The terms "horse" and "wild horse" (*Equus caballus*) are used synonymously throughout this document.

The AMLs were established through Final Multiple Use Decisions following completion of an in-depth analysis of habitat suitability, resource monitoring and population inventory data, and public input into the decision-making process. The upper limit of the AML range is the maximum number of wild horses that can be maintained within a HMA while maintaining a thriving natural ecological balance and multiple use relationship on the public lands. Establishing the AMLs within a population range allows for the periodic removal of excess animals (to the low end) and subsequent population growth (to the high end) between removals. Development of the Herd Management Area Plans (HMAP) has also included public involvement. The established AML for the Desatoya HMA is 127-180 individuals but the current population estimate is 543 individuals. It is projected that 651 horses including the 2012 foal crop would be in the population at the time of implementation of the proposed management action.

The BLM CCDO has previously prepared an HMAP Gather EA for the Desatoya HMA: Desatoya Herd Management Area Plan/Capture Plan Update and Environmental Assessment (EA) No. NV-030-03-022 (Jul, 2003). These NEPA analyses are incorporated by reference. The population inventory counts and gather history since 2000 for the HMA is listed in Table 2. That EA is available at BLM's web site at:
http://www.blm.gov/nv/st/en/fo/carson_city_field/blm_information/nepa/nepa_archives.html

Table 2: Desatoya HMA Population inventory and Gather History since 2000, (AML 127-180).

Year	Action	Number of Horses
2000	Population Inventory Count	304
2002	Population Inventory Count	435
2003	Removal	207
2004	Removal	95
2007	Population Inventory Count	238
2010	Population Inventory Count	434
2011	Population Inventory Count	543

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

1.3 Purpose & Need

The primary purpose of the Proposed Action is to improve availability, quantity, and quality of sagebrush, woodland, and wet meadow/riparian habitats that multiple wildlife species, wild horses, and livestock depend on.

A secondary purpose of the Proposed Action is to manage the HMA for a thriving natural ecological balance as required under the Wild Free-Roaming Horses and Burros Act by removing wild horses. Depending on gather efficiency (70-80%), the Proposed Action would involve gathering estimated 450 – 525 wild horses while removing approximately 400 excess wild horses during the initial helicopter drive-trapping gather in the late summer/early fall 2012. If gather efficiencies exceed 80% wild horses would be returned to the HMA following the initial gather activities. The goal is to leave no less than 127 horses within the HMA, 60% of which would be stallions and treating as many mares as possible with the fertility control vaccine PZP-22 to facilitate maintenance of the population within the AML and reduce the number of excess wild horses that would need to be removed in future gathers. Over the next ten years, the BLM intends to continually capture and treat mares as needed and remove excess wild horses, when necessary to maintain the wild horse population within the AML range . The proposed action would achieve and manage wild horse populations within established AMLs and allow BLM to make significant progress in attaining the management objectives identified in the Carson City Consolidated Resource Management Plan (CRMP), and the Standards for Rangeland Health & Guidelines for Grazing Management (S&Gs) in the Sierra Front Northwestern Great Basin Area. Furthermore, management of wild horses at the AML not only protects rangeland resources from deterioration that results from wild horse overpopulation and movement to areas outside the HMAs, but would also result in fewer wild horses being placed in short/long-term holding facilities and the adoption sale pipeline over time.

The first need is to restore and enhance degraded sage-grouse habitat stemming from pinyon/juniper (PJ) expansion into sagebrush and quality brood rearing habitats and/or excessive horse use. Healthy, resilient springs/wet meadows support abundant and diverse forb and insect populations. Sage-grouse chicks are critically dependent on the protein for survival, and in turn, recruitment into breeding-capable adults. In particular, wet meadows in Dalton Canyon are degraded from PJ expansion coupled with heavy wild horse use, as well as permitted livestock grazing use of meadows, and a wet meadow in Porter Canyon is degraded from PJ expansion. This has changed the hydrology that in turn has led to decreased plant diversity and declining sage-grouse use.

The second need is to decrease density of PJ that has been identified as a primary factor in mule deer population declines as well as several woodland dependent bird species. Mule deer, pinyon jays, mountain chickadees, and scrub jays depend on woodland landscapes that have a more open canopy and park-like structure with a robust understory of forbs, grasses, and shrubs. In highly dense PJ stands, the understory has been eliminated or is in decline. Increasing density and encroachment is also degrading springs/wet meadows in mule deer habitat and aspen stands in riparian areas.

The third need is to reduce the high fire risk stemming from increased PJ density and to restore a cheatgrass dominated landscape near Cold Springs that has resulted from previous fires. The Fire Regime Condition Class (FRCC) is a numerical rating representing the degree of departure from the historical fire regime and vegetation conditions, or in other words, fire frequency and severity. The Cold Springs landscape is rated FRCC 3 and is defined as follows:

These lands have been significantly altered from their historical range. Because fire regimes have been extensively altered, risk of losing key ecosystem components from fire is high. Consequently, these lands verge on the greatest risk of ecological collapse.

1.4 Land Use Plan Conformance Statement

The Proposed Action and the No Action alternatives are in conformance with the Carson City Field Office Consolidated Resource Management Plan ((CRMP) (2001)). Part of this EA is a project specific refinement of the Lahontan EIS (1983) and the Walker RMP (1985) focusing on the management of wild horses in the Desatoya HMA. The AML for the HMA was established through the allotment evaluation and Final Multiple Use Decision (FMUD) process. The Proposed Action and No Action alternatives described are in conformance with pages WHB –1-5 as well as the following:

- WHB-2.2 Maintain sound thriving populations of wild horses within HMAs.
- WLD-2.4: Maintain and improve wildlife habitat, and reduce habitat conflicts while providing for other appropriate resource uses.
- WLD-2.6 Maintain or improve the condition of the public rangelands so as to enhance productivity for all rangeland values (including wildlife).
- WLD-6.4: Wildlife habitat improvement projects would be guided, in the most part, by provisions in activity level plans such as habitat management plans, or interdisciplinary activity plans (i.e. *Desatoya Mountains Ecosystem Management Plan*). These plans would be developed through consultation with interested parties and would be coordinated with livestock, wild horse, and wilderness plans. These plans would be focused on rehabilitation and improvement of wildlife habitat through protective fencing, water developments, grazing management, and vegetation treatments.
- WLD-8.13: Spring improvement projects would be fenced and water would be piped away from the source to a trough or pond if necessary. Water would also be left at the spring source in accordance with Nevada law.
- FOR-1.1: Forest and woodland management would be based on the principles of multiple use, sustained yield, and ecosystem management.
- WHB-1.2: Remove excess wild horses and burros from public lands to preserve and maintain a thriving ecological balance and multiple-use relationship….
- FIR-2.1: Restore fire as an integral part of the ecosystem, improve the diversity of vegetation and to reduce fire hazard fuels.
- LSG-1.1: Maintain or improve the condition of the public rangelands to enhance productivity for all rangeland and watershed values.
- LSG-1A: Maintain a sufficient quality and diversity of habitat and forage for livestock, wildlife, and wild horses through natural regeneration and/or vegetation manipulation.
- RIP-1E. Prescribe management for riparian-wetland values that is based upon site-specific characteristics and settings.

- RIP-2I: Identify, encourage, and support research and studies needed to ensure that riparian-wetland area management objectives can be properly defined and met. Incorporate research findings into the planning and management of riparian wetland ecosystems.

1.5 Relationships To Statutes, Regulations, And Other Plans

Compliance with Executive Orders, Laws, Regulations, and State Statutes

The proposed action and no action alternatives are in compliance with the following:

- The Federal Land Policy and Management Act of 1976 (43 U.S.C. §§ 1701-1782, October 21, 1976, as amended 1978, 1984, 1986, 1988, 1990-1992, 1994 and 1996).
- The National Environmental Policy Act of 1969 (42 U.S.C. §§ 4321-4347, January 1, 1970, as amended 1975 and 1994).
- The Endangered Species Act of 1973 (16 U.S.C. §§ 1531-1544, December 28, 1973, as amended 1976-1982, 1984, and 1988).
- Bald and Golden Eagle Protection Act (16 U.S.C. §§ 668-668d, June 8, 1940, as amended 1959, 1962, 1972, and 1978).
- Migratory Bird Treaty Act (16 U.S.C. §§ 703-712, July 3, 1918, as amended 1936, 1960, 1968, 1969, 1974, 1978, 1986 and 1989).
- Executive Order 13186─Responsibilities of Federal Agencies to Protect Migratory Birds (2001).
- National Historic Preservation Act (Public Law 89-665; 16 U.S.C. 470 as amended through 2000).
- Archaeological Resources Protection Act of 1979, As Amended (Public Law 96-95; 16 U.S.C. 470aa-mm).
- Public Rangelands Improvement Act of 1978 (43 U.S.C. § 1901).
- Wild Free-Roaming Horses and Burros Act (WFRHBA) of 1971, As Amended (Public Law 92-195, 43 CFR § 4700),
  - **43 CFR 4700.0-6**: (a) "Wild horses shall be managed as self-sustaining populations of healthy animals in balance with other uses and productive capacity of their habitat."
  - **43 CFR 4710.3-1: Herd management areas.** "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."
  - **43 CFR 4710.4: Constraints on management.** "Management of wild horses and burros shall be undertaken with 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 4740.1: Use of motor vehicles or aircraft.** (a) "Motor vehicles and aircraft may be used by the authorized officer in all phases of the administration of the Act, except that no motor vehicle or aircraft, other than helicopters, shall be used for the purpose of herding or chasing wild horses or burros for capture or destruction. All

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

- **43 USC Sec. 1901:** (4) "continue the policy of protecting wild free-roaming horses and burros from capture, branding, harassment, or death, while at the same time facilitating the removal and disposal of excess wild free-roaming horses and burros which pose a threat to themselves and their habitat and to other rangeland values."

Relationship to Policies and Guidelines

The proposed action and alternative action are in conformance with the following guidance, manuals, and handbooks:

- Special Status Species Management (BLM Manual 6840).
- Integrated Vegetation Management (BLM Handbook H1740-2).
- State Protocol Agreement between the BLM, Nevada and the Nevada State Historic Preservation Office (October 26, 2009).

Relationship to Other Plans

The proposed action and alternative action are consistent with the following:

- Desatoya Mountains Ecosystem Management Plan, EA No. NV-030-98044 (July 1999).
- Desatoya Herd Management Area Plan/Capture Plan Update and Environmental Assessment (EA) No. NV-030-03-022 (Jul, 2003).
- The National Fire Plan, Review and Update of the 1995 Federal Wildland Fire Management Policy (January 2001).
- Carson City District Fire Management Plan (2004), Churchill Basin Fire Management Unit (NV-030-12).

1.6 Conformance With Rangeland Health Standards And Guidelines By Livestock Grazing Allotment

Maintaining wild horse populations within AML sustains a healthy horse population, ensures a thriving natural ecological balance, and prevents degradation of rangeland conditions by deterring negative impacts to rangeland resources that can result from wild horse over population. This has been demonstrated by the evaluation of key areas and ecological sites under rangeland health assessment protocols. Damage results from over utilization of resources when populations exceed the carrying capacity of the rangeland.

The Clan Alpine Livestock Grazing Allotment

A Clan Alpine allotment rangeland health assessment evaluation of key areas and ecological sites was conducted the summer of 2009 and 2010. Although the final Standards and Guidelines Assessment and Determination has not been completed, as of this date, it was noted at some of the evaluation sites that excess wild horses were a contributing factor for reduced amounts of perennial grasses and forbs, including winterfat.

However, only 2.4% of the allotment overlaps the Desatoya HMA and for the areas that were not meeting the standard in this portion of the allotment, historic fire and subsequent cheatgrass invasion, not wild horses, were the cause

(www.blm.gov/nv/st/en/res/resource_advisory/sierra_front-northwestern/standards_and_guideline.html).

The Porter Canyon and Edwards Creek Livestock Grazing Allotments:
A Standards and Guidelines Assessment was completed for these allotments in 2003. The wild horse population size was estimated to be 434 in 2002 and after gathers in 2003 and 2004, abundance estimates were 238 in 2007, 434 in 2010, and 543 in 2011 (See Table 2). In 2003 standards were being met for Soils, Water Quality, Plant and Animal Habitat, Special Status Species Habitat but not for Riparian/Wetlands. The interdisciplinary team at the time indicated that the cause was likely from a combination of livestock and wild horse use of upland spring areas and to a lesser degree, streamside habitat (www.blm.gov/nv/st/en/res/resource_advisory/sierra_front-northwestern/standards_and_guideline.html).

Through a cooperative agreement, Smith Creek Ranch and the BLM developed a long-term monitoring program that provides feedback to the grazing program based on cooperatively collected baseline data. Upland monitoring included species composition, frequency, cover, and utilization data. Riparian monitoring included greenline, riparian cross section, aspen density, and stubble height data. Innovative solutions developed in coordination between the BLM and Livestock Permittee to resource issues on Porter and Edwards Creek allotments have resulted in significant improvement in riparian and upland vegetation conditions, which in turn benefits wildlife habitat. However, riparian and upland objectives are not being met due to PJ encroachment coupled with overpopulation of wild horses that have degraded wet meadows and sagebrush plant communities.

Excess wild horses have damaged spring developments such as corrals, troughs, spring boxes and the spring source (Personal communication Jason Salisbury from NDOW and Duane Coombs Smith Creek Ranch). Although no data exists to assess the degree of impacts of wild horses versus livestock, spring development damage can be a major contributing factor to the reduction of the available water supply for wild horses, livestock, and wildlife. Maintaining wild horse numbers within the AML would reduce the occurrence of damage to springs and spring developments thus enhancing the availability of water for wildlife, livestock, wild horses, and riparian vegetation. In order to protect a sage-grouse brood rearing meadow in Haypress (See Appendix G Map 8 for general location), NDOW constructed an exclosure fence primarily because of excess wild horse impacts (Personal communication Jason Salisbury NDOW).

Managing vegetation utilization within the moderate or less categories is important to establishing a viable rangeland plant community. When plants are not over utilized there is an adequate amount of photosynthetic material remaining for the production of carbohydrates to meet the vegetation's growth and respiration demands. The plants enter dormancy with more root reserves for next year's growth and reproduction.

The South Smith Creek Livestock Grazing Allotment:
This allotment is not within the Project boundary but approximately 16% of the Desatoya HMA is within the allotment boundary. A Rangeland Health assessment was completed for the South Smith Creek Allotment in 1997, but no current data exists. The South Smith Creek evaluation

stated that wild horse use in this allotment is incidental. However, AML range for the portion of this allotment falling within the Desatoya HMA is 9 - 15.

1.7 Decision To Be Made For The Excess Wild Horse Removal

The BLM authorizing officer would determine whether to implement the proposed capture and vaccination of released mares with a contraceptive and removal of excess wild horses to maintain population size within the established AML and avoid the deterioration of the range that can result from wild horse overpopulation. The authorizing officer's decision would not set or adjust the AML, nor would it adjust livestock use, as these were set through previous decisions. Approximately 525 excess wild horses, including all wild horses residing outside the HMA boundaries, would be removed from the range to achieve and maintain a population size within the AMLs consistent with the requirements of the WFRHBA. A second separate decision by the BLM authorizing officer will be made to determine whether to implement the other components of the proposed action.

The No Action Alternative would not achieve the Purpose and Need identified in Section 1.3. However, it is analyzed in this EA to provide a basis for comparison with the action alternative, and to assess the effects of not conducting a gather or completing the other habitat enhancement or rehabilitation components at this time. The No Action Alternative would not be consistent with the requirement under the WFRHBA to remove excess wild horses and burros from public lands and is also not in conformance with regulatory provisions for management of wild horses and burros as set forth at 43 CFR § 4700. The No Action Alternative would not result in achievement of the established AML or progress towards the improvement of rangeland conditions.

1.8 Scoping and Identification Of Issues

Initial issues addressed in this EA were identified through internal scoping. Internal scoping was done via meetings and written communications with BLM resource specialists and the following project partners; Nevada Department of Wildlife, University of Nevada Reno, Great Basin Bird Observatory, Smith Creek Ranch, and U.S. Geological Service.

Comments were accepted on the *Desatoya Mountains Habitat Resiliency, Health, and Restoration* project Environmental Assessment, DOI-BLM-NV-C010-2011-0513-EA, for a 30 day period from March 5, 2012 through April 4, 2012; although comments received after this date were also considered. Appendix H contains information regarding comments received and subsequent responses by the CCD. The EA was made available by hard copy at the CCDO, and on the website at:
http://www.blm.gov/nv/st/en/fo/carson_city_field/blm_information/nep a.html.

Letters to 41 individuals, organizations, and agencies were mailed and notification of the availability of the EA to 33 other State and federal offices was made through the Nevada State Clearinghouse. The CCDO published a news release that was sent to media outlets listed on the Nevada BLM State Office media list. This list included the Tahoe Daily Tribune, Record Courier, San Francisco Chronicle, Mason Valley News, Las Vegas Review Journal, Sacramento Bee, Lahontan Valley News, Nevada Appeal, Reno Gazette Journal, Associated Press, Nevada

News, Fox news Reno, KNPB, KRNV, KTVN, Lotus Radio, Daily Sparks Tribune, and organizations on the Media Reno Area, Media Other NV&CA, Media So NV, Wild Horse Interest and Congressional group database. Additionally, an email invitation was sent out on May 12, 2012 for a site visit that was conducted to the project area on May 31, 2012 to over 3900 individuals who had submitted comments by email during the public comment period. Three members of the public participated.

The following Native American Tribes were initially consulted on the Proposed Action February 4, 2011; Fallon Paiute-Shoshone Tribe, and the Yomba-Shoshone Tribe. Further written correspondence was mailed on August 2, 2011 and face to face consultations were conducted with the Yomba-Shoshone Tribe on March 11, June 14, June 20, and August 11, 2011 and with the Fallon Paiute-Shoshone Tribe on February 23, 2011.

BLM internal, external, public, State and federal agency coordination and Native American tribal consultation was also completed during the development of the previously prepared Desatoya Herd Management Area Plan/Capture Plan Update and Environmental Assessment (EA) No. NV-030-03-022 (Jul, 2003).

The issues listed below were identified as a result of BLM's internal scoping relative to the proposed contraceptive control treatment of wild horses (mares) in the planning areas.

1. Impacts to individual wild horses and the herd. Measurement indicators for this issue include:
- Projected population size and annual growth rate (WinEquus population modeling).
- Expected impacts to individual wild horses from handling stress.
- Expected impacts to herd social structure.
- Expected effectiveness of proposed fertility control application.
- Potential effects to genetic diversity.
- Potential impacts to animal health and condition.

2. Impacts to vegetation/soils, riparian/wetland, and cultural resources. Measurement indicators for these issues include:
- Expected forage utilization.
- Potential impacts to vegetation/soils and riparian/wetland resources.

3. Impacts to wildlife, including migratory birds and BLM special status species, and their habitat. Measurement indicators for these issues include:
- Potential for temporary displacement, trampling or disturbance.
- Short and long term for potential competition over forage and water.

Additional issues brought up through initial scoping include the following:
- The ability to meet wild horse objectives using only water or bait trapping.
- Sage-grouse collisions with fencing.
- Cheatgrass invasion into tree removal areas.
- Protection of archaeological resources.
- Would using lop and scatter methods to protect archaeological resources lead to excess fuel load?
- How would success of treatments be measured for vegetative and biological resources?

- Will wood be available to the public?
- Is everything going to be clear cut?
- How would the BLM monitor success of treatments?

2.0 PROPOSED ACTION AND ALTERNATIVES

The EA Interdisciplinary Team developed one action alternative (proposed action) to meet the purpose and needs identified in Chapter 1. In addition, a No Action alternative is presented to represent current conditions and trends and establish a baseline for analysis. The No Action alternative also serves as a reference point in discussing project activity effects. All project activities incorporate Project Design Features (PDFs) designed to reduce or eliminate potential effects from project activities. PDFs are detailed in Appendix A.

2.1 The Proposed Action

General **—** The proposed action has been developed in collaboration and partnership with the Nevada Division of Wildlife (NDOW), the University of Nevada Reno, the US Department of Agriculture (ARS & NRCS), Great Basin Bird Observatory, U.S. Geological Survey, and Smith Creek Ranch LLC. Funding and partner contributions would influence how many acres are treated in any given year as well as the breadth of monitoring for response to treatment.

Summary **—** Within the project area, up to approximately 32,705 acres of ground disturbing treatments are proposed over a ten year period including pinyon/juniper removal and thinning; wet meadow and spring rehabilitation/protection (includes fencing, pipelines, and troughs); rabbitbrush control using mowing followed by herbicide treatment and reseeding; a site-specific fuels treatment utilizing prescribed fire, herbicide, and seeding; and excess wild horse removal utilizing helicopter drive-trapping and water/bait trapping methods. Additionally, researchers at the University of Nevada Reno (UNR) have set up a long term experimental watershed on private land within Porter Canyon to measure the hydrologic changes associated with pinyon/juniper tree removal. Portions of the UNR experiment would be expanded to BLM lands within Porter and Dalton Canyons. Ground-disturbing activities are summarized below for the main treatment areas, which are shown on maps 4-7 Appendix G. In addition to the main areas, between Porter and Dalton Canyon approximately 7,753 acres of 20 to 75 percent and 2,054 acres of up to 100 percent of PJ would be removed using any of the described methods in the be following ***Vegetation Treatment Methods*** section below (See Map 3 Appendix G). Specific details for vegetation treatments, wet meadow and spring rehabilitation, wild horse removal, and the Cold Spring fuels treatment are described in Sections 2.2 – 2.5, which follow these summaries:

Porter Canyon Area (See Map 4 Appendix G):

- Approximately 2500 acres of up to 100% PJ removed using any of the methods described in the following ***Vegetation Treatment Methods*** section below.
- Up to 3 H-flumes installed in streams to assess hydrological changes to PJ removal; two above the meadow and one below. Exact locations would need to have a 50 foot straight channel section with about a 10 foot stream width. Overall disturbance would be 10 x 10 feet with a concrete cutoff wall constructed to a depth of 3 feet.
- Springbox, trough, and pipeline at Stoker Spring No. 1 to protect and enhance an aspen grove and riparian area. The approximately 1.3 mile pipeline would follow the road and installation would be below the ground surface using trenching machinery. The spring box would be installed belowground to a depth of 4 feet.

- Maintain the drift fence across the canyon mouth near Stoker Spring No.1 and extend it farther up the slopes to control livestock. The current fence is a pipe rail design.
- Large scale rainfall experiment would result in disturbance where each plot is installed. A small trench approximately 1.5 x 2 feet and 1 foot deep is needed to install mini flume. 6 plots are proposed with exact locations to be determined after consultation with the BLM archaeologist.
- Several soil moisture probes would be installed and require a hole approximately 18 x 12 inches wide to depth of 3 feet. After probes are installed they are backfilled. Instrument control housing for soil moisture probes requires a 2 by 2 foot fenced area to keep livestock from rubbing and a solar panel is attached to the instrument house. Fencing would be removed after experiment is over.

Dalton Canyon Area (See Map 5 Appendix G):

- Approximately 9500 acres of up to 100% PJ removal using any of the methods described in the following ***Vegetation Treatment Methods*** section below.
- Construction of 142 acre wet meadow perimeter pipe rail fence or BLM standard 4-wire fence, which are both wildlife friendly (≈ 4.4 miles of fenceline). Pipe rail fence is more expensive but is far stronger and requires much less maintenance over time and is more effective at keeping livestock and wild horses out and letting wildlife in.
- Decadent rabbitbrush mowing followed by herbicide treatment between the wet meadows within the exclosure fence.
- One cattle guard installed in road at north end of fence.
- Multiple structural check dams as needed to rehabilitate downcuts and increase groundwater uptake in flow channels associated with the meadows. Check dams would consist of rock or downed trees. A bobcat would be used to structurally reduce severe downcuts in order to mimic natural slope.
- Three seasons of complete rest from livestock within the exclosure.
- After three seasons of rest, limited livestock grazing within the exclosure to less than 30 days in the spring and/or fall each year, the number of days dependent on the number of cattle and the amount of forage available. Also, 2 troughs and up to 1.5 miles of pipeline within the exclosure fence to keep livestock away from sensitive spring areas that are likely to require more than three years to recover to proper functioning condition (There is water available outside of exclosure for wild horses).
- A rectangular hardened stream crossing would be installed using matting with dimensions of approximately 16 x 50 feet on the southern end of the exclosure.
- Brush fences consisting of cut trees would be designed and built to protect sensitive spring areas within the exclosure that are likely to need more than 3 years of rest for recovery. It is expected that these brush fences would break down in 5-7 years.

Exact locations for the following Dalton Canyon actions would be determined after consulting with UNR and the BLM archaeologist and implementation would be dependent upon funding availability.

- To measure spring flow at up to 4 springs, a spring box would be installed and a sensor would be put on a pipe from the spring box to record continuous outflow.
- Up to 2 troughs and associated short pipelines to provide water outside of the fence to livestock, wild horses, and wildlife.

- Large scale rainfall experiment would result in disturbance where each plot is installed. A small trench approximately 1.5 x 2 feet and 1 foot deep is needed to install mini flume. 6 plots are proposed.
- Multiple groundwater monitoring wells (6 inch hole to maximum depth of about 25 feet).
- Small scale rainfall experiment for up to 30 trees to assess interception rates and stem flow from simulated rainfall. Minor ground disturbance stemming from four stakes in the ground and multiple buckets per tree would occur. No damage to the tree would occur.

Bassie Canyon-Edwards Creek Area: (See Map 6 Appendix G):

- 2609 acres of up to 100% and 633 acres of 20 to 75% PJ removal using any of the methods described in the following ***Vegetation Treatment Methods*** section below.
- 35 acre wet meadow piperail fence or BLM standard 4-wire fence (≈ 2.25 miles of fenceline).
- One trough and an approximately 1 mile long pipeline to help distribute wild horses and livestock further away from the riparian area and aspen stands within the canyon.
- Remove conifers and understory hazard fuels from within and around aspen stands throughout drainage.
- Maintain riparian protective fences in Edwards and Topia Creeks, modifying as needed to allow for expansion/restoration of riparian vegetation.

Smith Creek Drainage:

- Remove conifers and excessive understory fuels from within and around aspen stands throughout drainage.
- Maintain riparian protective fences at upper Smith Creek, Haypress Meadows, Billie Canyon, and Pole Creek, modifying as needed to allow for expansion/restoration of riparian vegetation.

Crucial Mule Deer Habitat Area: (See Map 7 Appendix G):

- Construct 15 acre wet meadow perimeter pipe rail fence or BLM standard 4-wire fence (≈ 1.5 miles of fenceline). Pipe rail fence is more expensive but is far stronger and requires much less maintenance over time and is more effective at keeping livestock and horses out and letting wildlife in.
- Approximately 2000 acres of up to 100% and 5093 acres of 20 to 75% PJ removal using any of the removal methods described in the ***Vegetation Treatment Methods*** section below.

Vegetation Treatments Methods

The following section further describes vegetation treatments that would be used to meet the purpose and need for the project. Site specific prescriptions would be developed each year for smaller treatment units prior to implementation. The specific method (s) utilized within a treatment unit would be based on consideration of resource protection needs, density of vegetation, and accessibility by machinery.

Vegetation Improvements **—** Over the next 10 years, sagebrush, woodland, and riparian/wet meadow habitats would be improved primarily by removing PJ on up to 32,142 acres within the project area. Acres treated would vary year by year from 50 to 5000 acres or more depending

upon availability of funding, partner contributions, logistics, and competing workload priorities. Within the delineated **sage-grouse specific treatment areas** (~18,663 acres) up to 100 percent, and in delineated **woodland treatment areas** (~13,479 acres), 20 to 75 percent of PJ would either be cut and removed, lopped and scattered, and/or shredded by mastication, while leaving the understory vegetation intact as much as possible (See Map 3 Appendix G). The specific treatment method in a given area would be dictated by cultural or biological resource sensitivity, topography, and soil erosion potential.

Areas of decadent rabbitbrush would be thinned using hand or mechanical means as well as herbicide treatments. Treatments would include the use of rubber-tired/-tracked or metal-tracked mechanized equipment with a mastication or mower head, post-hole diggers attached to tractors or backhoes, trenching machinery, chainsaws, prescribed burning of piles, hand held post hole diggers, and harvest of fuelwood or biomass depending on the site. Temporary spur roads would be necessary and maintenance of existing roads would occur including minor rerouting, installation of drainage control structures, and blading/recontouring.

Tree Cutting and Partial Tree Removal — PJ would be cut with hand and small mechanized tools. A portion of the wood would be removed as firewood or other biomass utilization under permit within designated boundaries either for personal use or for commercial resale. These areas would be determined by the BLM on a yearly basis based on public demand and project needs. Individuals would need to obtain a permit or contract from the CCD. Firewood cutting treatment areas would be located near existing roads. Woodcutters would be permitted to drive off established roads only as needed to load and remove the wood. Vegetation remnants (slash) would be left in place by wood cutters. If needed to meet objectives after termination of firewood cutting, slash would be treated further under BLM supervision by either shredding or scattering, emphasizing the need to cover vehicle tracks to avoid establishment of new permanent travel routes. Harvest or mechanical shredding of woody material would not be employed in canyon and foothill sites where slopes limit vehicle access.

Tree and Shrub Cutting with No Removal — PJ would be cut and lopped and scattered on site. Cut, lop, and scatter treatments would be employed where trees are small and sparse, where topography or rock limit the use of mechanized equipment, or where protection of sensitive natural resources is needed.

Tree Cutting and Slash Piling — PJ would be cut and the slash piled on sites where mastication is not practical but where it is important to decrease tree density for optimal wildlife habitat and to reduce fuel loading. The piles would be constructed to specifications for either leaving as habitat for small wildlife or for burning. Burn plans would be required for burning any piles.

Mechanical Tree Shredding — Rubber-tired/-tracked or metal-tracked mechanized equipment with a mastication or mower head would be used to shred trees and/or rabbitbrush in place. PJ within the treatment area would be targeted for shredding except for small pockets identified for avoidance to protect sensitive resources and provide for ecological diversity. The shrub community would not be targeted for shredding but would be thinned indirectly as part of the tree-shredding process. The product of grinding and shredding would be a mulch layer no deeper than 12 inches, consisting of material less than three feet in length and four inches in diameter.

Shredded vegetation would be left in place to reduce wind generation of dust and stabilize the soil surface. This method would not be employed in the confined riparian and foothill sites where slopes limit vehicle access.

Whole Tree Removal — Rubber-tired/-tracked or metal-tracked mechanized equipment would be used to cut, skid, or haul to a landing, and/or chip or grind PJ onsite or offsite. PJ within the treatment area would be targeted for removal or shredding except for small pockets identified for avoidance to protect sensitive resources or to provide for diversity. Shearing would include separating the tree from the stump six inches from the ground or lower. Once the trees are sheared, they would be skidded or hauled to a designated landing or processing area, where the vegetative material would be further cut, chipped, or ground before or after hauling from the site. This method would not be employed in the confined riparian and foothill sites where slopes limit vehicle access.

Riparian/Aspen Restoration — The two main treatment features to protect and restore riparian sites with aspen stands throughout the project area would be (1) removal of conifers and understory hazardous fuels and (2) livestock fencing where needed to control grazing. Conifers, including PJ, would be removed from within and at least 150 feet around aspens and associated riparian vegetation. Hazardous understory fuels would be reduced by hand or mechanical methods to minimize damage to mature aspen stems. Through a cooperative agreement, livestock grazing would be managed to reduce impacts on aspen regeneration and other riparian vegetation though systematic grazing including fencing where needed to aid management. Existing riparian fencing would be maintained or constructed and modified as indicated by monitoring. Riparian fence projects already exist in Edwards Creek, Topia Creek, and several sites in the Smith Creek watershed. Small portable, temporary exclosures made of 16-foot metal panels would also continue to be used widely to promote recovery of riparian vegetation at selected sites.

Rabbitbrush Control —2, 4-D herbicide would be applied during the spring growing season according to label specifications to eliminate monotypic stands of rabbitbrush that have encroached into meadow areas in Dalton Canyon. The herbicide would be applied by backpack sprayer or wet blade mower to only what has been cut.

Spring/Wet Meadow Exclosure Fencing and Range Improvements

Monitoring for baseline conditions would be assessed prior to treatment to gauge trend, evaluate outcome of treatments, and to inform an adaptive management strategy. Depending on funding availability, a pipe rail or a standard BLM 4-wire fence built to meet specifications regarding cattle, horses and/or wildlife would be constructed (BLM Handbook 1741-1). A standard 4-wire fence consists of a smooth bottom wire and two strands of barbed wire and a smooth top wire or a combination. The wire spacing is 16", 22", 30" and 42" and 16 1/2' spacing between T-posts. Fence construction would involve the use of pick-up trucks, post-hole diggers attached to tractors or backhoes and other equipment as necessary. New road construction would not be included for the proposed fenceline, but a two-track road would be created and remain visible until vegetation is naturally restored along any fence. Existing roads would be utilized to the extent possible.

Fencing would be utilized to protect and enhance approximately four spring/wet meadows that are or could be used by sage-grouse for brood rearing in Dalton Canyon and for spring/meadow

complexes that are used by birds, mule deer, desert bighorn sheep, and other general wildlife species in the Bassie Canyon and crucial mule deer habitat areas (See Maps 5-7 Appendix G). Where needed to provide water outside of the fenced area for animals, troughs and/or water tanks would be placed in an upland site away from the spring/wet meadow and any excess water would be piped back where feasible, or the trough would have an overflow mechanism installed that would shut off flow when full. Because of freezing, overflow mechanisms would be disengaged in the winter months. In addition to fencing, meadows with severe to moderate head cutting would require structural components such as check dams to trap sediment from increased water flow anticipated from tree removal and/or thinning (eg. the wet meadow complex in Dalton Canyon). For the Dalton and Bassie Canyon fences, livestock would be allowed to graze, with timing and duration based upon the ability to meet restoration objectives. This would be done in cooperation with Smith Creek Ranch. A cooperative maintenance agreement would also be established with Smith Creek Ranch.

A spring box (~70 sq. ft. of disturbance) and an approximately 1.3 mile pipeline would be constructed to provide water from Stoker Spring #1 to livestock and wild horses outside the riparian zone (See Map 4 Appendix G). A trough would be located at the end of the pipeline. While only one spring box would be installed, two areas would be dug to determine the best location for a total of 140 sq. ft. of ground disturbance. The pipeline would be dug and buried deep beneath the existing road if possible. Based on the results of cooperative monitoring, the existing drift fence across the mouth of the canyon would be maintained and extended farther up the hillsides if necessary to control grazing by wild horses and livestock.

In Bassie Canyon an approximately 15 acre pipe rail or standard BLM 4-wire riparian fence would be built using specifications previously described (See Map 6 Appendix G). A trough and an approximately 1 mile pipeline would be installed to provide water to livestock and wild horses outside the riparian exclosure. Gates would be installed at both ends to allow road access.

The springbox and/or collection system, discharge pipe and trough for Stoker Spring would be designed and installed to standard BLM specifications. Pipeline construction here, as well as in Bassie Canyon, would include installation of pipeline below ground surface by trenching machinery. Spring development and site cleanup would include the use of heavy equipment (i.e. backhoe-loader tractors) as well as pickup trucks.

One cattleguard (with wings, posts bases, and grids included) would be installed at the north end of the Dalton Canyon area fence (See Map 5 Appendix G). Normal maintenance and up keep of this cattle guard would be accomplished through a cooperative agreement with the livestock permittee, which include cleaning the pit under the cattle guard to ensure adequate drainage.

An existing culvert would be replaced with a corrugated metal pipe designed to accommodate spring snowmelt in the Dalton Canyon area (See Map 5 Appendix G). It would be installed at or below streambed elevation and sized to accommodate full active channel width, to reduce flow velocities through the structures, and allow accumulation of bedload (gravels). The culvert would be designed to allow passage by resident fish. Upstream and downstream approaches would be armored with non-erosive materials to prevent the loss of fill material from spillover during high

water events. Disturbed areas would be revegetated to prevent erosion and establishment of noxious weeds.

Excess Wild Horse Removal

Depending on gather efficiency (70-80%), the Proposed Action would involve gathering an estimated 450 – 525 wild horses while removing approximately 400 excess wild horses during the initial helicopter drive-trapping gather in the late summer/early fall of 2012. If gather efficiencies exceed 80% wild horses would be returned to the HMA following the initial gather activities. Under this alternative, the BLM would attempt to gather a sufficient number of wild horses beyond the excess wild horses to be removed, so as to allow for the application of fertility control (PZP-22 or most current formulation) to all breeding age mares that are released and to adjust the sex ratio of animals on the range following the gather to favor males (60% stallions). The sex ratio of potential released animals will be dependent on the sex ratio of gathered wild horses. Approximately 65% or more of all released wild horses would likely be stallions to achieve a 60% male sex ratio on the range (including animals not gathered). All wild horse mares released back into the HMA would be treated with fertility control vaccine (PZP-22 or the most current formulation) to maintain AML, extend the time before another gather is required, and reduce the number of excess wild horses that would need to be removed in the future. The procedures to be followed for implementation of fertility control are detailed in Appendix C. The overall management objective is to manage a core breeding population of 127 head (low AML) within the Desatoya HMA with a desired sex ratio that favors males (60% stallions). All wild horses residing outside of established HMA boundaries will be removed regardless of sex and age and would not be relocated back to the HMA.

Following the initial helicopter gather in late summer/early fall 2012, the BLM intends to use of bait/water trapping over the next 10 years to continue removing small numbers of excess wild horses (20-30) each year until the overall population management objectives are met or to maintain AML range. All future removals of excess wild horses will be based upon population inventories conducted through aerial or ground surveys. As part of these planned annual bait/water trapping sessions, the objective would be to trap sufficient numbers of wild horses to continue to administer fertility control vaccine and remove excess wild horses in order to achieve and/or maintain the AML range and desired sex ratio. If the proposed bait/water trapping and fertility control treatments prove to be unsuccessful in maintaining population objectives, then it is anticipated that a follow up helicopter-driven gather would be implemented in the Desatoya HMA every two to three years over the next 10 years to re-vaccinate the mares and remove excess animals. All future gather activities would be conducted in a manner consistent with those described for the late summer/early fall 2012 gather. Funding limitations and competing priorities may require delaying future follow-up gathers and population control activities.

Table 3 on the following page summarizes the proposed initial 2012 helicopter wild horse removal numbers.

Table 3. Current Population Estimate at time of proposed implementation, AML Range, Proposed Number Of Animals To Be Removed And Proposed Number To Be Treated And Released Back Into The HMA.

HMA	Current Estimate*	AML Range	Proposed Gather*	Horses Removed	Mares Treated	Horses Released
Desatoya	651	127 -180	450-525	525	51**	127**

*The last census was conducted in July 2011, and identified 543 horses. The objective is to leave 127 horses inside the HMA upon completion of the gather.
**Assumes 100% capture efficiency.

The proposed gather plan would be initiated as early as mid-August 2012 and would be ongoing, treating mares as necessary with the goal of balancing recruitment with natural mortality to maintain the population within the AML range. Over the course of this plan (10 years), if fertility control efficiency is low and too many foals are being recruited into the population; additional excess wild horses would be removed: alternatively, if not enough foals are recruited into the population to maintain the AML range, fewer mares would be vaccinated and thus allowed to return to higher fertility rates.

The Proposed Action would allow BLM to achieve significant progress toward attainment of rangeland health standards requirements and resource objectives. These management actions are also supported by a recent report received from the Humane Society of the United States (HSUS), which recommends that the BLM increase the level of use of fertility control and other population control methods (sex ratio adjustments, geldings, etc.) http://www.blm.gov/wo/st/en/info/newsroom/2011/july/hsusstatement.html.

The Proposed Action is consistent with current BLM policy and direction to reduce gather frequencies and the number of animals that need to be removed from the range over time through application of fertility control and adjustment of sex ratios to favor stallions, which reduces the proportion of the population that would give birth to foals.

Managing wild horse populations within the HMA at AML reduces the movement of horses outside of the HMA in their search for forage and water. The Proposed Action would reduce the number of excess wild horses that need to be removed from the HMA over time, and thereby result in fewer wild horses being placed in short or long-term holding facilities or in the adoption and sale program.

The bait/water trapping could start as early as the late summer/early fall of 2012 and would be conducted year round with an emphasis in the summer months when this method is expected to be most effective. Several factors such as animal physical condition, herd health, weather conditions, or other considerations could result in schedule adjustments. Gather operations would be conducted in accordance with the Standard Operating Procedures (SOPs) described in the National Wild Horse and Burro Gather Contract (Appendix D). Trap sites would be located at previously used or disturbed sites or other heavily surface disturbed areas whenever possible. New undisturbed areas selected as potential trap sites or holding facilities would be inventoried for cultural resources by qualified BLM personnel. If cultural resources are encountered, the locations would be avoided, unless they could be mitigated to eliminate any impacts.

For bait or water trapping Smith Creek Ranch LLC would construct either permanent or temporary corrals around water sources (private or BLM land). Personal from Smith Creek Ranch or a private gather contractor would close the gate on the corral/trap either remotely or a mechanical release method may be used such as a trip wire. If a mechanical release method which is activated by the horses is employed the trap would be inspected daily whenever there is a possibility of the gate being closed. Personnel from Smith Creek Ranch or a private gather contractor would follow all of the procedures outlined in Appendix D, Standard Operating Procedures for Wild Horse (or Burro) Gathers.

Gathered horses that are identified for removal would be taken to the Indian Lakes holding facility in Fallon, NV or the Palomino Valley Corrals near Sparks NV. The animals would be transported either by BLM personnel, Smith Creek Ranch personnel or a private contractor and subject to all the stipulations in Appendix D. Horses that would be released back into the HMA would have a freeze mark applied by either BLM personnel, Smith Creek Ranch personnel or a private contractor. Horses would not be held longer than five days at Smith Creek Ranch corrals. Trap sites and holding facilities would not be located inside of Wilderness Study Areas (WSAs). Motorized vehicle use would only be permitted on authorized designated existing (cherry stemmed) roads and trails extending into the WSAs.

An Animal and Plant Inspection Service (APHIS) or other veterinarian may be on-site during the gather activities, as needed, to examine animals and make recommendations to the BLM for care and treatment. Any wild horses residing outside the HMA boundaries, any weaned foals, yearlings or orphaned foals would be removed and made available for adoption to qualified individuals. 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 such as club feet, severe limb deformities, or sway back would be humanely euthanized as an act of mercy, comprising on average about 0.5% of gathered horses. Decisions to humanely euthanize animals in field situations would be made in conformance with BLM policy (Washington Office Instruction Memorandum 2009-041). Refer to:
http://www.blm.gov/wo/st/en/info/regulations/Instruction_Memos_and_Bulletins/national_instruction/2009/IM_2009-041.html

Wild horse data including sex and age distribution, condition class information (using the Henneke rating system), color, size and other information may also be recorded. Hair samples could be collected on about 25-100 animals to assess the genetic diversity of the herds.

Cold Spring Fuels Treatment

This 563 acre portion of the proposed action would modify the structure, amount, and continuity of the vegetation adjacent to the community of Cold Springs, Nevada (See Map 3 Appendix G). This would be accomplished using the following methods:

A prescribed fire plan would be designed and approved prior to implementation to remove the existing vegetation, which consists primarily of invasive annual grasses and mustards. The fire plan would be implemented by fire specialists and would be accomplished by hand crews and engine crews under low to moderate spread potential conditions in the fall of the year before November when livestock use this pasture. Fire lines would be constructed by hand for the

prescribed fire and then rehabilitated after the seeding effort. To control the spread of cheatgrass after the prescribed fire the BLM, through the use of a service contract, would spray imazapic at a rate of .0625 pounds active ingredient per acre on up to 563 acres in the fall/winter (October or December because of livestock use). Results of a study released in 2002 by BASF and Synergy Resource Solutions Inc. show that fire intensity can be significantly reduced in cheatgrass-infested areas treated by imazapic (Kury et al. 2002). The study found that the height of flames in treated areas can be reduced by as much as 88 percent and the rate at which the fire spreads can be lowered by as much as 95 percent, compared to untreated areas. Use of imazapic would comply with manufactures direction and conform to BLM policy (BLM 2007b). Imazapac would be applied using ground spray methods, vehicles, or manual application devices.

About one month after herbicide application, the fuels treatment area would be seeded with a combination of fire resistant non-native and native species. Species composition and application rate would be determined prior to implementation. Species under consideration for this project are: Forage kochia (*Kochia prostrata*), Siberian wheatgrass (*Agropyron fragile (Roth*)), fourwing saltbush (*Atriplex canescens*), Sandberg's bluegrass (*Poa secunda*) and bottlebrush squirreltail (*Elymus elymoides*). Due to the amount of rock in the project area, a combination of aerial, drill seeding, ATV, and hand applications would be used to plant the seed. Project design features (PDF's-Appendix A) for herbicide application would be followed with the exception of not spraying in fall.

Monitoring / Adaptive Management

Best management practices would be applied where applicable. The principle of adaptive management would also be used as treatment methods are applied and monitored for effectiveness in meeting project objectives.

Portions of the project area have not been inventoried for the presence of cultural resources. Field inventory of cultural resources prior to implementation of any treatment entailing surface disturbance is part of the proposed action, and treatments would be modified as needed to protect resources (see project design features for Cultural Resources). BLM personnel would conduct a pre-treatment field review of the BLM lands in the project area to flag any current mining claim markers, survey monuments, above ground improvements, or other vulnerable infrastructure for avoidance during vegetation treatment activities. Treatment unit boundaries would be flagged, including any islands to be avoided or modified for resource protection or ecological diversity.

Specific pre and post treatment monitoring protocols for vegetation and wildlife species would be developed by the BLM in consultation with project partners. Monitoring generally involves activities such as vegetation transects, photo-plots, wildlife surveys, soil testing, and other minimally invasive procedures. The level (amount) of monitoring conducted would be dependent upon funding availability from the BLM and its partners. The following broad goals would be addressed:

- Evaluate sage-grouse response to treatment.
- Evaluate migratory and resident bird species response to treatment.
- Evaluate BLM sensitive species response to treatment.
- Evaluate hydrologic response to PJ removal and fencing.
- Ensure initial fuel treatment objectives are met.

- Evaluate fuel load recovery.
- Evaluate habitat characteristics.
- Identify invasive species for subsequent treatment.
- Assess condition and usage of existing roads in the treatment areas.
- Evaluate response of wild horses to treatments.

If monitoring identifies detrimental changes in fuel loads, vegetation response, habitat characteristics, or other biotic indicators associated with completed or proposed treatments, additional treatments would be initiated to maintain objectives. Fencing, troughs, pipelines, and other structures would be checked periodically by the BLM or livestock grazing permittee to assess if maintenance is needed.

Project Design Features

Project design features (PDFs) are included in the proposed action for the purpose of reducing anticipated environmental impacts which might otherwise stem from project implementation. The PDFs noted in Appendix A would be integral to all activities and action alternatives.

2.2 No Action Alternative

The No Action Alternative refers to the current management situation. Under this alternative, no treatments would be applied. The current trends of vegetation growth and wet meadow/riparian decline would continue. PJ would continue to increase in density and expand into sagebrush communities and the resiliency and health of shrub and understory plants would continue to decline. Conifers would continue to increase in density around and within riparian hardwood groves and cause them to decline. Hazardous fuel conditions would continue to accumulate beyond levels representative of the natural (historic) fire regime and threaten to damage the sagebrush, woodland, and riparian hardwood habitats through the high risk of intense wildfires difficult to control. Horse populations would continue to increase even further beyond AML, which could cause harm to herd health as well as continue to impact native plant communities on which sage grouse and mule deer are dependent. Overall ecosystem health and species diversity would likely continue to decline.

For the Cold Springs fuels treatment, under the No Action alternative the restoration strategy would not occur. Over time this would likely lead to expansion of the grass-fire cycle. In response to this increasing density of cheatgrass; fire frequency, fire size, and fire intensity would continue to increase, further accelerating the loss of native plant communities. The result would be a permanent vegetation type conversion from native shrublands to non-native grasslands. The continuous fuels created by the invasive grasses means that more ignition sources (i.e., lighting, cigarettes, vehicle sparks) would strike receptive fuels and start a fire. The increased frequency and size of fires would make it more difficult to control future fires and protect other values of concern from being burned, such as infrastructure, and natural and cultural resources.

The BLM would not conduct a capture/gather at this time. Direct management of the wild horse populations in the Desatoya HMA would be deferred to a later date. The horse populations would not be maintained at the AML, which represent the wild horse population being

compatible with ensuring a thriving natural ecological balance. The fertility control vaccine would not be administered to mares within the HMA. A greater number of excess wild horses would need to be removed in future gathers to achieve AML and to reverse resource degradation from an overpopulation of wild horses. It is projected that by not applying a fertility control vaccine to mares and not removing the 400 excess wild horses at this time, future gathers would need to remove over 758 excess wild horses in 2014 from the HMA in order to achieve low range of AML. Compliance with the CRMP or with promoting a healthy natural ecological habitat in conformance with rangeland health standards and the provisions of Section 1333 (a) of the WFRHBA would not be met.

2.3 Other Action Alternatives

No other action alternatives were needed to address unresolved conflicts concerning uses of available resources at this time.

2.4 Alternatives Considered But Eliminated From Detailed Analysis

Widespread Prescribed Burning

Widespread use of prescribed broadcast burning was another alternative treatment method considered but eliminated. Although much of the need for action has been caused by departure from a natural fire regime, the plant communities and hazardous fuel levels have increased to the point that it is too risky to reintroduce prescribed fire on a broad scale until other treatment methods are strategically used to restore more natural conditions and in turn reduce the risk of prescribed fire escaping control.

Remove or Reduce Livestock within the HMA

This action would not be in conformance with the existing land use plan and is contrary to the BLM's multiple-use mission as outlined in the 1976 Federal Land Policy and Management Act (FLPMA), and would be inconsistent with the WFRHBA, which directs the Secretary to immediately remove excess wild horses. Additionally this would only be effective for the very short term as the horse population would continue to increase. Eventually the HMAs and adjacent lands would no longer be capable of supporting the horse populations. Removing approximately 450-525 excess wild horses now and treating released mares with a fertility control vaccine would delay the need for future removal of excess horses and reduce the absolute number of excess horses needed to be removed in the future. Horse populations can double every four to five years without fertility control.

Designate the Desatoya HMA as a "Wild Horse and Burro Range

Designation of the Desatoya HMA as a "Wild Horse and Burro Ranges" is an action under 43 CFR 4710.3-2 which would require the amendment of the CRMP, which is outside the scope of this EA. Only the BLM Director or Assistant Director (as per BLM Manual 1203: Delegation of Authority), may establish a Wild Horse and Burro Range after a full assessment of the impact on other resources through the land-use planning process. As this is not an "exclusive" designation, it potentially would not change the level of livestock grazing permitted to occur in the area. There are currently four designated Wild Horse and Burro Ranges in the western United States that are managed principally for wild horses and burros consistent with 43 CFR 4170.3-2. These

are the Pryor Mountain Wild Horse Range in Montana; the Little Book Cliffs Wild Horse Range in Colorado; the Nevada Wild Horse Range and the Marietta Wild Burro Range in Nevada.

Control of Wild Horse Numbers by Natural Means

This alternative would use natural means, such as natural predation, to control the wild horse population. This alternative was eliminated from further consideration because it is contrary to the WFRHBA which requires the BLM to prevent the range from deterioration associated with an overpopulation of wild horses. It is also inconsistent with the CRMP which directs the BLM to "Remove excess wild horses and burros from public lands to preserve and maintain a thriving (natural) ecological balance and multiple-use relationship". The alternative of using natural controls to achieve a desirable AML has not been shown to be feasible in the past. Wild horse and burro population in the Desatoya HMA is not substantially regulated by predators, as evidenced by the 20% annual increase in the wild horse populations. This alternative would result in a steady increase in the wild horse numbers which would continue to exceed the carrying capacity of the range until all of the usable forage is exhausted after which a substantial mortality event would be expected. However, prior to a substantial mortality event occurs the majority of native grasses would have been displaced by invasive weeds substantially reducing the carrying capacity of the HMA for the foreseeable future. In addition many wild life species would be lost from the HMA as they rely on the native grasses or on species which rely on native grasses.

Raising the Appropriate Management Levels for Wild Horses

The AMLs were established through a Final Multiple Use Decisions process following completion of an in-depth analysis of habitat suitability, resource monitoring, population inventory data, and public input into the final decision-making. This alternative was not brought forward for detailed analysis because it is outside of the scope of the analysis in this EA. The established AML for the Desatoya HMA is 127-180 wild horses with the current population estimate at 543 horses (nearly three times the high AML). The upper limit of the AML range is the maximum number of wild horses that can be maintained within a HMA while maintaining a thriving natural ecological balance and multiple use relationship on the public lands. When wild horse AMLs are 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). Presently heavy use is occurring on key forage grass species causing substantial areas of the HMA to sustain very few forage grasses. It is estimated that with the 2012 foal crop the wild horse numbers could increase to approximately 651 horses. This alternative would not achieve and manage wild horse populations within the established AMLs allowing the BLM to attain the management objectives identified in the Carson City Consolidated Resource Management Plan (CRMP), and the Standards for Rangeland Health & Guidelines for Grazing Management (S&Gs) in the Sierra Front Northwestern Great Basin Area.

3.0 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

This chapter identifies and describes the current condition and trend of elements or resources in the human environment which may be affected by the Proposed Action or Alternatives and the environmental consequences or effects of the action(s).

Scoping and Issues
During the preliminary internal scoping in January 2011, BLM resource specialists identified the following resources as being present and potentially impacted by the Proposed Action:

- Cultural Resources
- Human Health and Safety (Regarding horse gather)
- Invasive, Nonnative and Noxious Species
- Migratory Birds
- Native American Religious Concerns
- Wetlands / Riparian Zones
- Fish, Wildlife, and Key Habitats (Vegetative Resources)
- BLM Sensitive Species
- Livestock Grazing
- Fire Management
- Wild Horses and Burros
- Soils

Proposed Action
The scope of this EA addresses approximately 230,000 acres of primarily BLM administered lands within the Desatoya Mountain Range and adjoining Smith Creek and Edwards Creek valleys in Churchill and Lander Counties, Nevada. The elevation varies from approximately 5000 feet in Edwards Creek Valley to almost 10,000 feet atop Desatoya Peak.

Supplemental Authorities
Appendix 1 of BLM's NEPA Handbook (H-1790-1) identifies Supplemental Authorities that are subject to requirements specified by statute or executive order that must be considered in all BLM environmental documents. The table on the following page lists the Supplemental Authorities and their status in the project area (Table 4). Supplemental Authorities that may be affected by the Proposed Action are further described in this EA.

Table 4. Resources considered for analysis based on Supplemental Authorities as defined by BLM's Handbook H-1790-1.

Supplemental Authority*	Not Present **	Present/ Not Affected	Present/May Be Affected***	Rationale and/or Reference Section
Air Quality		X		The project area is not in a non-attainment area. During implementation of the project there would be a negligible increase in particulates (dust) and pollutants from vehicle emissions and equipment, but the overall air quality of the project area would not change.

Supplemental Authority*	Not Present **	Present/ Not Affected	Present/May Be Affected***	Rationale and/or Reference Section
Areas of Critical Environmental Concern	X			Resource is not present.
Cultural Resources			X	Analysis carried forward.
Environmental Justice	X			Resource is not present.
Farm Lands (prime or unique)	X			Resource is not present.
Forests and rangelands (HFRA Projects Only)	X			This is not a HFRA project.
Human Health and Safety (Herbicide Projects)			X	Regarding herbicides, human, health and safety would not be impacted to a degree that requires detailed analysis. If the herbicides are applied to control rabbitbrush, this treatment would be in conformance with the analysis in the Programmatic Vegetation Treatments Using Herbicides on Bureau of Land Management Lands in 17 Western States EIS and Record of Decision (BLM 2007b). This includes proper safety measures and the requirement that the applicator be certified or under the direct supervision of a certified applicator. Analysis of Human Health and Safety specific to the wild horse gather phase of the EA is carried forward.
Floodplains	X			Resource is not present.
Invasive, Nonnative and Noxious Species			X	Analysis carried forward.
Migratory Birds			X	Analysis carried forward.
Native American Religious Concerns			X	Analysis carried forward.
Threatened and/or Endangered Species		X		After consulting with the BLM wildlife biologist and the USFWS website for Nevada, the only federally listed threatened or endangered species within the project area is Lahontan cutthroat trout in Edwards Creek. Fence maintenance and limited individual tree removal along Edwards Creek would have no affect on the stream or trout habitat.
Wastes, Hazardous or Solid		X		Fuel, motor oil, and any other hazardous product would be handled according to the Nevada State Environmental Commission's Handbook of Best Management Practices.
Water Quality (Surface / Ground)	X			Soil, Water, and Air program Best Management Practices (Appendix B) would be implemented to minimize/eliminate impacts and protect water quality.

Supplemental Authority*	Not Present **	Present/ Not Affected	Present/May Be Affected***	Rationale and/or Reference Section
Wetlands / Riparian Zones			X	Analysis carried forward.
Wild and Scenic Rivers	X			Resource is not present.
Wilderness / WSA		X		No direct treatments would be conducted in the Desatoya WSA. No designated wilderness areas exist.

**See H-1790-1(January 2009) Appendix 1 Supplemental Authorities to be Considered.*

***Supplemental Authorities determined to be Not Present or Present/Not Affected need not be carried forward or discussed further in the document.*

****Supplemental Authorities determined to be Present/May Be Affected must be carried forward in the document.*

Resources or Uses Other Than Supplemental Authorities

The following resources or uses, which are not Supplemental Authorities as defined by BLM's Handbook H-1790-1, are present in the area (Table 5). BLM specialists have evaluated the potential impact of the Proposed Action on these resources and documented their findings in the table below. Resources or uses that may be affected by the Proposed Action are further described in this EA.

Table 5. Additional resources or concerns considered for analysis.

Resource or Issue	Present/Not Affected#	Present/May Be Affected##	Rationale
Recreation	X		Treatment acreage would be less than 5000 acres in any given year, work would be conducted during the week, and notice would be given regarding area and timing of treatment in any given year. Therefore, impacts to recreational access and opportunities would be negligible.
Visual Resources	X		No modifications would occur in the Desatoya WSA. VRM has not been designated within the rest of the project area but it is considered a defacto Class III. The level of change to the characteristic landscape from the Proposed Action is considered moderate and would not affect the current visual class.
Fish, Wildlife, and Key Habitats (Vegetative Resources)		X	Analysis carried forward.
BLM Sensitive Species		X	Analysis carried forward.
Livestock Grazing		X	Analysis carried forward.
Land Use Authorization	X		In the project area there are numerous rights-of-way and other land use authorizations. However, in the direct treatment areas there are no current land use authorizations.
Fire Management		X	Analysis carried forward.
Wild Horses and Burros		X	Analysis carried forward for horses. No burros are present.
Soils		X	Analysis carried forward

Resource or Issue	Present/Not Affected#	Present/May Be Affected##	Rationale
Global Climate Change	X		There is a public and scientific debate about human caused contributions to global climate change, no methodology currently exists to correlate greenhouse gas emissions (GHG) and to what extent these contributions would contribute to such climate change.
Greenhouse Gas Emissions	X		There would be negligible contribution of GHG – methane; no methodology currently exists to correlate GHG emissions from livestock grazing to any specific resource impact within the project area.

#*Resources or uses determined to be Present/Not Affected need not be carried forward or discussed further in the document.*

##*Resources or uses determined to be Present/May Be Affected must be carried forward in the document.*

Resources Present and Brought Forward For Analysis

The following resources are present in the area and may be affected by the Proposed Action. An overview of cumulative effects starts on Page 73. However, the cumulative effects analysis for each resource brought forward is described separately under each resource section.

3.1 Cultural Resources

Affected Environment

In conformance with BLM regulations (43 CFR Part 8100) and other federal laws, including the National Historic Preservation Act (16 USC § 470f) and it's implementing regulations (36 CFR Part 800) as amended, BLM reviewed the immediate region for historic properties prior to a federal undertaking. By definition, an historic property is a "prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in, the National Register of Historic Places" and includes "artifacts, records, and remains that are related to and located within such properties" (36 CFR 800.16(l)(1)).

BLM defined the project Area of Potential Effect (APE) as consisting of approximately 230,000 acres of public land managed by the Carson City District, Stillwater Field Office and the Battle Mountain District, Mount Lewis Field Office of the BLM. Class III cultural resource inventories would be conducted in the area of ground disturbing treatments, approximately 32,705 acres. Approximately 8% or 4,036 acres of the 32,705 acres has been previously surveyed to Class III standards. To identify and avoid historic properties, Class III cultural resource inventories and analysis would be conducted for each phase of the project.

A BLM Class I records search of previous Class III cultural resource inventories was conducted for the area of implementation. The review included the Nevada Cultural Resource Information System (NVCRIS), the geodatabase and archives on file at the Carson City District (CCD), a review of the current literature (Bingston 2002; Fowler 1992; and Pendleton et al. 1982), General Land Office records, and the Nevada BLM webpage. Based on research, historic properties represent significant past human use of the landscape throughout the Desatoya Mountains. These include prehistoric-period camp/habitation sites, limited activity/procurement sites, rock art, rock alignments, rock shelters and caves, and talus pits utilized over an extensive period of time ranging from the Paleoarchaic (approximately 8500 BP) to the historic contact period extending

through the nineteenth-century. Ethno-historic sites have also been documented for activities associated with wood cutting, pine nut procurement, hunting and habitation sites associated with historic ranch employment. Historic-period debris scatters; stone structures and buildings; roads associated with mining, ranching, and transportation including the Pony Express and the Overland Mail and Stage Routes.

Based upon the results of a BLM literature review at the Carson City District and NVCRIS, eighteen Class III cultural resource inventories have been conducted within the area of implementation (32,705 acres) between 1976 and 2011. Approximately one hundred and fifty cultural resources (prehistoric historic and ethno-historic) were documented and evaluated (91 eligible and 50 non eligible).

Environmental Consequences

Proposed Action
Each phase of this project has the potential to adversely affect cultural resources. Per 36 CFR Part 800 and 43 CFR Part 8100 (BLM), as amended. BLM is required to identify and evaluate cultural resources within the APE for each phase of this project. Historic properties identified and evaluated as eligible under the National Register of Historic places would be avoided during implementation to result in a no adverse effect to the historic property (ies) pursuant to 36 CFR Part 800, in consultation with the local tribal entity (ies), in consultation with the Nevada State Historic Preservation Office, and in consultation with Native American Tribes with ancestral ties to the Desatoya Mountains.

To prevent unnecessary or undue degradation to known and unknown historic properties vegetative treatments would be designed to avoid historic properties with adequate buffers including development of mosaics to reduce post implementation effects (e.g. looting or erosion); as well as direct effects during implementation (lop and scatter; hand thinning; mechanical treatments (chipping and mowing); and prescribed burn piles). If unanticipated historic-era or prehistoric resources are discovered during project activities, work would cease and be reported immediately to the BLM.

No Action
If the proposed action did not occur, then no effect to cultural resources would occur from treatments. However, the current fuel load could result in damage to known or unknown cultural resources in the event of a fire.

Cumulative Effects

When combined with the effects from past present and reasonably foreseeable future actions, cumulative effects from the proposed action are expected to be negligible. This is because of the following; cultural resources would be identified prior to implementation or treatments; eligible properties would be avoided, and a programmatic agreement between the BLM, partners, and the Nevada State historic preservation officer would be developed for the life of the project in order to ensure compliance with the Section 106 of the National Historic Preservation Act (1966).

3.2 Native American Religious Concerns

Affected Environment

Two Native American Tribes have cultural affiliation with the project area, the Fallon Paiute-Shoshone Tribe and the Yomba Shoshone Tribe. Per 36 CFR Part 800 and 43 CFR Part 8100 (BLM), as amended, correspondence including a general summary of the proposed project, and a map of the Project APE was sent to the Yomba Shoshone Tribal Council and Fallon Paiute-Shoshone Tribes (February 2, 2011). Additional written and face to face correspondence is described in *Section 1.8 Scoping and Identification of Issues*. Consultation documentation for five previous inventories (2007-2011) indicates that tribal comments and concerns consisted of the following: avoidance of historic properties; the development of agreements/contracts to participate in the removal of the wood products for use or sale by the Tribe(s) and continued consultation for each phase of the proposed project in cooperation with the BLM.

Environmental Consequences

Proposed Action
Any proposed activities may potentially have an effect on known and unknown historic properties and Traditional Cultural Places. The BLM has been and would continue to conduct government to government consultation with the Fallon Paiute-Shoshone Tribe and the Yomba Shoshone Tribe during all phases of the Project. Per 36 CFR Part 800 and 43 CFR Part 8100, as amended, BLM would review tribal concerns as identified and conduct Native American coordination and consultation for each phase of the project including but not limited to correspondence including a general summary and map of the current phase of the project, results of each cultural resource inventory, face to face meetings, and field trips to the project area with Tribal Council members and other staff as requested.

No Action
If the proposed action did not occur, then no change in current concerns would happen.

Cumulative Effects

When combined with the effects from past present and reasonably foreseeable future actions, cumulative effects from the proposed action are expected to be negligible. This is because Native American representatives would be consulted before treatments were implemented, and values of interest to Native Americans would be protected from both the impacts of treatment and the impacts of catastrophic wildfire if treatments are successful.

3.3 Fish, Wildlife, and Key Habitat (Vegetative Resources)

Affected Environment

Based on the Southwest Regional GAP Analysis Project, the Nevada Department of Wildlife's Wildlife Action Plan (2006) characterized Nevada's vegetative land cover into 8 broad ecological system groups and linked those with Key Habitat types, which are further refined into

Ecological Systems characterized by plant communities or associations (USGS 2005). The **primary** Key Habitat types found in project area are displayed in Table 11 Appendix F and described below. A few of the known or potential wildlife species that could be supported by the plant communities are displayed in Table 12 Appendix F. Because intensive plant and animal surveys have not been completed, abundance and distribution of most wildlife species can only be inferred from available habitat. Key habitats are delineated using GIS vegetation data (Peterson 2008).

Key Habitats

Intermountain Cold Desert Scrub—Approximately 8% (19,232 acres) of the entire project area contains this key habitat. However, direct treatment areas (sage-grouse and woodland treatments, 32,705 acres) are not proposed within this habitat. Annual rainfall tends to be low (3-8 in) and wildlife are generally not found in great densities. Lizards are the most diverse and abundant assemblage of species found within this habitat. Winterfat is a key forage species for some wildlife, in particular, pronghorn. However, many species move between cold desert scrub and sagebrush habitats for various life requirements such as foraging and nesting. For instance, kit fox use the sandy soils for denning in cold desert scrub habitat but also forage for prey in sagebrush plant communities (NDOW 2006).

Sagebrush—Approximately 62% (141, 241 acres) of the project area contains this key habitat. Vegetative composition in sagebrush habitats can be highly variable depending on rainfall, elevation, and slope aspect. However, pinyon and/or juniper trees should be a very minor component, which is considered early transition (Phase I) from sagebrush to woodlands. Within the delineated sage-grouse treatment areas (~18,663 acres), NRCS soils surveys indicate that approximately 65% (12,609 acres) of the acreage should be composed of various sagebrush plant communities ((low sage-black sage (*Artemisia arbuscula* Nutt. - *Artemisia nova* A. Nelson) & big sage communities (*Artemisia tridentata* Nutt. spp.)). However, according to GIS data only 32% (6,567 acres) of the proposed treatment area has relatively intact sagebrush and associated understory vegetation. In the woodland treatment areas (~13,479 acres), NRCS soils surveys indicate approximately 66% (8896 acres) of the area should be sagebrush. But according to GIS vegetation data, only 11% (1482 acres) of the proposed treatment area has sagebrush dominant plant communities; with most of the PJ cover estimated to be in mid-transition (Phase II) and late transition (Phase III) from sagebrush to woodlands *(Phase I: trees are present but shrubs and herbs are the dominant vegetation that influences ecological processes on the site; Phase II: trees are co-dominant with shrubs and herbs and all three vegetation layers influence ecological processes on the site; Phase III: trees are the dominant vegetation and the primary plant layer influencing ecological processes on the site (Miller et al. 2005)).*

Increasing PJ encroachment into sagebrush communities has been shown to result in the decline of shrubs and herbaceous vegetation (Burkhardt and Tisdale 1969, Adams 1975, Bunting et al. 1999, Miller et al. 2000, Roberts and Jones 2000, Schaefer et al. 2003). This increase in PJ density and distribution has often resulted in negative impacts to soil resources, plant community structure and composition, forage availability, water and nutrient cycles, and wildlife habitat (Miller et al. 2000, Miller et al. 2005). While a low level of PJ adds structural/vertical diversity to the landscape and increases habitat values for many species such as pinyon jay and mule deer, a continual increase in dominance causes a general decline in species richness, wildlife

abundance, and wildlife diversity (Miller et al. 2005). Greater sage-grouse (*Centrocercus urophasianus*) and other sagebrush obligate species, such as sage sparrow (*Amphispiza belli*) and Brewer's sparrow (*Spizella breweri*), appear to be the most negatively affected wildlife species by PJ expansion and increasing density. For instance, in the Dalton and Porter Canyon areas, wet meadows used for brood rearing by sage-grouse are being degraded in large part by uptake of water through increasing expansion and densities of PJ into sagebrush habitat.

Lower Montane Woodland—Approximately 27% (61,949 acres) of the project area contains this key habitat, which consists primarily of a PJ community (96%) dominated by a mix of singleleaf piñon (*Pinus monophylla*) and Utah juniper (*Juniperus osteosperma*), pure or nearly pure occurrences of singleleaf pinyon, or areas dominated solely by Utah juniper. Western juniper (*Juniperus occidentalis*) exists in small pockets throughout. Mountain mahogany (*Cercocarpus montanus*), Freemont cottonwood (*Populus fremontii*), and quaking aspen (*Populus tremuloides*) are also found in small areas and abundance throughout the project and are crucial for landscape diversity in both vegetation and wildlife species.

Within the proposed woodland treatment areas, NRCS soils surveys indicate that approximately 34% (4,583 acres) of the acreage should be woodland. But according to GIS data, approximately 86% (11,592 acres) of the treatment area is PJ woodland with primarily Phase II and phase III densities. These densities have been shown to exhibit decreased abundance of several currently declining PJ dependent bird species such as pinyon jay (*Gymnorhinus cyanocephalus*), mountain chickadee (*Poecile gambeli*)), and western scrub jay (*Aphelocoma californica*) when compared to Phase 1 densities (GBBO 2010). For woodland dependent bird species, open canopy PJ with a robust and healthy understory existing in Phase 1 and some Phase II density stands interspersed with small groves of high density trees (Phase III) are preferable. A healthy PJ stand should also include diverse age classes with mature, seed-bearing trees located across the landscape (GBBO 2010 and references therein). Mule deer (*Odocoileus hemionus*) also are more abundant in Phase 1 or II densities. According to NDOW biologists, mule deer numbers have been declining within the project area (Jason Salisbury pers comm November 2010.

Intermountain Rivers and Streams—Stream aquatic habitats within this key habitat are highly variable and are subdivided into montane and sub-montane aquatic habitats. Depending on the vegetation structure, various species of birds, fish, raptors, amphibians, and aquatic invertebrates can be supported. Only a few hundred acres of this habitat exist within the proposed treatment areas. Nonetheless, healthy riparian corridors are crucial to many species in Nevada and are the hub of species diversity on the larger landscape. Smith and Edwards Creeks are within the project area and are designated by NDOW as fishable streams. According to NDOW data, Edwards Creek supports native Lahontan cutthroat trout (*Oncorhynchus clarkii henshawi*), which is federally listed as threatened, and non-native rainbow trout (*Oncorhynchus mykiss*), and both Edwards and Smith Creek support non-native brook (*Salvelinus fontinalis*) and brown trout (*Salmo trutta*).

Springs and Springbrooks—Nevada has the most known springs of any state in the U.S. with over 4,000 mapped. They vary greatly in temperature and flow and are extremely important in maintaining Nevada's wildlife diversity (Nevada Wildlife Action Plan 2006). Springbrooks are areas of flowing water linked to the spring source such as Dalton Spring located in Dalton

Canyon. Even small springs and/or flows can support important endemic gastropods and other aquatic invertebrates as well as a diverse plant community including various species of forbs, sedges, and rushes. While the actual amount of riparian/spring habitat is small in Nevada (<5%), about 80% of all vertebrate species require this habitat. Consequently, maintaining health and resiliency in this key habitat is especially critical for wildlife.

Porter and Dalton Canyons contain multiple springs and springbrooks that support wet meadows that have been shrinking, in large part from PJ encroachment. In Dalton Canyon wild horses have been major contributors to degradation as well. In Porter Canyon, 140 acres of PJ were removed in 2009 on private land that encompassed a large wet meadow that had become non-functional. The University of Nevada Reno set up an experimental watershed to assess the change to the hydrology from the PJ removal while taking into account precipitation interception rates of trees and rainfall differences from year to year. Preliminary experimental and visual results indicate that the meadow is recovering well. Proposed treatments in Porter and Dalton Canyon would be monitored for effectiveness of treatments on the hydrology and in turn recovery of this key habitat in degraded areas.

Big Game

Desert Bighorn Sheep ─ The desert bighorn sheep found in the proposed action area is one of four desert subspecies of bighorn sheep (*Ovis canadensis*) found in North America. They prefer rough, rocky, and steep terrain; require freestanding water in the summer months or during drought; and mainly eat grasses, shrubs, and forbs. The project area contains 105,221 acres (46%) of occupied habitat, primarily in the Desatoya Mountains WSA.

Within the proposed treatment areas (~32,142 acres), 27,240 acres (84%) of potential and 3,145 acres (10%) of occupied habitat exist. The primary limiting factors are PJ encroachment and wild horses. A crucial lambing area exists in the steep terrain directly west and northwest of the Cold Springs proposed fuel break (NDOW 2010).

Pronghorn ─ Pronghorn (*Antilocarpa americana*) have an evolutionary history of 20 million years in North America. They were almost wiped out in the 1800s but have rebounded due to changes in wildlife and rangeland management techniques. Pronghorn primarily eat forbs and shrubs with grasses being the least preferred forage. The project area supports about 149,168 acres (65%) of delineated year-round habitat. However, proposed treatment areas only encompass about 4,000 acres of this habitat (NDOW 2010). Freestanding water is very important for pronghorn during the hot summer months or during drought and PJ can provide thermal cover during extremely cold winter days.

Mule Deer ─ Mule deer (*Odocoileus hemionus*) 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. The project area encompasses approximately 100,281 acres (44%) of crucial summer (30,024 acres), crucial winter (9,489 acres), and year round habitat (60,767). Mule deer habitat encompasses almost the entirety of the direct treatment areas. The primary factors limiting distribution of mule deer are PJ encroachment and water availability (NDOW 2010). Approximately 52% (164, 245 acres) of

the Clan Alpine HMA supports mule deer populations, including crucial winter, summer, and year-round habitat (NDOW 2010).

Upland Game

The primary upland game species within area are Chukar Partridge (*Alectoris chukar*) and mourning dove (*Zenaida macroura*). Healthy springs and springbrooks are important habitats for the survival of these game birds.

Chukar Partridge ─ This non-native species from the pheasant family was originally introduced from Pakistan as an upland game bird. It can be found on rocky hillsides or open and flat desert with sparse grassy vegetation. They primarily eat seeds but would forage on some insects (Christensen 1996).

Mourning Dove ─ Seeds make up 99 percent of a Mourning Dove's diet, which includes cultivated grains, wild grasses, weeds, herbs, and occasionally berries. Even snails are sometimes eaten. Mourning Doves eat around 12 to 20 percent of their body weight per day (Otis et al. 2008).

Environmental Consequences

Proposed Action

The biggest challenges to wildlife in the project area are key habitat loss from PJ encroachment and increasing density; loss of understory vegetation and degradation of riparian and wet meadow habitat from PJ encroachment and overpopulation of wild horses; and the potential for climate change, which can increase fire risk when combined with fuel loads associated with increased PJ density. Although climate change predictions are arguable, the Department of Interior Secretarial order No. 3226, Amendment No. 1 states that potential climate change issues be addressed in long-term planning documents. If predicted climate change should occur, the habitat that wildlife species depend upon could be impacted through decreased plant species diversity, increased fire frequency, and lack of water resources. At higher elevations or near remaining water sources, densities and competition among wildlife may increase. Thus it is crucial to maintain or enhance habitats that can be resilient to the potential effects of climate change fluctuations.

Operations involving the removal of PJ by any of the methods could cause direct, short-term, localized impacts to wildlife species. A few ground dwelling rodents and reptiles could be trampled or have burrows destroyed from equipment or people. However, displacement to big game, upland game, and resident bird species would be temporary and would only occur in areas of less than 5,000 acres in any given year. Old growth and other trees with obvious signs of wildlife use, such as nest cavities or raptor nests, would be left intact. Downed trees and left over slash may decrease habitat for some species while enhancing cover and nesting opportunities for other individuals. In fact, the removal and/or reduction of PJ is expected to translate into an increase in grasses, forbs, and shrubby browse species thus increasing health, vigor, and palatability of winter forage for deer and pronghorn as well as providing increased forage for seed/grass eating lizards and rodents. PJ removal is also expected to increase the amount of water available in the overall watershed. This increased water availability is expected to enhance

degraded wet meadows through ground water recharge that would in turn increase spring and springbrook flows. Enhancing overall watershed health is expected to increase or maintain water flowing during drier years in Edwards and Smith Creeks. Creating or maintaining a mosaic of habitat types across the project area is expected to increase and/or maintain species diversity and increase resiliency to climate fluctuations.

Operations involving the installation of fences, water troughs, and pipelines also could cause direct, short-term, localized impacts to wildlife species through displacement during construction activities such as noise or mortality caused by vehicles or trenching equipment. Fencing may cause certain individuals to change their normal path or expend energy jumping over the fence. BLM fencing standards would be adhered to and have been designed specifically to minimize or alleviate the potential for large ungulates to get hung up and die when going under or over a fence. If pipe rail fencing is used, no mortality is likely to occur because there are no wires to get tangled up in and visibility is high.

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%). Dietary overlap of wild horses with desert bighorn sheep has been documented around 50% 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 within an HMA 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. The proposed action would also help in achieving and maintaining the wild horse populations within AML, thus vegetative health within key habitats would be promoted. In the 2010 grazing year despite above average precipitation during the growing season, heavy use was documented on approximately 88,657 acres, which represent most of the accessible areas of the HMA that support forage grasses. Although grazing data does not specifically separate livestock utilization from wild horse use; livestock grazing is a permitted/monitored use controlled by the BLM. The wild horse AMLs for the HMA are currently nearly three times greater than the high AML. The over population of wild horses contribute heavily to the over use of native plant communities.

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 at al. 2008 conducted a study of vegetation response to removal of horses in 1997 and 1998 (part of study was in the Clan Alpine HMA, which is close to the Desatoya HMA). 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.

However, effects of wild horses are not uniform across the landscape. For instance, horses would most utilize areas of the HMAs that have more grasses because they are primarily grazers. However, when horses are substantially over AML they would also overgraze shrub species such

as winterfat, budsage, and four-wing salt bush, which takes away available forage for browsers such as mule deer. While impacts to water from horses are different than cattle due to behavior (horses tend to not linger at a source and drink in the morning and at night), 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. Sage-grouse require specific amounts of grass cover for optimal nesting habitat, an abundance of forbs for brood-rearing habitat, and free water with sufficient vegetation to support insects and to provide cover (Connelly et al. 2000). If grasses are continually over-utilized sage-grouse habitat can be negatively affected. Keeping wild horses at AML is expected to alleviate these effects.

So overall, if the gather and immune-contraception efforts are successful, increased understory plant species and cover, healthier wet meadows in Dalton Canyon and elsewhere, 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, may benefit from an increased prey base over time.

Noise and habitat loss from installation of ground water monitoring wells, flumes and gauging stations, soil moisture probes and control housing, and rainfall experiment mini flumes could cause direct, short-term, localized impacts to individuals through temporary or permanent displacement. Direct habitat loss would be minor (< 500 square feet) and the fencing for the soil moisture probes are temporary.

The herbicide proposed to be used in the Cold Springs fuel break is imazapic, and 2,4-D would be used for rabbitbrush and decadent sagebrush control. The environmental risks of these herbicides were analyzed in the Vegetation Treatments Using Herbicides on BLM lands in 17 Western States Programmatic EIS (2007). The application scenarios for the risk categories for terrestrial animals were direct spray, off-site drift (wind erosion), indirect contact with foliage after direct spray, ingestion of contaminated vegetation or prey, and runoff, which includes percolation to the root zone, at typical and maximum application rates. The Proposed Action would not exceed the maximum application rates. The assessments also included the risks from typical adjuvants. These aid in proper wetting of foliage and absorption of the active ingredient (e.g. imazapic) into plant tissue. Adjuvant is a broad term that includes surfactants, selected oils, anti-foaming agents, buffering compounds, drift control agents, compatibility agents, stickers, and spreaders (BLM 2007c).
The risk assessment concluded that in general, imazapic, even at high doses, does not adversely affect terrestrial animals, including invertebrates, as it is rapidly metabolized in urine and feces and does not bioaccumulate in animal tissue. The document did state that during pregnancy mammals may be more at risk and long-term exposure had negative effects on birds. However, application of imazapic would occur in the fall/winter, which is outside of the gestation period for most animals that may use the project area; therefore these risks would likely be negligible (BLM 2007b, BLM 2007c).

2,4-D can present risk to some wildlife species due to direct spray, consumption of the recently sprayed vegetation, and consumption of contaminated insects. However, adhering to project

design features for herbicide use would avoid contamination from direct spray or consuming contaminated insects through timing restrictions. The herbicide would only be applied to cut branches after mowing, pre-treatment sweep for nests, and the fact that the monotypic stands of rabbitbrush that exist do not provide quality nesting or foraging habitat. Also, due to limited residual activity, any incidental contamination to individuals would be very short-term (2-weeks). If active nests are found the area would be avoided.

Herbicides could come into contact with and impact non-target plants through drift, runoff, wind transport, or accidental spills and direct spraying. Potential impacts include mortality, reduced productivity, and abnormal growth. However, project design features, which are associated with the standard operating procedures outlined in the Record of Decision for the Vegetation Treatments Using Herbicides on BLM lands in 17 Western States Programmatic EIS (2007), would minimize or eliminate these risks to wildlife habitat adjacent to the project site. In fact, 2,4-D has limited residual activity (2 weeks); therefore any incidental contamination risk to non-target plants would likely be negligible.

No Action
Over-utilization of forage by free-roaming horses would continue to occur if population numbers stay above or increase above the current level of 300+% above high AML. Some Key Habitats could become further degraded by continual PJ encroachment, which would decrease forage and cover available to sagebrush dependent wildlife species. Further increases of PJ density would further increase the catastrophic fire risk over time as well as diminishing available quality woodland habitat for woodland dependent species. Over time it is expected that the diversity and abundance of species that inhabit the project area would decrease, which may in turn decrease the prey base for wildlife species that forage in the area.

Cumulative effects

When combined with the effects from past, present, and reasonably foreseeable future actions, cumulative effects from the proposed action to key habitats, and in turn fish and wildlife, are expected to be negligible or positive. This is because the proposed action would help accomplish the objectives of enhancing and/or maintaining resilient plant communities and watersheds by reducing loss of sagebrush communities to PJ encroachment; stabilizing the loss of sagebrush from future wildfire; decreasing over-utilization 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 fish and wildlife in the project area.

3.4 Migratory Birds

Affected Environment

On January 11, 2001, President Clinton signed Executive Order 13186 (EO) placing emphasis on the conservation and management of migratory birds. Migratory birds are protected under the Migratory Bird Treaty Act of 1918 (MBTA) and the EO addresses the responsibilities of federal agencies to protect migratory birds by taking actions to implement the MBTA. BLM management for migratory bird species on BLM administered lands is based on Instruction

Memorandum No. 2008-050 (BLM 2007a). Based on this IM, migratory bird species of conservation concern include 'Species of Conservation Concern' and 'Game Birds Below Desired Conditions' (GBBDC). These lists were updated in 2008 (USFWS 2008).

Golden Eagle

The Bald and Golden Eagle Protection Act (1940 as amended 1959, 1962, 1972, 1978) prohibits the take or possession of bald and golden eagles with limited exceptions. Take as defined in the Eagle Act, includes "to pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest or disturb". "Disturb" means "to agitate or bother a bald or golden eagle to a degree that causes or is likely to cause, based on the best scientific information available, 1) injury to an eagle, 2) a decrease in its productivity, by substantially interfering with normal breeding, feeding or sheltering behavior, or 3) nest abandonment, by substantially interfering with normal breeding, feeding or sheltering behavior."

Important eagle-use area is defined in the Eagle Act as an eagle nest, foraging area, or communal roost site that eagles rely on for breeding, sheltering, or feeding, and the landscape features surrounding such nest, foraging area, or roost site that are essential for the continued viability of the site for breeding, feeding, or sheltering eagles. Portions of the proposed action area are considered important eagle-use areas.

Migratory birds are dependent upon all the Key Habitats that exist in the project area, which are described in detail under the Key Habitats subsection in Chapter 3. Large, old pinyon or juniper trees in the project area may support cavity nesting species such as northern flicker (*Colaptes auratus*) and American kestrel (*Falco sparverius*). Migratory bird species expected or found within the proposed action boundary are displayed in Table 12 Appendix F. Diversity and richness of species is expected to be highest in areas that are in Phase I and early Phase II densities. In fact, piñon jays, mountain chickadees (*Poecile gambeli)*, and scrub jays (although these species are not migratory) are more abundant in this type of woodland compared to Phase III, but have had significant declines documented despite an increase in PJ woodlands across the landscape (GBBO 2010 and references therein). Because much of the project area is exhibiting late Phase II to Phase III woodlands, it is expected that these species, as well as sagebrush dependent bird species, would undergo further declines. Furthermore, in general a lack of understory vegetation in sagebrush habitats is also a factor in species' declines. If funding is consistently available, pre and post treatment monitoring of multiple bird species would be assessed for treatment response for the life of the project.

Environmental Consequences

Proposed Action

If wild horse gather operations involve the use of a helicopter it would not directly impact populations of migratory bird species because operations would occur after breeding season when species are not present. However, for reasons described in the environmental consequences section under the **Fish, Wildlife, and Key Habitat** category, attaining proper AML levels of wild horses should help restore degraded habitat conditions that benefit migratory bird species that utilize these Key Habitats. Attaining and maintaining proper AML may also help to maintain Key Habitat areas that exhibit healthy vegetation in their current state.

The proposed action regarding the use of herbicides would have negligible negative effects to migratory birds because the treatment would occur outside of the breeding/nesting season for imazapic and pre-treatment sweeps would occur for nests before mowing and applying 2,4-D. Furthermore, these treatments are proposed in habitat that is marginal or nonexistent because it has been destroyed by fire. Imazapic does not cause adverse effects in birds exposed to short-term acute exposures (BLM 2007c). Additionally, 2,4-D does pose moderated risk to birds that consume contaminated food. However, 2,4-D has a ten day half-life and mowing the rabbitbrush, then applying the herbicide to cut branches would minimize any potential risk to migratory birds that may be in the treatment area immediately following application (BLM 2007b,c).

No Action
Over-utilization of forage by free-roaming horses would continue to occur if population numbers stay above or increase above the current level of 300+% above high AML. In the 2010 grazing year despite above average precipitation during the growing season heavy (over use) use was sustained on approximately 88,657 acres, which represent most of the accessible areas of the HMA that support forage grasses. Some Key Habitats could become further degraded by continual PJ encroachment, which would decrease forage and cover available to sagebrush dependent migratory bird species. Further increases of PJ density would further increase the catastrophic fire risk over time as well as diminishing available quality woodland habitat for woodland dependent species. Over time it is expected that the diversity and abundance of species that inhabit the project area would decrease.

Cumulative Effects

When combined with the effects from past, present, and reasonably foreseeable future actions, cumulative effects from the proposed action to key habitats, and in turn migratory and resident birds, are expected to be negligible or positive. This is because the proposed action would help accomplish the objectives of enhancing and/or maintaining resilient plant communities and watersheds by reducing loss of sagebrush communities to PJ encroachment; decreasing PJ densities for woodland bird species; stabilizing the loss of sagebrush and woodlands from future wildfire; decreasing over-utilization 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 many birds in the project area.

3.5 BLM Designated Sensitive Species

Affected Environment

Species designated as Bureau sensitive must be native species found on BLM-administered lands for which the BLM has the capability to significantly affect the conservation status of the species through management, and either:

1. There is information that a species has recently undergone, is undergoing, or is predicted to undergo a downward trend such that the viability of the species or a distinct population segment of the species is at risk across all or a significant portion of the species range, or

2. The species depends on ecological refugia or specialized or unique habitats on BLM-administered lands, and there is evidence that such areas are threatened with alteration such that the continued viability of the species in that area would be at risk.

A list of sensitive animal and plant species associated with BLM lands in Nevada was signed in 2011 (BLM 2011). BLM-designated Sensitive Species use a variety of Key Habitats, which are described in detail under the Key Habitats subsection in Chapter 3 (Section 3.3.1). Nevada BLM sensitive species expected and/or found in or near the project area are displayed in Table 12 Appendix F. Details of high priority sensitive species are described below. No BLM Sensitive Plant species are currently known to occur in the project area. If discovered during pre-treatment surveys, they would be marked and avoided.

Desert Bighorn Sheep ─ See description under Big Game.

Sage-Grouse ─ In March 2010, the USFWS published the 12 month findings for petitions to list the greater sage-grouse under the Endangered Species Act ((1964) (ESA)). In these findings, the sage-grouse that inhabit the project area were found to be warranted but precluded by higher priority listing actions, and were given a priority ranking of 8. The project area encompasses 192,755 acres of the Desatoya and 3,091 acres of the Reese River sage-grouse Population Management Units (PMU). The direct treatment areas are wholly within the Desatoya PMU, which totals over 508,000 acres with current sage-grouse population estimates ranging from 1000-1333 within the entire PMU. BLM Manual 6840 (Special Status Species Management) directs the BLM to improve the condition of habitat as well as minimizing or eliminating threats affecting the status of BLM Sensitive Species in order to avoid listing under the ESA. Sage-grouse nesting (lack of grasses) and brood-rearing habitats (degraded meadows) is a major concern. Sage-grouse populations have been declining in the Desatoya Mountains. Lack of grasses in nesting habitat is documented as a factor leading to nest predation and in turn decreased nest success that can lead to decreases in population abundance (Connelly et al. 2000). Additionally, PJ encroachment has been identified range-wide as a primary contributor to loss of sage-grouse habitat. See description of existing habitat under the Key Habitats subsection in Chapter 3 (See Section 3.3).

Approximately 6 lek complexes (male-established courtship sites) surrounded by intact quality nesting habitat exist and are relatively close to brood rearing meadow habitat such as Smith Creek Ranch or Haypress meadows. Sage-grouse treatments would maintain, expand, or open up corridors between lek complexes as well as enhance and restore degraded/encroached brood rearing habitat in Dalton and Porter Canyons (See Maps 4 & 5 Appendix G).

Raptors

Multiple species of raptors exist within the proposed action boundary and many are BLM – designated sensitive species. Current diversity exists because of the proximity of multiple habitat types that provide nesting, foraging, and roosting sites. For instance, northern goshawks and prairie falcons have documented nests in aspen/cottonwood stands in riparian areas associated with Edwards and Smith Creeks, but roost in old growth PJ stands and forage in sagebrush or cold desert scrub habitats. Northern goshawks are adept flyers when foraging but need open canopy woodlands (Phase I) with a significant understory that supports an abundant prey base.

Thus, increasing density of PJ woodlands to Phase II and Phase III decreases foraging opportunities for this species as well as others. Prairie falcons are also known to nest in cliff areas similar to golden eagle nesting habitat but need open shrub habitat for foraging. Ferruginous hawks nest in juniper trees but prefer open sagebrush for foraging. Consequently, Phase II and Phase III PJ encroached sagebrush habitat is a primary detriment to most raptors.

Bats

Four sensitive species of bats are known to inhabit Key Habitats within the project area. These include pallid bat (*Antrozous pallidus*), spotted bat (*Euderma maculatum*), Townsend's big-eared bat (*Corynorhinus townsendii*), and fringed myotis (*Myotis thysanodes*). These bats use a variety of habitats for roosting and foraging (Bradley et al. 2006). Roosting habitats include crevices in rock cliffs and rimrock, abandoned mines, abandoned structures, and in trees with loose bark such as junipers. Foraging habitats include open grasslands, shrub-steppe, and in and around trees. Most species fly from their day roosts to forage for insects and drink water, and then use a temporary roost to rest for a couple of hours during the night. After resting they return to foraging then back to their day roosts. There is little information on bats and their foraging patterns or roosting areas within the project area.

Pygmy Rabbit

Historical and recent records of pygmy rabbits exist within the project area. However, populations at this time are unknown. If funding is available systematic surveys would be completed to assess potential and occupied habitat. Pygmy rabbits prefer tall stands of sagebrush with deep loose soils suitable for burrowing. Primarily sagebrush is consumed, but grasses and forbs are utilized in mid to late summer (NDOW 2006 and references therein). If funding for systematic surveys is not available, pre-treatment sweeps would be used to identify habitat.

Environmental Consequences

Proposed Action

Impacts would generally be the same to BLM designated sensitive species as described in the environmental consequences section under the **Fish, Wildlife, and Key Habitat** section. Maintaining, expanding, or developing corridors to facilitate sage-grouse connectivity between core breeding areas and seasonal habitats would be expected to increase survival rates. PJ removal from encroached sagebrush habitats should increase available habitat over time thus increasing survival rates and helping to maintain or increase abundance of sage-grouse.

Maintaining proper wild horse 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 requirements that any given species may need to successfully reproduce. If the proposed action is successful, decreasing competition for forage from 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 project area should benefit from a robust prey base and proper functioning water sources.

No Action

Over-utilization of forage by wild horses would continue to occur as the population numbers continue to increase above the current level of ≈300+% above high AML. Some Key Habitats could become further degraded by continual PJ encroachment, which would decrease forage and cover available to sagebrush dependent sensitive bird species. Further increases of PJ density would further increase the catastrophic fire risk over time as well as diminishing available quality woodland habitat for woodland dependent species such as pinyon jay. Over time it is expected that the diversity and abundance of sensitive species that inhabit project area would decrease. This in turn could decrease the prey base for BLM sensitive species that forage in the area.

Without the Cold Springs fuels treatment, cheatgrass would likely continue to outcompete native vegetation in that previously burned area. Continual fires in the area may spread cheatgrass to surrounding areas, thus eliminating additional habitat that would otherwise be available to BLM sensitive species that utilize sagebrush habitats for food, forage, or cover. Over time, this could lead to decreased population abundance for sagebrush dependent sensitive species, which is contradictory to BLM Sensitive Species management.

Cumulative effects

When combined with the effects from past, present, and reasonably foreseeable future actions, cumulative effects from the proposed action to key habitats, and in turn BLM designated sensitive species, are expected to be negligible or positive. This is because the Proposed Action would help accomplish the objectives of enhancing and/or maintaining resilient plant communities and watersheds by reducing loss of sagebrush communities to PJ encroachment; decreasing PJ densities for woodland bird species; stabilizing the loss of sagebrush and woodlands from future wildfire; decreasing over-utilization of vegetative resources by excess wild horses as well as livestock 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.

3.6 Invasive, Non-native, and Noxious Species

Affected Environment

Invasive species are defined by Executive Order 13112 as "an alien species whose introduction does or is likely to cause economic or environmental harm or harm to human health". Alien refers to a species that did not evolve in the environment in which it is found or in other words, non-native. This includes plants, animals, and microorganisms. The definition makes a clear distinction between invasive and non-native species because many non-natives are not harmful (i.e. most U.S. crops). However, many invasive species have caused great harm (National Invasive Species Council 2005).

Noxious weeds in Nevada are classified by the Nevada Department of Agriculture and the Plant Protection Act (2000) and are administered by the United States Department of Agriculture's (USDA) Animal and Plant Health Inspection Service (APHIS). Table 6 gives examples and

definitions of noxious weeds in Nevada. The only noxious weed that is currently documented in the project area is Tamarisk.

Table 6. Noxious weed categories, definitions, and examples (NDA 2010).

Type	Definition	Examples
Category A	Weeds not found or limited in distribution throughout the state; actively excluded from the state and actively eradicated wherever found; actively eradicated from nursery stock dealer premises; control required by the state in all infestations	Dyer's woad *(Isatis tinctoria)* Spotted Knapweed *(Centaurea masculosa)*
Category B	Weeds established in scattered populations in some counties of the state; actively excluded where possible, actively eradicated from nursery stock dealer premises; control required by the state in areas where populations are not well established or previously unknown to occur	Russian Knapweed *(Acroptilon repens)* Scotch Thistle *(Onopordum acanthium)*
Category C	Weeds currently established and generally widespread in many counties of the state; actively eradicated from nursery stock dealer premises; abatement at the discretion of the state quarantine officer	Hoary cress *(Cardaria draba* Salt cedar (tamarisk) *(Tamarix spp)*
For more information on noxious weeds visit: http://agri.nv.gov/nwac/PLANT_NoxWeedList.htm		

Cheatgrass (*Bromus tectorum*) is an invasive, non-native, annual grass currently scattered at very low densities throughout the project area. This invasive annual grass displaces native perennial shrub, grass, and forb species because of its ability to germinate quicker and earlier than native species, thus outcompeting natives for water and nutrients. Cheatgrass is also adapted to recurring fires that are perpetuated in part by the fine dead fuels that it leaves behind. In general, native plants have a difficult time thriving in these altered fire regimes.

Tamarisk (*Tamarix* spp.) is classified in Nevada as a Category C noxious weed. There is a documented infestation in Bassie Canyon. There are 54 known species of Tamarisk which are native to North Africa, the Mediterranean, and the Middle East. Tamarisk is fire adapted, each plant can produce up to 500,000 wind-blown seeds, the leaves and flowers contain few nutrients for wildlife, and it tends to grow in riparian areas or where water is near the surface. Native aquatic systems are disrupted because of long tap roots that are capable of intercepting deep water tables and increased salinity of the surrounding soil after leaves drop. In turn, native species such as willow and cottonwood are displaced leaving poor habitat and forage for wildlife. After burning or cutting, Tamarisk can easily resprout making it difficult to eliminate (Muzika and Swearingen 2006).

Environmental Consequences

Proposed Action

Intact healthy native plant communities are more resistant to the establishment and spread of noxious weeds. By managing wild horses at a level compatible with the native plant communities, noxious weeds would be less likely to become established and spread.

Under the proposed action, all treatment areas would be inventoried and monitored to ensure that noxious weeds and invasive species would be identified and treated where practical. All noxious

weeds discovered on the project area would be recorded, to include the species, size of the infestation, cover class, distribution of plants (linear or irregular), and location. The Stillwater Field Office weed coordinator would be notified of any weeds found and provided with this information. All noxious weeds found would be treated and evaluated. Treatment methods could include BLM approved biological, cultural/mechanical, and chemical control. When applicable, several of these methods would be combined into an integrated pest management program in order to reduce costs and risks to humans and the environment.

Where chemical control is the treatment method, a Pesticide Use Proposal would be submitted to the Nevada State Office weed coordinator, which would specify the most appropriate herbicide for the site and noxious weed species, as well as the application rate of the herbicide. Any herbicide selection and application would be in conformance with Final Vegetation Treatments Using Herbicides on Bureau of Land Management Lands in 17 Western States Programmatic Environmental Impact Statement (EIS) and Record of Decision (ROD) (BLM 2007a,b).

There may be an increased threat of noxious weeds being introduced into the project area by administrative vehicles associated with conducting the mechanical activities. Vehicles used during the project would be cleaned prior to arriving at the job site. Staging and turn-around areas would be specified in the treatment plan to avoid areas of cheatgrass or other weeds. Those treatment areas where biomass was removed would be at greater risk for weed invasion due to the additional soil disturbance caused from removal and/or movement of the pinyon-juniper. Seeding with native perennial plants would reduce the risk of invasive species invasion. However, additional inventory for noxious weeds would need to occur one year after treatment and then would be included on a regular monitoring schedule.

Under the proposed action, the project area would be routinely surveyed along roadways and other disturbed areas for new weed infestations and treated as described above. Areas previously treated with herbicides would continue to be monitored. The occurrence of invasive and noxious weeds would decrease in the long term as there would be less competition between these plants and the desirable perennial plants. The invasive plants would be treated if observed, allowing more light, water, and nutrients for the desirable perennial species. In addition, more monitoring would be completed as part of this treatment, and this would prevent further spreading of weeds and their more timely eradication. Washing of equipment would also prevent inadvertent transport of weeds before and after treatment is conducted.

No Action

Under the no action alternative, the Clan Alpine, Edwards Creek, and Porter Canyon Allotments would be routinely surveyed along roadways and other disturbed areas for new weed infestations. The Stillwater Field Office weed coordinator would be notified of any weeds found and provided with the species, size of the infestation, cover class, distribution of plants (linear or irregular), and location. Treatment methods could include biological, cultural/mechanical, and chemical control. When applicable, several of these methods would be combined into an integrated pest management program in order to reduce the costs and risks to humans and the environment. Areas previously treated with herbicides would continue to be monitored.

Cumulative Impacts

The cumulative impact analysis area for invasive, non-native, and noxious species consists of the Porter Canyon, Edwards Creek, and the Clan Alpine Allotments (only 2.4% portion of). When combined with the effects from past, present, and reasonably foreseeable future actions, cumulative effects have been determined be positive. The risk of wildfire would be reduced with the reduction of cheatgrass in the Cold Springs treatment area, making conditions more favorable for the desired native plant species to become established. Any short term and long term effects that may be considered negative from herbicide application to control the invasive, non-native, and noxious species would be negligible since the herbicides would be applied as per label instructions. The decreasing of over-utilization of vegetative resources by excess wild horses would also be a positive effect in enhancing plant communities to be resilient to invasive weed invasions.

3.7 Livestock Grazing

Affected Environment

There are two permittees authorized to graze cattle on the three allotments encompassing the project area. The Clan Alpine allotment covers approximately 23,400 acres of the project area and includes the Cold Springs fuel break portion of the proposed action, which is in the Cold Springs pasture. Currently 927 cattle are permitted in November in this pasture for a total of 914 Animal Unit Months (AUMs). Permitted livestock use on the Porter Canyon Allotment is 603 cattle from December 1 until November 30 for a total of 7,256 AUM's. Permitted use on the Edwards Creek Allotment is 275 cattle from December 1 until November 30 for a total of 3,309 AUM's. Grazing for Edwards Creek and Porter Canyon allotments is done in accordance with the Desatoya Ecosystem Management Plan, which allows for an adaptive management approach. This management plan outlines an approximate grazing schedule, with the summer use areas being predominantly in the foothills and at the higher elevations. Winter grazing occurs mainly on the flats.

The Desatoya Ecosystem Management Plan includes active management in changing on/off times and grazing deferment to support growth of valuable plant species. The primary livestock management tools consist of early season deferment to favor herbaceous species and late season deferment to favor woody species. Other management tools include training the cattle on these allotments to graze the uplands by use of off-riparian watering areas and using grazing behavior as a culling criterion. Livestock movement is timed to meet utilization objectives, and timing can vary based on forage production, weather, livestock behavior, and progress towards objectives.

Through a cooperative agreement, Smith Creek Ranch and the BLM developed a long-term monitoring program that provides feedback to the grazing program based on cooperatively collected baseline data. Upland monitoring included species composition, frequency, cover, and utilization data. Riparian monitoring included greenline, riparian cross section, aspen density, and stubble height data. Innovative solutions to resource issues on Porter and Edwards Creek allotments have resulted in significant improvement in riparian and upland vegetation conditions, which in turn benefits wildlife habitat. However, riparian and upland objectives are not being

met due to PJ encroachment coupled with overpopulation of wild horses that have degraded wet meadows and sagebrush plant communities.

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 within an HMA 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. In the 2010 grazing year, despite above average precipitation during the growing season, heavy use was documented on approximately 88,657 acres, which represent most of the livestock and wild horse accessible areas of the Desatoya HMA that support forage grasses.

Environmental Consequences

Proposed Action

The health, vigor, recruitment, and production of perennial grasses, forbs, and shrubs are expected to improve following implementation of the vegetation treatments and wild horse removal. Successful treatments would provide an increase in palatable and more nutritional forage for livestock as well as reducing factors outside of the control of the permittee in meeting the Standards and Guidelines for Rangeland Health (BLM 2003). Successful treatments should help maintain, restore, or increase soil site stability, hydrologic function, and biotic integrity. This is expected to maintain, restore, or increase capacity for the capture, storage, and safe release of precipitation, the conversion of sunlight to plant and then animal matter, and the cycle of nutrients through the environment. Resilient plant communities have a greater ability to recover from random events such as wildlife or droughts, thus diminishing the duration of potential grazing closures stemming from future wildfires or reduced potential AUMs resulting from drought.

The fencing of the wet meadow in Dalton Canyon would limit cattle grazing in this pasture to less than 30 days in the spring and/or fall each year, the number of days dependent on the number of cattle and the amount of forage available. Wild horses would be eliminated from the exclosure because it is not practical to allow a set amount of wild horses into an exclosure for a specific period of time. This would occur after 3 years of complete rest from livestock grazing. This period of rest would not impact livestock AUMs because currently there is so little forage available due to the degradation of the Dalton Canyon wet meadow complex. The proposed pipelines and troughs inside the Dalton Canyon exclosure would provide water to livestock that would be otherwise unavailable due to the brush fences that would be constructed to facilitate recovery of the most degraded areas that are unlikely to recover after 3 years of rest. The fencing of the wet meadow in Bassie Canyon would limit cattle grazing to 100 to 150 head and serve as an overnight holding pasture. Water would be piped away from the riparian area so that cattle and wild horse would continue to have access to water. There would be less damage to springs and spring developments so that the availability of water would be greater for all of the resources dependent on water, including livestock.

Under the proposed action, the conditions that can lead to extreme fire behavior would be reduced so the likelihood of having to close areas of the Clan Alpine, Porter Canyon, and Edwards Creek Allotments to cattle grazing in the future would be minimized.

Livestock may avoid portions of the project area if vegetation treatments or fence construction coincides with cattle movement or use of an area. To reduce this potential impact, livestock grazing would not be scheduled within the treatment areas during tree removal, shredding, cutting, and piling. Also, cattle would not be present during mowing or herbicide treatment on rabbitbrush or decadent sagebrush. For the Cold Springs fuels treatment, livestock would not be directly affected because prescribed burning and subsequent herbicide treatment would not occur in November, which is the only time livestock use the Cold Springs pasture.

During the baiting and trapping of the wild horses, livestock located near the corrals may be temporarily disturbed or displaced by the increased activity during the trapping and loading process; however, this would be minimal since there would not be very many horses being loaded at one time. Livestock would move back into the area once the horses were removed and hauled to a permanent holding facility. The use of a helicopter may also temporarily cause avoidance of the trap site.

In managing wild horse numbers so that they are within the AML, there would be less competition between cattle and horses, as well as wildlife, for perennial plants that are considered palatable by both types of animals. The plants would not be utilized so heavily, which would allow for an adequate amount of photosynthetic material remaining for the production of carbohydrates to meet the growth and respiration demands of the plants. The plants would enter dormancy with more root reserves for next year's growth and reproduction. This is expected to increase quality and abundance of forage.

No Action

Under the no action alternative, the amount of forage for livestock and wild horse grazing would likely decrease over time since the PJ would continue to increase in density leading to continual crowding out of more favorable perennial bunchgrasses, forbs, and shrubs. The rabbitbrush and decadent sagebrush would continue to dominate certain areas if not removed, outcompeting more palatable plant species preferred by cattle and wild horses. As grass species decline in abundance, there would be increased use by livestock and wild horses on remaining plants. The health, vigor, recruitment, and production of perennial grasses, forbs, and shrubs would decline in the long-term due to a combination of factors, to include continued livestock grazing, wild horses, wildlife, and the competition with older trees and shrubs for nutrients, water, and light. Riparian and upland objectives for Porter Canyon and Edwards Creek allotments would continue to fail in meeting objectives because of the decline in key plant species. The result would be the potential for a reduction in permitted grazing use as forage quantity and quality declines because Conformance with the Standards and Guidelines for Rangeland Health would likely not be met when a current assessment is undertaken in 2014.

The wet meadow in the Crucial Mule Deer habitat, as well as Dalton Canyon and Bassie Canyon would not be fenced, and the associated springs would not be developed at this time so cattle would not be excluded from these areas. The springbox, trough, and pipeline would not be installed at Stoker Spring so that livestock and wild horses would not be drawn away from the spring for their water.

Under the no action alternative, the conditions for extreme fire behavior would increase each year on the Porter Canyon and Edwards Creek Allotments due to the build-up of large woody material. The Cold Springs Pasture of the Clan Alpine Allotment is likely to experience shorter fire intervals due to cheatgrass abundance, thus decreasing palatable winter forage over time. This would increase the possibility that the allotments would be either partially or totally closed to livestock grazing sooner and more frequently than under the proposed action alternative.

Under the no action alternative, there would be no disturbance to the cattle or resulting avoidance to the project area since the mechanical treatment would not be done. Also, no wild horses would be bait or water trapped so that potential disturbance would not occur.

Cumulative Effects

When combined with the effects from past, present, and reasonably foreseeable future actions, cumulative effects have been determined to be positive for livestock grazing and detrimental under the no action alternative. Any negative, short term impacts to livestock grazing would be minimal under the proposed action as there would be an overall improvement of the health, vigor, and recruitment of perennial grasses, forbs, and shrub species, in part due to decreasing of over-utilization of vegetative resources by excess wild horses. The increase in ground cover would decrease soil erosion and improve water quality. The quantity and quality of livestock forage would increase, which would promote herd health and economic stability.

3.8 Wild Horses

Affected Environment

Detailed information about the history of the Desatoya HMA and the wild horse herd is provided in the Desatoya Herd Management Area Plan/Capture Plan Update and Environmental Assessment (EA) No. NV-030-03-022 (Jul, 2003). The Desatoya HMA has not been designated as "range" under 43 CFR 4710.3-2. There are currently four designated Wild Horse and Burro Ranges in the Western United States that are managed principally for wild horses and burros consistent with 43 CFR 4170.3-2. These are the Pryor Mountain Wild Horse Range in Montana; the Little Book Cliffs Wild Horse Range in Colorado; the Nevada Wild Horse Range and the Marietta Wild Burro Range in Nevada. Only the BLM Director or Assistant Director (as per BLM Manual 1203: Delegation of Authority), may establish a Wild Horse and Burro Range after a full assessment of the impact on other resources through the land-use planning process

Table 3 summarizes the AML, current population, and estimated removal numbers for the affected HMA under the Proposed Action. The Desatoya HMA was last gathered to remove excess wild horses in 2003 and 2004. A total of 302 horses were gathered and removed (See Table 7).

Table 7: Removals, releases and treatment.

HMA	Gather Date	Wild Horses Gathered	Wild Horses Removed	Total Remaining Post-Gather Population
Desatoya	2003/ 2004	302	302	127

Results of Win Equus Population Modeling

The Win Equus Population Model was designed to project how wild horse populations may react to different management techniques. The Alternatives were modeled using Version 3.2 of the WinEquus population model (Jenkins, 2000). For results see Table 8 on the following page and Appendix E. The best recruitment and mortality data available for these HMAs is from the Garfield HMA, also located in this district. Using the available data, results from the model show that over the next ten years the rate of increase can be reduced from approximately 18% to 2.1% for the Desatoya HMA with PZP-22 contraception boosters given every three years. This equates to 808 fewer excess wild horses that would need to be gathered and placed into the adoption program or sanctuaries.

The "Total Number Removed" under the "No Action" alternative is the number that would need to be removed in 10 years if the Proposed Action is not selected.

Table 8: Summary of Population Modeling Results for Desatoya HMA.

Alternative	Ave. Pop. Size (10 years)*	Ave. Growth Rate Next 10 Years (%)*	Total Number Gathered*	Total Number Removed*	Total Number Treated*
Proposed Action	127	2.1%	1073	512	113
No Action	1447	18%		1320**	

* Median Trial

** Median number of horses needed to be removed to equal the estimated population size under the proposed action. Female foals, (fillies) would not be treated.

Appropriate management level (AML) for the Desatoya Herd Management Area (HMA) was determined by allocating available forage between wild horses, livestock, and wildlife by allotment. The AML within the Porter Canyon and Edwards Creek allotments for the Desatoya Herd Management Area (HMA) was established through the approval of the *Desatoya Mountains Ecosystem Management Plan EA* in 1999 (EA # 98044). AML for the HMA that overlaps with the Cold Springs Pasture portion of the Clan Alpine allotment was established through a Multiple Use Decision in 1992. The project boundary contains 84% of the HMA (136,00 HMA acres) with approximately 82% of those acres being contained within the Porter Canyon allotment, 12% within the Edwards Creek allotment, and 5% within the Clan Alpine allotment portion .

Historically many wild horses have used areas outside of the HMA when populations have increased many times over the AML; therefore wild horses seek additional water and forage when densities are above AML. However, during the 2011 census only 14 wild horses were outside of the HMA, likely because 2011 was an above average year for precipitation. AML for the Porter Canyon, Edwards Creek, and Clan Alpine allotments was established at 45-67, 41-55, and 32-43 individuals respectively, with another AML of 9-15 individuals being established for

the South Smith Creek allotment, which is adjacent but outside of the project boundary, for a total of 127-180. A wild horse population inventory was completed for the entire Desatoya HMA on July 5, 2011. A total of 543 horses were counted and appeared to be healthy, in part because of an abundance of water over much of the HMA stemming from a longer, wetter than average late winter/spring in 2010 and 2011. Fourteen wild horses were counted outside of the HMA at that time. However, the horse populations have increased beyond the carrying capacity of the range which has resulted in heavy use over much of the upland and riparian areas. During the population inventory flight, the valley bottoms and the area around meadows near Haypress were being heavily used by wild horses. Heavy use is occurring on key forage grass species. Substantial areas of the HMA supply very little forage grasses or are too steep to be grazed, however, approximately 88,657 acres (≈ 54% of HMA) are accessible to wild horses and for the most part cattle. In the 2010 grazing year heavy use was documented for these areas. The forage grasses cannot sustain this level of use.

Table 9: County in which the HMA is located.

HMA Name	County	Acres	Multiple Use Decision Date	AML Range	Distance from Nearest Town
Desatoya	Churchill/Lander	161,715	1992/1999	127 - 180	60 miles E. of Fallon

See Map 2 Appendix G.

Environmental Consequences

Proposed Action

Under the Proposed Action, approximately 450 - 525 wild horses would be captured, of which approximately 400 excess wild horses would be removed. Approximately 127 wild horses would be released back to the range after treatment of 51 mares (dependent on capture efficiency) with PZP-22. Female foals (fillies) would not be treated. Excess horses to be removed would primarily consist of the wild horses residing outside the HMAs and younger more adoptable animals gathered from within the HMA's. These animals would be transported to a BLM short-term corral facility where they would receive appropriate care and be prepared for adoption, sale (with limitations) or for shipment to a grassland pasture facility (GPF). Any old, sick or lame horses and any animals that are covered by BLM's Euthanasia Policy (e.g., that would be unable to maintain an acceptable body condition (greater than or equal to a Henneke BC of 3) would be humanely euthanized as an act of mercy. The resulting sex ratio would be approximately 60% stallions and 40% mares. It is expected that releasing additional stallions to reach the targeted sex ratio of 60% males would result in smaller band sizes, larger bachelor groups, and some increased competition for mares. More stallions involved in breeding should result in increased genetic exchange improving the genetic health within the herd.

Fertility control would be applied to the mares selected for release, decreasing fertility and future annual wild horse population growth within the HMAs. The detailed procedures to be followed for the implementation of fertility control are described in Appendix C. Each released mare would receive a single dose of the two-year PZP contraceptive vaccine prior to release. If the proposed bait/water trapping and fertility control treatments prove to be unsuccessful in maintaining population objectives, then it is anticipated that a follow up helicopter-driven gather would be implemented in the Desatoya HMA every two to three years over the next 10 years to

re-vaccinate the mares and remove excess animals. All future gather activities would be conducted in a manner consistent with those described for the late summer/early fall 2012 gather. When injected, PZP (antigen) causes the mare's immune system to produce antibodies. These antibodies bind to the mare's eggs, which effectively blocks sperm binding and fertilization (Zoo, Montana, 2000). PZP is relatively inexpensive, meets BLM requirements for safety to mares, to the environment, and can be easily administered in the field. Based on behavioral studies, PZP-22 does not cause significant changes in behavior at individual or herd levels (USGS). Additionally, PZP contraception appears to be completely reversible.

The highest success for fertility control has been obtained when applied during the timeframe of November through February. The application efficacy of the two-year PZP vaccine (representing the percent of vaccinated mares that do not foal) based on winter applications follows next page:

	Year 1	**Year 2**	**Year 3**	**Year 4**
Winter	Normal	94%	82%	94%
Summer	Normal	80%	65%	80%

One-time application at the capture site would not affect normal development of a fetus, hormone health of the mare or behavioral responses to stallions, should the mare already be pregnant when vaccinated (Kirkpatrick, 1995). The vaccine has also proven to have no apparent effect on pregnancies in progress, the health of offspring, or the behavior of treated mares (Turner, 1997). Mares would foal normally in 2012 (Year 1).

Ransom et al. (2010) found no differences in how PZP-treated and control mares allocated their time between feeding, resting, travel, maintenance, and social behaviors in 3 populations of wild horses, which is consistent with Powell's (1999) findings in another population. Body condition of PZP-treated and control mares did not differ between treatment groups in Ransom et al.'s (2010) study. Turner and Kirkpatrick (2002) found that PZP-treated mares had higher body condition than control mares in another population, presumably because energy expenditure was reduced by the absence of pregnancy and lactation.

In two studies involving a total of 4 wild horse populations, both Nunez et al. (2009) and Ransom et al. (2010) found that PZP-treated mares were involved in reproductive interactions with stallions more often than control mares, which is not surprising given the evidence that PZP-treated females of other mammal species can regularly demonstrate estrus behavior while contracepted (Shumake and Wilhelm 1995, Heilmann et al. 1998, Curtis et al. 2002). Ransom et al. (2010) found that control mares were herded by stallions more frequently than PZP-treated mares, and Nunez et al. (2009) found that PZP-treated mares exhibited higher infidelity to their band stallion during the non-breeding season than control mares. Madosky et al. (in press) found that infidelity was also evident during the breeding season in the same population that Nunez et al. (2009) studied, resulting in PZP-treated mares changing bands more frequently than control mares. Long-term implications of these changes in social behavior are currently unknown.

The first-time application of PZP-22 at the capture site would not affect normal development of a fetus, hormone health of the mare or behavioral responses to stallions, should the mare already be pregnant when vaccinated (Kirkpatrick, 1995). The vaccine has also proven to have no

apparent effect on pregnancies in progress, the health of offspring, or the behavior of treated mares (Turner, 1997). Mares would foal normally in 2012 (Year 1). There are always some portion of the wild horse population, including mares, that manage to evade capture and some mares produce a foal even when treated with PZP-22 assuring the populations will continue to have reproduction occurring. The majority of mares vaccinated with PZP under the Proposed Action would not produce a foal for the following 22 months, which would help maintain the horse populations within the AML range. It is estimated that over the next 11 years gathering and re-vaccinating mares every 2 or 3 years will result in at least178 fewer excess horses recruited into the population. PZP-22 can safely be repeated in 2 years or as necessary to control the population growth rate. The probability of long-term infertility using PZP-22 is very low, and many mares retreated even after 3 years will return to normal fertility after the second treatment wears off (Turner, pers. comm.). After the contraceptive wears off, the population will increase at or slightly above the normal growth rate for the HMAs. The fertility control treatment would be controlled, handled, and administered by a trained BLM employee. Mares receiving the vaccine would experience slightly increased stress levels associated with handling while being vaccinated and freeze-marked. Serious injection site reactions associated with fertility control treatments are rare in treated mares. Any direct impacts associated with fertility control, such as swelling or local reactions at the injection site, would be minor in nature and of short duration. Most mares recover quickly once released back to the HMA, and none are expected to have long term consequences from the fertility control injections. Released stallions may also be freeze marked to aid in determining the accuracy of future inventory flights and efficiency of the current gather.

Direct and Indirect Gather Impacts

The BLM has been conducting wild horse and burro gathers since the mid-1970s. During this time, methods and procedures have been identified and refined to minimize stress and impacts to wild horses during gather implementation. The SOPs in Appendix D would be implemented to ensure a safe and humane gather occurs and to minimize potential stress and injury to wild horses. Various impacts to wild horses as a result of gather activities have been observed. Under the Proposed Action, impacts to wild horses would be both direct and indirect, occurring to both individual animals and the population as a whole.

In any given gather, gather-related mortality averages about one half of one percent (0.5%), which is very low when handling wild animals. Approximately, another six-tenths of one percent (0.6%) of the captured animals could be humanely euthanized due to pre-existing conditions and in accordance with BLM policy, according to the Government Accountability Office (GAO-09-77). The data affirms that the use of helicopters and motorized vehicles has proven to be a safe, humane, effective, and practical means for the gather and removal of excess wild horses from the public lands. The BLM also avoids gathering wild horses by helicopter during the six weeks prior to and six weeks following the peak of foaling (mid-April to mid-May), therefore the BLM does not use a helicopter to gather wild horses between March 1 through June 30 except under emergency situations.

Individual, direct impacts to wild horses include the 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 wild horses may include bruises, scrapes, or cuts to feet, legs, face, or body from rocks, brush or tree limbs. Rarely wild horses might encounter barbed wire fences and receive wire cuts. These injuries are very rarely fatal and are treated on-site until a veterinarian can examine the animal and determine if additional treatment is indicated.

Other injuries may occur after a horse has been captured and is either within the trap site corral, the temporary holding corral, during transport between facilities, or during sorting and handling. Occasionally, horses and to a lesser extent burros may sustain a spinal injury or a fractured limb, but based on prior gather statistics serious injuries requiring humane euthanasia are rare. Similar injuries could be sustained if wild horses are 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 (or short-term) 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 injures are more frequent. Indirect individual impacts are those which occur to individual wild horses or burros after the initial event. These may include miscarriages in females, increased social displacement, and conflict between males. These impacts, like direct individual impacts, are known to occur intermittently during wild horse gather operations. An example of an indirect individual impact would be the brief 1-2 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 that the potential for miscarriages varies, but is more likely if the mares are in very thin body condition or in poor health.

A few foals may be orphaned during gather activities but every precaution would be taken to avoid these situations. This can occur if the mare rejects the foal, the foal becomes separated from its mother and cannot be matched up following sorting, the mare 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. Due to the timing of the proposed gather, it is unlikely that orphan foals will be encountered as the majority of the current year's (2012) foals will be already weaned from their mothers and will be 6-10 months old. In private industry, domestic horses are normally weaned between four and six months of age. On occasion, foals are gathered that were previously orphaned on the range (prior to the gather) because the mother rejected it or died. These foals are usually 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 may be placed in a foster home in order to receive additional care. Despite these efforts, some orphan foals may die or be humanely euthanized as an act of mercy if the prognosis for survival is very poor.

During summer gathers, wild horses may travel long distances between water and forage and become more easily dehydrated. The BLM staff (Contracting Officers (COR) and Project Inspectors (PI)) are continuously at the gather site to monitor weather conditions and health and well-being of the wild horses. Adjustments to gather operations are made as necessary to ensure animal health and safety. Specific temperature and distance parameters are set by the COR and PI to adapt the gather operations to site specific conditions and animal needs. Most summer related concerns can be mitigated by conducting gather activities during the early morning hours when it is cooler and by removing the helicopter pressure from wild horses that are exhibiting the symptoms of heat fatigue and dehydration until the horses regain their stamina.

Through the capture and sorting process, wild horses are examined for health, injury and other potential physical defects. Decisions to humanely euthanize animals in field situations would be made in conformance with BLM policy. BLM Euthanasia Policy IM-2009-041 is used as a guide to determine if animals meet the criteria and should be euthanized (refer to SOPs, Appendix D). 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 wild horses or burros that have serious physical defects such as club feet, severe limb deformities, limb and dental deformities, or sway back. Some of these conditions have a causal genetic component and the animals should not be returned to the range in order 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 may move into another area during the gather operation. With the exception of changes to herd demographics from removals, direct population impacts to gathered horses 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 to gathered horses would be expected within one month of release, except for a heightened awareness of human presence.

It is not expected that genetic health would be impacted by the Proposed Action as the AML ranges should provide for acceptable genetic diversity.

Over the next 10 years, implementation of the Proposed Action could result in as many as 808 fewer excess wild horses that need to be removed from the range. For every excess horse that is removed from the range and for which no adoption or sale demand exists, there is a cost to the American taxpayer of up to $12,000 to care for each animal over a 20 year period (the average lifespan of a wild horse cared for in a grassland facility).

Diet and Dietary Overlap with Other Species

Wild horses are not alone in their dietary needs on the range, which they share with many other ungulates also looking for forage. Smith (1986) determined that cattle, domestic sheep, elk, and bighorn sheep were the most likely to negatively interact with wild horses. However, elk and domestic sheep are not issues for the Desatoya HMA.

Because of physiology, wild horses primarily eat native bunchgrasses when available; consequently due to different food preferences, diet overlap between wild horses, deer, and pronghorn rarely reaches above 20% (Hubbard and Hansen 1976, R. Hansen, R. Clark, and W. Lawhorn 1977, Meeker 1979, Hanley and Hanley 1982). Dietary overlap of wild horses with desert bighorn sheep has been documented around 50% when averaged throughout the year (Hanley & Hanley 1982, Hansen et al. 1977).

The dietary overlap between wild horses and cattle is much higher, and averages between 60 and 80% (Hubbard and Hansen 1976, R. Hansen, R. Clark, and W. Lawhorn 1977, Hanley 1982, Krysl et al. 1984, McInnis and Vavra 1987). Although horses and cattle are often compared as grazers, horses have been cited as more destructive to the range than cattle due to their digestive system and grazing habits. Horses are cecal digesters, unlike most other ungulates including cattle, pronghorn, and others, which are ruminants (Hanley and Hanley 1982, Beever 2003). Cecal digesters do not ruminate, or have to regurgitate and repeat the cycle of chewing until edible particles of plant fiber are small enough for their digestive system. 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 (Hanley and Hanley 1982, Beever 2003).

Wild horses can exploit the high cellulose of graminoids, or grasses, which have been observed to make up over 88% of their diet (McInnis and Vavra 1987, Hanley 1982) when available. However, this lower quality diet requires that horses consume 20-65% 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 (Symanski 1994, Menard et al 2002, Beever 2003). As a result, areas grazed by horses may retain fewer plant species than areas grazed by other ungulates.

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 within an HMA 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. By maintaining wild horse population size within the AML, 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 AMLs would be expected to improve forage quantity and quality and promote healthy 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

As with many other wildlife and domestic species living in arid environments, the availability and location of water is critical not only for survival but for habitat utilization (BLM 2002). Wild

horses have been observed to travel great distances to and from water daily, and during dry summer months when less water is available from seasonal sources, horses remain slightly closer to perennial water sources than in the winter and spring (Ganskopp and Vavra 1986, R. Hansen, R. Clark, and W. Lawhorn 1977). They prefer to drink during the first part of daylight or the last, and were not observed to linger at the water source (Ganskopp and Vavra 1986).

Horses have been found to have some effect on the frequency of use of a water source by other wildlife in arid environments. One study found that in areas where bighorn sheep and horse water sources overlapped, the higher the frequency of horse use led to lower frequency of bighorn sheep use, and vice versa (Ostermann-Kelm et al. 2009).

Population Dynamics and Demography

Wild horses usually produce one offspring per year, with an observed or projected annual herd rate of increase between 18 and 25% (Wolfe 1980, L. Eberhardt, A. Majorowicz, and J. Wilcox 1982, Eberhardt 1985, M. Wolfe, L. Ellis, and R. MacMullen 1989, Garrott and Taylor 1990, R. Garrott, D. Siniff, and L. Eberhardt 1991). A herd with a 20% rate of annual increase will more than double in four years.

Herd rate of increase is influenced by adult survival rate, foaling rate, and foal mortality. Adult horse survival is usually very high, estimated between and 80 and 97%, and may be the key determinant of wild horse population increases (Wolfe 1980, L. Eberhardt, A. Majorowicz, and J. Wilcox 1982, Garrott and Taylor 1990).

Foaling rates vary by year, depending on weather, available resources, and herd size, and differ between herds. Peak foaling rates occur between ages 8 and 20, after which reproduction is possible but much less likely. Some mares may be able to foal at age 2, but most females begin reproducing at age 3 (L. Eberhardt, A. Majorowicz, and J. Wilcox 1982, Garrott and Taylor 1990). Most foals are born between April and June (McCort 1984).

Foal mortality is highest within the first year, and has been recorded as between 2 and 10%, and as high as 20-25% (D. Siniff, J.Tester, and G. McMahon 1986, McCort 1984). Causes of foal mortality include weaknesses at birth, rejection by the mare or inattentiveness of the mare, miring in mud, severe winters and separation from mares.

Sex ratios of adult wild horse herds are nearly always skewed toward females. Experts cite three main reasons for this: differential survival of adult males and females, removal of a disproportionate number of males, and skewed foal sex ratios (Garrott and Taylor 1990). Higher mortality in male horses may be due to injuries acquired during fights for mates or under conditions of food shortage and being unable to obtain sufficient nutrients since male horses naturally need more nutrients than females (D. Siniff, J.Tester, and G. McMahon 1986).

Social Interactions

It is widely agreed that wild horses have three major types of social groups: harem groups, multiple male and female groups, and bachelor male groups. A harem group consists of one adult male and several adult females and their offspring, ranging from 2 total individuals to more than

20 (McCort 1984). Harems are stable groups, and are the type of wild horse group most often described by authors. Harem females mate almost exclusively with the harem male.

Multiple male and female groups generally have more than one adult male and several adult females and their offspring. These group compositions are not stable, and differ from harems in mating behavior and dominance structure. In such groups, one male is most likely dominant over the others. This male prevents subordinate males from interacting with the adult females in the group and plays the dominant role during interactions with other groups (Salter and Hudson 1982). The most common male horse interactions include olfactory investigation and fecal marking. Fecal marking of the same location repeatedly by various males is common and can become very large. These stud piles are used throughout the year, commonly for 1-3 years, and are often located in highly visible areas such as the edges of trails or roads or beneath lone trees in a grassy area (Salter and Hudson 1982, McCort 1984, personal observation). Occasionally, more than one in the same general location is noted.

Bachelor male groups are composed entirely of male wild horses and are generally unstable in composition. These groups are formed by young males forced out of their family groups or older horses who have lost membership in a harem or multiple male and female group. Group sizes have been observed as ranging from a single lone stallion to 16 horses.

Many young horses leave their natal group at sexual maturity, so there is movement of horses between harems or groups, making inbreeding rare in wild horse populations.

Another type of social structure that wild horses exhibit is a herd, made up of several bands. Each band has certain dominance within the herd structure, but all generally follow the same movement patterns and have a similar home range.

Home Range/ Habitat

Wild horses generally move widely both daily, usually between water sources, as well as seasonally, seeking higher elevations during summer months and at times when it is necessary to minimize threats to their safety by enhancing their view of the surrounding area (Ganskopp and Vavra 1986, Beever and Herrick 2006).

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

Approximately 400 excess horses would be removed during the initial helicopter driven gather and 20-30 at a time during bait/water trapping. Animals would be transported from the capture/temporary holding corrals to the designated BLM short-term holding corral facility(s). From there, they would be made available for adoption or sale to qualified individuals or sent to grassland pasture facilities (GPFs).

Wild horses selected for removal from the range are transported to the receiving short-term holding facility in straight deck semi-trailers or goose-neck stock trailers. Vehicles are inspected by the BLM Contracting Officer Representative (COR) or Project Inspector (PI) prior to use to ensure wild horses can be safely transported and that the interior of the vehicle is in a sanitary condition. Wild horses are segregated by age and sex and loaded into separate compartments. A small number of mares may be shipped with foals. Transportation of recently captured wild horses is limited to approximately 8 hours. 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 wild horses or burros are in extremely poor condition, it is rare for an animal to be seriously injured or die during transport.

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

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

At short-term corral facilities, a minimum of 700 square feet is provided per animal. Mortality at short-term holding facilities averages approximately 5% per year (GAO-09-77, Page 51), and includes animals euthanized due to a pre-existing condition; animals in extremely poor condition; animals that are injured and would not recover; animals which are unable to transition to feed; and animals which are seriously injured or accidentally die during sorting, handling, or preparation. Approximately 15,600 excess wild horses are being maintained within BLM's short-term holding facilities.

Adoption or Sale with Limitations, and Grassland Pasture Facilities (GPF)

Adoption applicants are required to have at least a 400 square foot corral with panels that are at least six feet tall for horses over 18 months of age and at least four and a half feet tall for burros. Applicants are required to provide adequate shelter, feed, and water. The BLM retains title to the horse or burro for one year and the animal and the facilities are inspected to assure the adopter is complying with the BLM's requirements. After one year, the adopter may take title to the horse or burro after an inspection from a humane official, veterinarian, or other individual approved by the authorized officer, at which point the horse becomes the property of the adopter. Adoptions are conducted in accordance with 43 CFR 4750.

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

Since fiscal year 2008, the BLM has removed over 31,440 excess wild horses or burros from the Western States. Most animals not immediately adopted or sold have been transported to long-term grassland pastures facilities in the Midwest. Unadopted animals 5 years of age and older are transported to GPFs. Each GPF is subject to a separate environmental analysis and decision making process. Animals in GPFs remain available for adoption or sale to individuals interested in acquiring a larger number of animals who can provide the animals with a good home. The BLM has maintained GPFs in the Midwest for over 20 years.

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

GPFs are designed to provide excess wild horses with humane, life-long care in a natural setting off the public rangelands. The wild horses 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. Approximately 31,441 wild horses, that are in excess of the existing adoption or sale demand (because of age or other factors), are currently located on private grassland pasture facilities in Iowa, Kansas, Oklahoma, and South Dakota. Located in mid or tall grass prairie regions of the United States, these GPFs are highly productive grasslands as compared to more arid western rangelands. These pastures comprise approximately 256,000 acres (an average of about 8-10 acres per animal). The majority of these animals are older in age.

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

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

Euthanasia and Sale without Limitation

While humane euthanasia and sale without limitation of healthy horses for which there is no adoption demand is authorized under the WFRHBA, Congress prohibited the use of appropriated funds between 1987 and 2004 and again in 2010 for this purpose. It is unknown if a similar limitation will be placed on the use of FY2012 appropriated funds. Sale with limitations has been used by the BLM since 2005 when the Act was amended.

No Action

If No Action is taken, excess wild horses would not be removed from within or outside the HMA and the wild horse populations would not be brought to AML at this time. The animals would not be subject to the individual direct or indirect impacts as a result of a gather operation in mid-August 2012. Over the short-term, individual animals in the herd would be subject to increased stress and possible death as a result of increased competition for water and forage as the population continues to grow even further in excess of the land's capacity to meet the wild horses' habitat needs. The areas currently experiencing heavy utilization by wild horses would increase over time. This would be expected to result in increasing damage to rangeland resources throughout the HMA. Trampling and trailing damage by wild horses in/around riparian areas would also be expected to increase, resulting in larger, more extensive areas of bare ground. Competition for the available water and forage between wild horses, domestic livestock, and native wildlife would continue and further increase.

Wild horses are a long-lived species with documented survival rates exceeding 92% for all age classes. Predation and disease have not substantially regulated wild horse population levels within or outside the project area. Throughout the HMA few predators exist to control wild horse populations. Some mountain lion predation occurs, but does not appear to be substantial. Coyotes are not prone to prey on wild horses unless young, or extremely weak. Other predators such as wolf or bear do not inhabit the area. Being a non-self-regulating species, there would be a steady increase in wild horse numbers for the foreseeable future, which would continue to exceed the carrying capacity of the range. Individual horses would be at risk of death by starvation and lack of water as the population continues to grow. The wild horses would compete for the available water and forage resources, affecting mares and foals most severely. Social stress would increase. Fighting among stud horses would increase as they protect their position at scarce water sources, as well as injuries and death to all age classes of animals. Significant loss of the wild horses in the HMA due to starvation or lack of water would have obvious consequences to the long-term viability of the herd. 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. The damage to rangeland resources that results from excess numbers of wild horses is also contrary to the WFRHBA, which mandates the Bureau to "*protect the range from the deterioration associated with overpopulation*", "*remove excess animals from the range so as to achieve appropriate management levels*", and *"to preserve and maintain a thriving natural ecological balance and multiple-use relationship in that area".* Once the vegetative and water

resources are at these critically low levels due to excessive utilization by an over population of wild horses, the weaker animals, generally the older animals and the mares and foals, are the first to be impacted. It is likely that a majority of these animals would die from starvation and dehydration. The resultant population would be heavily skewed towards the stronger stallions which would lead to significant social disruption in the HMA. By managing the public lands in this way, the vegetative and water resources would be impacted first and to the point that they have no potential for recovery. This degree of resource impact would lead to management of wild horses at a greatly reduced level if BLM is able to manage for wild horses at all on the HMA in the future. As a result, the No Action Alternative would not ensure healthy rangelands that would allow for the management of a healthy wild horse population, and would not promote a thriving natural ecological balance.

As populations increase beyond the capacity of the habitat, more bands of horses would also leave the boundaries of the HMA in search of forage and water, thereby increasing impacts to rangeland resources outside the HMA boundaries as well. This alternative would result in increasing numbers of wild horses in areas not designated for their use, and would not achieve the stated objectives for wild horse herd management areas, namely to "prevent the range from deterioration associated with overpopulation", and "preserve and maintain a thriving natural ecological balance and multiple use relationship in that area". Additionally, there would be no active management to maintain the population size within the established AML at this time. In the absence of a gather, wild horse populations would continue to grow at an average rate of at least 20% per year.

Cumulative Effects

When combined with the effects from past, present, and reasonably foreseeable future actions, cumulative effects associated with the capture and removal of excess wild horses, are considered minor. The application of fertility control vaccine to released mares includes gather-related mortality of less than 1% of the captured animals, about 5% per year associated with transportation, short term holding, adoption, or sale with limitations and about 8% per year associated with long-term holding. This compares with natural mortality on the range ranging from about 5-8% per year for foals (animals under age 1), about 5% per year for horses ages 1-15, and 5-100% for animals age 16 and older (Jenkins 2002, Garrott and Taylor 1990). In situations where forage and/or water are limited, mortality rates increase, with the greatest impact to young foals, nursing mares and older horses. 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 mare, or animals may become too weak to travel. After suffering, often for an extended period, the animals may die. Before these conditions arise, the BLM generally removes the excess animals to prevent their suffering from dehydration or starvation.

While humane euthanasia and sale without limitation of healthy horses for which there is no adoption demand is authorized under the WFRHBA, Congress prohibited the use of appropriated funds between 1987 and 2004 and again in 2010, 2011 and 2012 for this purpose.

The other cumulative effects which would be expected would include continued improvement of upland vegetation conditions, which would in turn benefit permitted livestock, native wildlife, and wild horse population as forage (habitat) quality and quantity is improved over the current

level. Application of fertility control should slow population growth rates and result in fewer excess wild horses that need to be removed. However, return of wild horses back into the HMA could lead to increased difficulty and greater costs to gather horses in the future as released horses learn to evade the trap site and/or helicopter. However, if the horses are able to be bait/water trapped they may become habituated to the corrals with the possibility of multiple captures of the same individual horses over time.

Cumulatively, there should be more stable wild horse populations, less competition for limited forage and water resources, healthier rangelands and wild horses, and fewer multiple use conflicts in the area over the short and long-term. Over the next 10-20 years, continuing to manage wild horses within the established AML range would achieve/maintain the thriving natural ecological balance and multiple use relationship on public lands in the area.

Cumulatively under the No Action Alternative, the wild horse population could exceed 1,000 horses in and outside of the Desatoya HMA in the next four years. Movement outside of the HMA would be expected as greater numbers of horses search for sufficient food and water. Heavy excessive utilization of the available forage would be expected to continue with severe use expected to occur and the water available for use could become increasingly limited. Emergency removals could be expected in order to prevent individual animals from suffering or death as a result of insufficient forage and water. Cumulative effects would result in foregoing the opportunity to improve rangeland health and 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 foregone.

3.9 Health And Safety

Affected Environment

Members of the public can inadvertently wander into areas that put them in the path of wild horses that are being herded or handled during the gather operations, creating the potential for injury to the wild horses and to the BLM employees and contractors conducting the gather and/or handling the horses as well as to the public themselves. Because these horses are wild animals, there is always the potential for injury when individuals get too close or inadvertently get in the way of gather activities.

The helicopter work is done at various heights above the ground, from as little as 10-15 feet (when herding the animals the last short distance to the gather corral) to several hundred feet (when doing a recon of the area). While helicopters are highly maneuverable and the pilots are very skilled in their operation, unknown and unexpected obstacles in their path can impact their ability to react in time to avoid members of the public in their path. These same unknown and unexpected obstacles can impact the wild horses being herded by the helicopter in that they may not be able to react and can be potentially harmed or caused to flee which can lead to injury and additional stress. When the helicopter is working close to the ground, the rotor wash of the helicopter is a safety concern by potentially causing loose vegetation, dirt, and other objects to fly through the air which can strike or land on anyone in close proximity as well as cause

decreased vision. Though rare, helicopter crashes and hard landings can and have occurred (approximately 10) over the last 30+ years while conducting wild horse gathers which necessitates the need to follow gather operations and visitor protocols at every wild horse gather to assure safety of all people and animals involved. Flying debris caused by a helicopter incident poses a safety concern to BLM and contractor staff, visitors, and the wild horses.

During the herding process, wild horses would try to flee if they perceive that something or someone suddenly blocks or crosses their path. Fleeing horses can go through wire fences, traverse unstable terrain, and go through areas that they normally don't travel in order to get away, all of which can lead them to injure people by striking or trampling them if they are in the animal's path.

Disturbances in and around the gather and holding corral have the potential to injure the government and contractor staff who are trying to sort, move and care for the horses by causing them to be kicked, struck, and possibly trampled by the animals trying to flee. Such disturbances also have the potential for similar harm to the public themselves.

The BLM is committed to allowing access by interested members of the public to the fullest possible degree without compromising safety or the success of operations. To minimize risks to the public from helicopter operations, the gather Contractor is required to conduct all helicopter operations in a safe manner, and to comply with FAA regulations (FAR) 91.119 (http://rgl.faa.gov/regulatory_and_guidance_library/rgfar.nsf/bf94f3f079de2117852566c70067018c/91693c93525de33e862576c100763e31) and BLM IM No. 2010-164 (http://www.blm.gov/wo/st/en/info/regulations/Instruction_Memos_and_Bulletins/national_instruction/2010/IM_2010-164.html) [2].

Public observations sites would also be established in locations that reduce safety risks to the public (e.g., from helicopter-related debris or from the rare helicopter crash landing, or from the potential path of gathered horses), to the wild horses (e.g., by ensuring observers would not be in the line of vision of 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. The Visitor Protocol and Ground Rules for public observation found in Appendix D provide the public with the opportunity to safely observe the gather operations. Every attempt would be made to identify observation site(s) at the gather location that offers good viewing opportunities, although there may be circumstances (flat terrain, limited vegetative cover, private lands, etc.) that require viewing locations to be at greater distances from the gather site to ensure safe gather operations.

2 At recent gathers, public observers have ranged in number from only a handful of individuals to a maximum of between 15-25 members of the public. At these numbers, BLM has determined that the current level of public visitation to gather operations falls below the threshold of an "open air assembly" under the FAR regulations (14 CFR 91.119).

Environmental Consequences

Proposed Action
All helicopter operations must be in compliance with FAR 91.119. Public safety as well as that of the BLM and contractor staff is always a concern during the gather operations and is addressed through the implementation of Visitor and Ground Rules (see Appendix D) that have been used in recent gathers to ensure that the public remains at a safe distance and does not impede gather operations. Appropriate BLM staffing (public affair specialists and law enforcement officers) would be present to assure compliance with visitation protocols at the site. These measures minimize the risks to the public.

Public observation of the wild horse gather activities on public lands would be allowed and would be consistent with BLM IM No. 2010-164 and visitation protocols for scheduled and non-schedule visitation in Appendix D.

Bait/water trapping would be done utilizing permanent or portable corrals constructed out of wood or steel. The trap would be constructed around a water source and once horses have entered the trap a gate would be closed. The ability to provide public visitation/observation would be limited during bait/water trapping activities as these operations require minimal human visibility and noise in order to effectively gather the horses. Having multiple people in the vicinity of the gather corrals would significantly reduce the operations success because the horses may refuse to enter the capture corrals with people present.

No Action
There would be no gather related safety concerns for BLM employees, contractors and the general public as no gather activities would occur.

3.10 Fire Management

Affected Environment

The fire management responsibility for the project area is shared by both the Carson City and the Battle Mountain Districts. The project area includes portions of five fire management units (FMU). Goals and objectives for the Churchill Basin FMU and the Churchill Ranges FMU are identified in the Carson City Field Office Fire Management Plan. Goals and objectives for the Paradise/Ione FMU, Smith Creek Valley FMU, and Carico Lake FMU are identified in the Battle Mountain District Fire Management Plan.

Fire is widely recognized as a natural process influencing vegetation patterns in many mountain landscapes of the western United States including the Desatoya Mountains. In recent history, management policy has been the systematic exclusion of fire, which influences vegetation patterns by removing the influence of fire. As crown cover and density increases in the pinyon/juniper woodlands, fuel loads also increase and understory vegetation is depleted. Lack of fire also increases the expansion of the pinyon/juniper into the sagebrush ecosystem. Increases in woody fuel loads result in a shift from frequent low and mixed intensity fires to less frequent high intensity fires. High intensity fires create a post fire environment that is often exploited by

fire dependent species such as cheatgrass. Once established this species provides fine fuels that increase opportunities for wildfire ignition and spread. In many areas cheatgrass is associated with a fire return interval of two to five years. Due to the 1998 and 1999 Cold Springs Wildfires, this is the case on 563 acres just north of the community of Cold Springs, Nevada. Table 10 shows the wildland fire and vegetation treatment projects within the project boundary since 1980.

Table 10. Fire history and previous treatments for the Proposed Action.

Treatment/Event	Name	Year	Acreage
Wildfire (Natural)	Cedar	1996	317
Wildfire (Human)	Cold Spring	1998	255
Wildfire (Human)	Clan Alpine	1999	145
Wildfire (Natural)	DeLong	1999	63
Wildfire (Human)	Cold Spring	1999	736
Aerial Seeding*	Cold Spring	1999	736
Wildfire (Natural)	Smith Creek	2005	19
Mastication	Edwards Creek	2005	217

*Seed Mixture: Crested Wheatgrass, Four Wing Saltbrush, Ladak Alfalfa, Thickspike Wheatgrass, and Western Wheatgrass. Since 1980, less than 1% of the vegetation in the project area has been affected by either wildfire or mechanical fuels treatments.

Fire regime condition class (FRCC) describes the degree of fire regime departure from historical fire cycles due to fire exclusion and other influences (selective timber harvesting, grazing, insects and disease, the introduction and establishment of non-native plants). FRCC identifies changes to key ecosystem components such as species composition, structural stage, tree or shrub stand age, and canopy closure. It characterizes the landscape by five "Fire Regime Groups" and three "Fire Condition Classes". Specifically, the natural historic frequency and severity of fire within an ecosystem is the identified Fire Regime, and Fire Condition Class identifies the departure of current conditions from the historical reference condition. The National Fire Plan and Healthy Forest Restoration Act dictate that the federal agencies use FRCC as criteria for planning projects.

The project area can be characterized by Fire Regime Group II which has a natural historic fire frequency of 0-35 years and a replacement severity and Fire Regime Group III which has a natural historical fire frequency of 35-100 years and a mixed fire severity. The condition class for the project area can be characterized as Condition Class 1, meaning the fire regime is within the historical range and the risk of losing key ecosystem components is low. However where the pinyon/juniper is encroaching on the sagebrush system or where past wildfires have converted the vegetation to annual grasslands (cheatgrass) the Condition Class is 3, meaning without disturbance the fire regime would become significantly altered from historical ranges and there exists a high risk of losing key ecosystem components from wildfire.

Environmental Consequences

Proposed Action

The overall effect of the Proposed Action would result in the intended consequences of reducing the risks of catastrophic wildfire and its potential adverse impacts to life, property, and natural resources. The structure, amount, and continuity of flammable vegetation within the project area

would be altered resulting in reduced fire intensity. The treated area would be moved from high intensity wildfire fuel conditions to mixed intensity wildfire fuels conditions. Concentrations of trees would be thinned reducing the connection from the younger trees to the older trees. The openings between tree crowns would reduce the tree torching and crowning potential. The trees which are left would be better protected from the adverse effects of wildfire, because fuel loads would be reduced and more natural breaks in fuels would enable better fire control and management. The shrub component would be thinned reducing the surface fuel quantity and continuity and reducing ladder fuels that can carry fire from the surface into tree crowns.

The Proposed Action would slow down the PJ encroachment into the sagebrush system and restore 563 acres north of the community of Cold Springs, Nevada. The Condition Class would move from a rating of 2 to 1, meaning the project area would be more in line with historical fire regimes and the risk of losing infrastructure or key ecosystem components would be lower.

There is a slight risk of the equipment conducting the treatments starting a wildland fire by hitting rocks and causing sparks. This risk can be minimized by scheduling the treatment outside periods of very high to extreme fire danger or by having water available on site during treatment operations if the treatment is conducted at a high fire danger.

No Action

The No-Action Alternative would result in the continuation of current fire management practices. The condition of the understory species would continue to decline with the increase of PJ trees into the sagebrush system. The areas represented as Condition Class 3 would increase creating further departure from the historical fire regime. The risk of equipment starting a wildland fire would not exist. At some future time, an ignition from a natural or human-caused source could result in an uncontrolled wildland fire. Under drought conditions and/or high winds, a running crown fire could put life, property, and natural resources at risk.

Cumulative Effects

The cumulative effects of actions within the Proposed Action Boundary are expected to decrease the potential for catastrophic fire.

3.11 Wetlands and Riparian

Affected Environment

Protection and the definition of wetlands for federal agencies stems from Executive Order (EO) 11990, Protection of Wetlands (1977). Section 6 (c) defines wetlands as follows; "*The term "wetlands" means those areas that are inundated by surface or ground water with a frequency sufficient to support, and under normal circumstances does or would support, a prevalence of vegetative or aquatic life that requires saturated or seasonally saturated soil conditions for growth and reproduction. Wetlands generally include swamps, marshes, bogs, and similar areas such as sloughs, potholes, wet meadows, river overflows, mud flats, and natural ponds*."

There are multiple springs that sustain "wetlands" and riparian areas in the project area. Riparian areas refer to the aquatic ecosystem and the portions of the adjacent terrestrial ecosystem that directly affect or are affected by the aquatic environment. Natural riparian areas are associated with Edwards, Topia, and Smith Creeks, as well as various named and unnamed springs and springbrooks in Dalton, Bassie, and Porter Canyons, as well as the spring meadow complex in the crucial mule deer area (See Maps 4-7 Appendix G). Current conditions in Dalton and Porter Canyons as well as portions of Edwards Creek are not in Proper Functioning Condition. Dalton Canyon is an approximately 3.5 mile long wet meadow complex that is drying out, has severe headcuts, and has experienced shrub encroachment leading to loss of riparian/wetland vegetation. The causes include over use by wild horses and increased PJ density and encroachment. For further details see subsection *Springs and Springbrooks* under Key Habitats subsection.

Vegetation in these areas includes quaking aspen *(Populus tremuloides*), black cottonwood (*Populus trichocarpa)*, Fremont cottonwood (*Populus Fremontii*), wouldow species *(Salix spp.*), wild rose (*Rosa woodsii*). Meadow species include bluegrass *(Poa spp*), sedges *(Carex spp*.), rush *(Juncus spp*.), and creeping wildrye *(Elymus triticoides*), along with other numerous grasses and forbs.

Environmental Consequences

Proposed Action

Under the Proposed Action, the removal of PJ that occur near springs should increase spring flow, raise the water table, improve riparian functioning condition at the springs and perennial creeks, which would in turn increase resiliency of the entire watershed. For Dalton Canyon, gathering wild horses and maintaining at AML, installing the exclosure fence to keep wild horses and livestock from over utilizing riparian vegetation, fixing the headcuts, and removing encroached rabbitbrush, would facilitate the establishment of riparian species on areas that are currently dominated by non-riparian vegetation or with vegetation at levels less than site potential. This is expected to provide maintenance of or increased soil protection and stability. This would also reduce the potential for accelerated soil erosion rates during flooding and other natural weather events and in turn, reduce the potential for sedimentation into nearby riparian areas throughout the treatment area. Appropriate *Soil Water and Air Program Best Management Practices* would be followed to further minimize effects on wetland and riparian resources (Appendix B).

Herbicides would not negatively impact riparian or wetland areas due to a "no treatment" buffer zone of at least 100 feet from drainage bottoms and 300 feet around springs and perennial water sources that would be implemented near these areas. Adherence to the Standard Operating Procedures and Project Design Features for Herbicide Applications as identified in the *Final Programmatic Environmental Impact Statement (EIS) - Vegetation Treatments Using Herbicides on BLM Lands in 17 Western States* (2007) should help in mitigating impacts to riparian and wetland areas. The impacts of the proposed action would occur to woody vegetation outside of the no-treatment buffer and would not directly impact vegetation adjacent to riparian areas. Treatments should help to maintain existing spring sources as woody vegetation mortality due to a higher water table increases over 3-5 years and less ground water is utilized. Overall, the

implementation of the Proposed Action should assist in maintaining PFC or making progress towards achieving PFC at spring sources and assist in conforming with Rangeland Health Standard 2 (Riparian and Wetland Sites), which states the following:

"*Riparian and wetland areas exhibit a properly functioning condition and achieve state water quality criteria. As indicated by:*

Stream side riparian areas are functioning properly when adequate vegetation, large woody debris, or rock is present to dissipate stream energy associated with high water flows. Elements indicating PFC such as avoiding accelerating erosion, capturing sediment and providing for groundwater recharge and release are determined by the following measurements as appropriate to the site characteristics:

- *Width/Depth ratio;*
- *Channel roughness;*
- *Sinuosity of stream channel;*
- *Bank stability;*
- *Vegetative cover (amount, spacing, life form);*
- *Other cover (large woody debris, rock)*

Natural springs, seeps, and marsh areas are functioning properly when adequate vegetation is present to facilitate water retention, filtering, and release as indicated by plant species and cover appropriate to the site characteristics. Chemical, physical and biological water constituents are not exceeding the State water quality Standards."

No Action

Under the No Action Alternative, adverse impacts to riparian and wetland areas are expected to occur and increase over time with a continuation of wild horse population above AML and continued increasing density of PJ and other upland species in these zones. The establishment of these species could reduce the opportunity for the establishment of desirable riparian species, and decrease perennial surface water flow at springs and creeks. Impacts to riparian and wetland areas could also occur in the event of a large high-intensity wildfire killing the vegetation in these areas. Following an event of this nature, major run-off events could impact drainages and riparian areas through soil deposition and erosion patterns. Erosion potential following a high-intensity wildfire could be high, particularly on those sites with a dense PJ fuel type which are capable of producing crown fires. Under a natural wildfire event, water flow at spring sources could increase more than or similar to the Proposed Action due to widespread vegetation removal that could occur. The decreased water uptake by burned vegetation could cause flow at spring sources to increase, although sedimentation that could occur as a result of erosion associated with a large wildfire could potentially destroy existing riparian vegetation. The No Action Alternative may not assist springs in maintaining PFC or making progress towards achieving PFC over the Proposed Action.

Cumulative Effects

When combined with the effects from past, present, and reasonably foreseeable future actions, cumulative effects from the proposed action is expected to be positive for the overall health and resilience of the riparian areas and water availability. Achieving and maintaining wild horses at AML that leads to decreasing of over-utilization of vegetative resources by excess wild horses; fencing, troughs, and pipelines; and reduction of PJ within and around riparian areas is expected

to help increase riparian obligate vegetation and raise the water table. Additionally, a reduction of the fuel load would reduce wildfire intensity and adverse impacts from fire on riparian sites. Managing for a range of willow, aspen, and colonizer/stabilizer species life-cycle stages would allow for greater diversity in the riparian corridor.

3.12. Soils

Affected Environment

The U.S.D.A. Natural Resources Conservation Service (NRCS) classifies soils into map units including one or more dominant soil map unit components and inclusions. Soil map unit components may be designated based on the soil series, slope, aspect, and texture modifier. Soil series are soils grouped together with similar pedogenesis (soil formation), soil chemistry, and physical properties. Soil map units for the project area were obtained from NRCS surveys conducted for Lander and Churchill Counties and are highly variable across the landscape (NRCS 2011, NRCS 2001, NRCS 1991). Table 14 Appendix F displays these map units along with associated information. Thirty three different map units have been identified in the treatment area consisting of associations of 33 different major soil series. Soils series consist of soils that have profiles that are similar and associations are map units made up of two or more geographically associated soils or miscellaneous areas (NRCS 2001). Miscellaneous areas have little or no soil material and thus support scant or no vegetation (i.e. playas).

The composition of soil series within each association is variable and is based on the overall map unit. Therefore the acreage for any one soil series in the treatment areas is unknown. For instance, in the Torro-Clanalpine-Itca association, Torro soils make up about 50% of the association while the Clanalpine soils make up 20% and the Itca soils make up 15%. The remaining 15% is made up of inclusions. However, in the Itca-Clanalpine-Torro association, the Itca soils make up 35% of the association while the Clanalpine and Torro soils both make up 25%, with the remaining 15% being composed of inclusions. In the Itca-Clanalpine-Rock outcrop association, the Itca and Clanalpine soils are co-dominant at 35% each.

Within a specific proposed treatment area the composition could be very different from the overall map unit composition. However, four soils series appear most prevalent within treatment areas based on the acreage of the associations they are a component within. Itca soils are found in 59% (19,122 acres); Clanalpine soils are found in 45% (14,835 acres); Torro soils are found in 37% (12,068); and Jung soils are found in 25% (8127 acres) of the associations' acreage within the proposed treatment areas (See Table 14). Additionally, the primary association for the Cold Springs fuel treatment is the Pineval-Rebel association. The overall composition is for the map unit is 60% for the Pineval series, 25% of the Rebel series, and 15% made up of inclusions. Descriptions of all soil series can be found in NRCS soils surveys conducted for Lander and Churchill Counties (NRCS 2011, NRCS 2001, NRCS 1991).

Fire Damage Potential

As soil organic matter is destroyed by fire, soil productivity can decrease. Organic matter is important to the health and productivity of grasslands because of its nutrient and water content, its influence on physical, chemical, and biological characteristics; and its ability to support root and microbial growth. At 220°C, 37 percent of carbon (organic matter) can be lost and at soil

temperatures of 350°C, 90 percent of carbon can be lost (Gaylor, 1974). However, soil temperatures have been found to rarely exceed 200°C when burning dry juniper on wet soils in southeastern Oregon (Miller et. al, 2005). Burning juniper on dry soils when ground litter water content is minimal has shown to result in surface soil temperatures exceeding 870°C and a near 100 percent loss of herbaceous perennials, especially bunchgrass. Similar results would be expected for pinyon pine. Water repellency or hydrophobicity is a soil physical property limiting water infiltration in which water would "ball up" on the soil surface rather than infiltrate into the soil (Debano, 1981). Soil porosity can decrease following PJ pile burning or wildfires when soil temperatures are between 175°C-200°C.

The potential damage to soil by fire is rated based on the texture, content of rock fragments, and organic matter in the surface layer, thickness of the surface layer, and slope. Soils in potential burn pile treatment areas would be assessed using these criteria (Forest Encyclopedia 2008).

Soil Erosion

Soils within smaller treatment areas of the overall proposed treatment area would be evaluated for their susceptibility to erode resulting from soil disturbance. Puddling is the destruction of soil structure usually by churning or kneading action of wheeled equipment, and invariably results in soil compaction. Displacement is the act of moving soil laterally from narrow ruts or wider areas. Soils are considered detrimentally disturbed if more than half of the surface A horizon over a 100 sq. ft. area has been removed. Soils in the Great Basin tend to have fairly shallow surface A horizons (0-5 inches) and are variable within the proposed treatment areas. The dragging of PJ material on skid trails and landings can result in the removal of vegetative cover. When soil cover is removed, soil particles are more easily detached from falling rain and can be removed from the site. Soil sealing refers to the phenomenon in which the energy of falling rain drops displaces soil particles and causes the soil surface to develop a thin crust due to the clogging of soil micropores. This leads to decreased infiltration and increased soil runoff. The steeper slopes are the most likely to be subject to erosion and transport if the vegetative cover is removed over a large area. The majority of the soils in the proposed treatment areas range from slight to moderate for erosion potential.

Soil Compaction

Soil compaction has occurred in the wet meadow areas of Dalton Canyon from a combination of concentrated heavy use by wild horses, historic livestock use, and the drying out of the wet meadow complex. Other heavily grazed areas within the project boundary likely also have compacted soils. Soil compaction is the process by which the soil grains are rearranged to decrease void space (particularly large pores) and bring them into closer contact with one another. Soil compaction negatively affects physical and chemical properties thereby decreasing soil fertility by increasing soil bulk density and reducing plant root penetration, soil water holding capacity, and plant growth. Soils with a range of soil particle sizes (i.e. fine sandy loam) are generally more susceptible to compaction than soils with a more uniform particle size distribution and compaction is more likely to occur when bare ground is driven over. Other forest management practices using heavy metal tracked machinery has been found to cause detrimental levels of soil compaction.

Ruts can form as a result of the operation of forestland equipment, begin to concentrate soil runoff, and increase soil erosion. Criteria used to evaluate the soil rutting hazard includes the depth to the water table, the percent of rock fragments on or below the surface, the soil texture, depth to a restrictive layer, and slope. Overall, dry soils are not expected to be highly compactable and susceptible to ruts because of their uniform fine texture and high percentage of stones, boulder, and cobble rock fragments. These soils with higher percentages of large rock fragments have a smaller percentage of bare ground and should be less susceptible to compaction. If soils are moist to wet they would be very susceptible to compaction.

Areas occupied by wild horses have been documented as having a significantly higher soil penetration resistance than areas without wild horses (Beever and Herrick 2006). This can affect a variety of other ecosystem processes, such as decreasing water infiltration rates, inhibiting digging by burrowing mammals, limiting plant establishment, and restricting root growth (E. Beever, R. Tausch, and P. Brussard 2003, Belsky and Blumenthal 1997).

Environmental Consequences

Proposed Action

Fire Damage Potential
Soils within the proposed treatment area would be evaluated for their susceptibility to damage previous to pinyon/juniper (PJ) pile burning activities. Long-term soil productivity is maintained when soil porosity, soil organic matter, and soil depth are not significantly reduced. PJ pile burning can damage organic matter and affect soil porosity depending on the duration and intensity of burning materials, and soil and fuel moisture content at the time of burning. Larger and wetter PJ piles would tend to burn longer and damage to organic matter would increase as the duration of soil heating increases (Pierson et. al, 2007).

Pile burning may cause small areas of high-intensity soil scorching. Total area affected would be between one and five percent (320 & 1600 acres respectively) of the project area. High-intensity fire would kill some plants and may alter physical soil characteristics over a small area of the piles. Areas of greatest impact would be directly below juniper trunks and large branches. Surface erosion could slightly increase on portions of burned areas, especially if there is an extreme rain event before vegetation starts to regenerate. However, the limited burn areas and retention of live root systems of herbaceous and root sprouting plants throughout the project area would reduce the possibility of any accelerated erosion. To reduce impacts from pile burning, piles would only be burned when soils are moist, very moist, wet, frozen, or covered in snow (See Table 15). In areas where erosion potential is deemed high, downed trees/slash would be left in place to minimize this potential effect.

The prescribed burn for the Cold Springs fuels treatment would be a low intensity fire based on the fuels that are present and would not exceed the water repellency or hydrophobicity soil temperatures of between 175°C-200°C. Therefore, impacts to the soils series found in this treatment area would be slight. The fuels treatment, if successful, should actually improve soil stability, productivity, and decrease erosion potential in the long term because cheat grass perpetuates the fire cycle and drives out native grasses, forbs, and shrubs.

Soil Erosion and Compaction

For treatment areas utilizing the whole tree removal method, dragging of PJ material on skid trails could lead to three types of disturbances including compaction, puddling, or displacement. The degree to which disturbance affects a given area would depend on equipment, methods, and harvest layout; and operator knowledge and skill. Softer soils that are less resistant to rupture would be more easily disturbed during yarding. While PJ is yarded, tree particles and seeds are cultivated into the soil and this soil cover may help to limit soil erosion. Qualitative observations on other similar projects indicate vegetation on skid trails is often damaged or uprooted after multiple repetitive passes on the trails. When possible, steeper slopes would be avoided or skid trails would be perpendicular to the slope. Because the majority of the proposed treatment area receives most of its precipitation in the form of snowfall, accelerated erosion due to precipitation should be minimal; yet, slight to moderate erosion caused by wind on bare ground on steeper slopes could occur if vegetative regrowth is unsuccessful.

Depending on the soil moisture, pressure exerted by yarding equipment and number of passes on the severity of soil compaction would vary. Generally, it is expected compaction on skid trails would be low to moderate. Skid trails with high amounts of passes could have severe compaction. Areas with severe compaction could be ameliorated with a brush rake, and rehabilitated areas should be covered with chips or slash to decrease the possibility of erosion due to wind or water. Tillage under non-optimum conditions (e.g., wet soil), however, can cause additional soil compaction and/or puddling, and create further risk to long-term productivity. If soil compaction is high or the majority of vegetation is removed, erosion is more likely to increase. Skid trails on steeper slopes are more likely to erode and waterbars would be installed to minimize effects. The return of vegetation to disturbed soil areas is expected to vary depending on the magnitude of soil disturbance, slope, and rehabilitation methods. It is expected compaction would not be detrimental on most skid trails. Yarding would mostly occur when soils are dry. Impacts from other treatments would not be expected to cause severe erosion or compaction. Appropriate *Soil Water and Air Program Best Management Practices* would be followed to further minimize effects on soil resources (See Appendix B).

No Action

As the transition continues from shrub-steppe communities toward PJ woodlands there would be reduced vegetation cover, litter, and increased bare ground. The net result of change would be an increased vulnerability to accelerated erosion, site instability, and decreased watershed function.

Selection of the No Action Alternative would likely lead to combined impacts to soil resources from PJ expansion likely leading to further loss of shrubs, grasses, and forbs. This loss of forage would lead to increased grazing pressure on remaining resources and more bare ground. Loss of vegetation increases the amount of soil exposed to wind and water effects, and could lead to increased risk of soil erosion.

Cumulative Effects

When combined with the effects from past, present, and reasonably foreseeable future actions, cumulative effects from the proposed action are expected to be minimal in the short-term and positive overall in the long-term. Fencing and decreasing PJ density is expected to increase herbaceous vegetation cover and diversity in all key habitats, in part by decreasing of over-

utilization of vegetative resources by excess wild horses. This should in turn either maintain or increase soil stability, decrease erosion potential, and increase infiltration rates. Soil compaction stemming from overuse of riparian and wet meadow areas by wild horses and livestock is expected to decrease over the long term as these areas experience recovery and burrowing animals over turn and mix soils.

3.13 Cumulative Effects Overview

The purpose of the cumulative impacts analysis for the proposed action is to evaluate the combined, incremental effects of human activity within the scope of the project. CEQ regulations define scope to include connected actions, cumulative actions, and similar actions (40 CFR 1508.25). Approximately 32,705 acres of specific treatments are proposed within the project area (≈ 230,000 acres) ; therefore the reasonable scope of the cumulative analysis would be restricted to connected, cumulative, and similar actions to the Proposed Action within the project area. The Council on Environmental Quality formally defines cumulative impacts as follows:

"...the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time' (40 CFR 1508.7)."

3.14 Past and Present Actions

Past and current relevant land use activities in the vicinity include authorized geothermal energy leases, land use authorizations (See Table 10) for power lines, gravel pits, dispersed casual recreation, hunting in hunting unit 184 (mule deer, desert bighorn sheep, and pronghorn in particular), wild horse gathers, and livestock grazing activities; which include various range improvements such as spring developments, storage tanks, troughs, fences, and cattle guards.

The Desatoya Mountains were subject to a historic regime of wildfire caused by lightning strikes. Natural caused fire may have burned several acres to several thousand acres during one event. In more modern times, the area is also subject to man-caused wildfire in addition to lightning-caused fire. Several wildfires have occurred within the past 30 years within the project boundary. The Cedar fire in 1996 burned 317 acres, the DeLong fire in 1999 burned 63 acres, and the Smith Creek fire in 2005 burned 19 acres. All were natural ignitions (lightning). The Cold Spring fire in 1998 burned 255 acres, the Clan Alpine fire in 1999 burned 145 acres, and the Cold Spring fire in 1999 burned 736 acres. All were human ignitions. Typical wildfire patterns created a mosaic pattern on the landscape, burning intensely in some areas removing all vegetation, and burning lightly in other areas, removing only grasses or groundcover.

Re-seeding efforts have occurred in one area of the project boundary burned by fire. After the 1999 Cold Spring fire, approximately 736 acres were aerially re-seeded. Species included: crested wheatgrass, four-wing saltbrush, ladak alfalfa, thickspike wheatgrass, and western wheatgrass.

Past vegetation treatments have been completed in the project boundary to reduce catastrophic wildfire risks and to influence plant community composition and diversity. In 2005, the BLM treated 736 acres within the project boundary by mechanical thinning of pinyon-juniper and understory vegetation as a part of the Edwards Creek Vegetation Treatment Project. Additionally, 70 acres of PJ removal on BLM land and 140 acres of PJ removal on private land have occurred in Porter Canyon in an effort to restore a degraded wet meadow historically used by sage-grouse and to reduce fire risk. Trend data is not yet available.

Natural and man-caused wildfires are likely to occur in the future, although the intensity and scope of any such event is unknown. The impact from potential future wildfires is too speculative to evaluate in this EA. Should any fire occur in the future, post-fire rehabilitation including re-seeding with native or fire resistant non-native plants would be likely. Prescribed fire could be used to influence vegetation types, improve ecological condition, and reduce the potential for large wildfires. The impact from potential future prescribed fires is too speculative to evaluate in this EA. Prescribed burning projects would be analyzed on a site-specific basis and a new environmental assessment would be developed.

The actions which have influenced today's wild horse populations are primarily wild horse gathers, which have resulted in the removal of 302 excess horses from the Desatoya HMA since 2000. Refer to the Desatoya Herd Management Area Plan/Capture Plan Update and Environmental Assessment (EA) No. NV-030-03-022 (Jul, 2003) for additional information.

3.15 Reasonably Foreseeable Future Actions

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 Actions. For the Proposed Actions, the time frame for potential future actions is reasonably assumed to be the duration of the proposed treatments, or approximately 10 years. RFFAs include grazing, dispersed recreation; including off-highway vehicle use and hunting, potential geothermal energy exploration and production from existing leases.

Over the next 10-20 year period, reasonably foreseeable future actions include wild horse gathers about every 4 years to revaccinate the mares and remove a few excess wild horses in order to manage population size within the established AML range if continual bait and water trapping objectives to keep the HMA at AML are not met. The HMAP which has been completed for the Desatoya HMA to establish short and long-term management and monitoring objectives for the herd and its habitat would be evaluated. Any future wild horse management would be analyzed in appropriate environmental documents following site-specific planning with public involvement.

Other reasonably foreseeable future actions include the transport, handling, care, and disposition of the excess wild horses removed from the range. Initially wild horses would be transported from the capture/temporary holding corrals to a designated BLM short-term holding corral facility. From there, the animals would be made available for adoption or sale to individuals who can provide a good home, or to LTH pastures.

Table 11: Past, Present and Reasonably Foreseeable future actions applicable to the cumulative analysis area specifically related to wild horses.

Project -- Name or Description	Status (x) Past	Present	Future
Issuance of multiple use decisions and grazing permits for ranching operations through the allotment evaluation process and the reassessment of the associated allotments.	X	X	X
Livestock grazing.	X	X	X
Wild horse gathers.	X	X	X
Invasive weed inventory/treatments.	X	X	X
Wild horse issues, issuance of multiple use decisions AML adjustments and planning.	X	X	X

3.16 Monitoring

Extensive pre and post treatment monitoring is proposed and described in the Proposed Action and is therefore sufficient for this action. A detailed monitoring plan for vegetation and individual wildlife species would be developed prior to any implementation and the magnitude would be dependent on funding in any given year.

The BLM Contacting Officer Representatives (CORs) and Project Inspectors (PIs) assigned to the gather would be responsible for ensuring contract personnel and other personnel abide by the contract specifications and the SOPs (Appendix D). Ongoing monitoring of forage condition and utilization, water availability, aerial population surveys, and animal health would continue. Fertility control monitoring would be conducted in accordance with the SOPs (Appendix C).

4.0. PERSONS, GROUPS, AND AGENCIES CONSULTED

Public hearings are held annually on a state-wide basis regarding the use of motorized vehicles, including helicopters and fixed-wing aircraft, in the management of wild horses (or burros).). During these meetings, the public is given the opportunity to present new information and to voice any concerns regarding the use of motorized vehicles. The Ely District Office held a state-wide public hearing on June 15, 2011. The Standard Operating Procedures were reviewed following this public hearing and no changes to the SOPs were indicated based on this review.

The use of helicopters and motorized vehicles has proven to be a safe, effective, and practical means for the gather and removal of excess wild horses and burros from the range. Since July 2004, Nevada has gathered over 26,000 animals with a mortality rate of 1.1 percent (of which 0.5 percent was gather related) which is very low when handling wild animals. BLM also avoids use of helicopters for gathering wild horses prior to and during the peak foaling period and therefore does not conduct helicopter removals of wild horses from March 1 through June 30 unless under emergency situations.

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