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Environmental Assessment

Devil's Garden Plateau Wild Horse Territory Management Plan



Devil's Garden and Doublehead Ranger Districts,
Modoc National Forest

Modoc County, California

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1.0 SUMMARY

The Modoc National Forest (MDF) proposes to develop and implement a plan to guide the management of wild horses and their habitat in the Devil's Garden Plateau Wild Horse Territory (WHT) over the next 15-20 years. The WHT is located within Modoc County, California beginning about 7 miles north of the City of Alturas and comprises approximately 232,520 acres of federal land.

The purpose of the proposed action is to develop and implement a Territory Management Plan (TMP) and designate the Forest Service as the lead agency for all wild horse management actions within the WHT, consistent with the authority provided in Forest Service Manual 2261.1, 36 CFR 222 Subpart B, and the 1971 Wild Free-Roaming Horse and Burro Act (WFRHBA), as amended. The proposed action identifies management and monitoring objectives and actions for future management of the herd and their habitat. The need for the project is to ensure the herd is managed as a self-sustaining population of healthy animals in a thriving natural ecological balance with other uses and the productive capacity of their habitat as required by the WFRHBA.

- *Proposed Action Alternative.* Under the Proposed Action Alternative, an Appropriate Management Level (AML) would be established as a population range of 206-402 wild horses. When necessary, gathers to remove excess wild horses from within and outside the WHT would be conducted in conformance with the Standard Operating Procedures (Appendix D) in the most current approved Gather Contract(s) and would begin as soon as October 2013. The first priority would be the gather and removal of wild horses residing outside the WHT. The second priority would be to gather and remove excess wild horses in those areas within the WHT where monitoring indicates resource conditions have deteriorated due to wild horse overpopulation/ concentration. Annual gathers would be needed to achieve a wild horse population size within AML. Once AML is attained, fewer gathers to maintain AML would be needed. This Alternative would include the construction of wider gates in allotment boundary fences to facilitate seasonal migrations of animals throughout the territory.
During the first gather following plan approval, DNA-based material (hair samples) would be collected from a number of wild horses to establish baseline genetic diversity. Thereafter, samples would be collected at a minimum of every other gather to detect any change from the baseline. If genetic diversity should fall below the minimum acceptable level, management actions such as increasing the number of breeding age horses, adjusting the sex ratio to favor males or releasing 1-2 young mares from similar habitats every 8-10 years would be implemented. Once AML is achieved, population suppression methods would be implemented to slow population growth rates, reduce gather frequency, and decrease the number of excess wild horses which need to be removed over time. These would include application of fertility control (one year or 22-month Porcine Zona Pellucida agents) and adjustment of sex ratios to 50/50 males/females or slightly in favor of males (60/40 males/females).

In addition to the Proposed Action Alternative, the Forest Service evaluated the following alternatives:

- *No Action Alternative.* Under this alternative, wild horses would continue to be managed as a range of 275-335 (an average of 305) animals. Wild horse management would be guided by the goals and objectives established in the 1982 Devil's Garden Plateau Wild Horse Management Plan, the 1991 Modoc National Forest Land and Resource Management Plan (as amended), and in conformance with Forest Service Policy. A number of consecutive gathers would be needed to achieve AML. Once AML is attained, annual gathers of 60-90 animals would be needed to maintain population size within the AML. Herd sex ratios would be maintained at 43/57 males/females and no change in the current age distribution of the

horses would result. Baseline genetic diversity would not be established. No measures to slow population growth rates would be implemented.

- *Alternative 3.* This alternative would be the same as the Proposed Action, with the exception that additional management actions would be taken to enhance future wild horse management and assist in slowing population growth. Included would be removal of approximately 30 miles of fence, the construction of wider gates in allotment boundary fences, and the construction of additional water developments in areas such as Mowitz or Timbered Mountain that are not currently well-watered. The first priority would be the gather and removal of wild horses residing outside the WHT. The second priority would be to gather and remove excess wild horses in those areas within the WHT where monitoring indicates resource conditions have deteriorated due to wild horse overpopulation/concentration. Where feasible, small numbers of gelded animals would be placed in areas within the WHT with the necessary habitat components, but where no or few animals presently exist.
- *Alternative 4.* This alternative would develop a TMP which would establish AML as a range of 700-900 wild horses. The AML upper limit would represent the approximate number of wild horses presently within the WHT. Authorized livestock use would be adjusted as needed to provide additional forage for use by wild horses and to improve and/or maintain rangelands in satisfactory ecological condition. About 50 miles of existing fence would be removed to provide increased opportunities for free-roaming behavior. Fertility control (one year or 22-month Porcine Zona Pellucida agents) would be applied to slow population growth. Helicopter-assisted gathers would be conducted to remove excess wild horses residing outside the WHT. Within the WHT, gathers to maintain a wild horse population size of about 700-900 animals would be conducted annually by bait trapping.

All action alternatives include non-significant amendments as defined under the National Forest Management Act (NFMA) to the 1991 Modoc National Forest Land and Resource Management Plan (Forest Plan). The needs for these amendments are to facilitate more efficient and adaptive management of the WHT and to correct an administrative error in how the WHT boundary is defined in the Forest Plan. These proposed amendments are site-specific and apply only to the WHT.

The deciding official for the MDF will be the Forest Supervisor. Based on the purpose and need for action and the potential environmental effects of each alternative, the deciding official will select a management strategy for the Devil's Garden Plateau wild horse herd and their habitat. The selected management actions, together with the associated management and monitoring objectives will guide management of the Devil's Garden wild horse herd over the life of the plan. Among the decisions to be made are:

- Whether or not to amend the Forest Plan.
- The AML for wild horses expressed as a population range with an upper and lower limit.
- The techniques to be used to maintain or improve the herd's genetic health.
- The population suppression methods that may be implemented to slow herd growth rates and reduce the number of excess animals which must be removed over time.
- The frequency of population management activities (gathers and/or removals).
- The criteria to be considered when determining whether excess wild horses are present and require removal.
- The methods to be used to gather and remove excess wild horses.
- The habitat improvement projects which would be implemented.

2.0 INTRODUCTION

The Devil's Garden Plateau Wild Horse Territory (WHT) is located within Modoc County, California beginning about 7 miles north of the City of Alturas. The WHT comprises approximately 232,520 acres of federal land. Of this, 97 percent (224,888 acres) is National Forest System lands administered by the Modoc National Forest's Devil's Garden and Doublehead Ranger Districts (MDF) and 3 percent (7,632 acres) is public land administered by the Bureau of Land Management's Alturas Field Office (BLM). Another 800 acres of Tribal lands, 640 acres of State lands and 500 acres of private lands are excluded from the territory.

The Forest Service and the BLM have cooperated in the management of wild horses within the WHT since the mid-1970s when the BLM public lands were first included as a part of the territory. Under this cooperative approach, the Forest Service has had the lead management responsibility for the WHT, with the BLM a cooperating agency.

In 2008, in the Record of Decision for the BLM's Alturas Resource Management Plan¹, the BLM elected not to set a separate AML for their public lands. The decision was made to cooperate with the Forest Service in the periodic removal, adoption and holding of animals and keep wild horse numbers within the AML established by the MDF for the Devil's Garden Plateau WHT. This decision was made because the public lands comprise only three percent of the WHT, are unfenced, and wild horses roam freely between the National Forest and the BLM on a year-round basis.

Federal actions such as development of a Territory Management Plan (TMP) must be analyzed to determine the potential environmental consequences and the effects must be disclosed (National Environmental Policy Act of 1969). A TMP is described as an operational plan for managing one or more herd units of wild free-roaming horses and burros and describes the desired population level, detailed management practices, interagency coordination, scheduling and monitoring requirements for managing each herd unit, within the direction established in the Forest Plan (Forest Service Manual 2200, Chapter 2260).

Wild horse management is prescribed through Acts of Congress, their implementing regulations, policies and other relevant documents. The laws and documents that guide wild horse management on Modoc National Forest System lands are:

- Wild Free-Roaming Horses and Burros Act (WFRHBA) of 1971 (as amended)
- 36 Code of Federal Regulations (CFR) 222 Subpart B (Management of Wild Free-Roaming Wild Horses and Burros)
- Forest Service Manual 2200 (Range Management) and Chapter 2260 (Wild Free-Roaming Horses and Burros)
- 1991 Modoc National Forest Land and Resource Management Plan (as amended)

2.1 Document Structure

The Forest Service has prepared this Environmental Assessment in compliance with the National Environmental Policy Act (NEPA) and other relevant Federal and State laws and regulations. This Environmental Assessment discloses the direct, indirect, and cumulative environmental impacts that would result from the proposed action and alternatives. The document is organized into five parts:

¹ This document is available at <http://www.blm.gov/ca/st/en/fo/alturas.html>

- ❑ **Introduction:** This section includes information on the history of the project proposal, the purpose of and need for the project, and a brief description of the agency's proposal for achieving that purpose and need. This section also details how the Forest Service informed the public of the proposal and how the public responded.
- ❑ **Alternatives, Including the Proposed Action:** This section provides a more detailed description of the agency's proposed action as well as alternative methods to achieve the stated purpose. These alternatives were developed in response to the key issues raised by the public and other agencies. This discussion also includes possible mitigation measures. Finally, this section provides a summary table of the environmental consequences associated with each alternative.
- ❑ **Environmental Consequences:** This section describes the environmental effects of implementing the proposed action and other alternatives. This analysis is organized by resource area. Within each section, the affected environment is described first, followed by the effects of each alternative. The No Action Alternative (Continue Existing Management) provides a baseline for evaluation and comparison of the action alternatives that follow.
- ❑ **Agencies and Persons Consulted:** This section provides a list of preparers and agencies consulted during the development of the environmental assessment.
- ❑ **Appendices:** The appendices provide more detailed information to support the analyses presented in the environmental assessment.

Additional documentation, including more detailed analyses of project-area resources may be found in the project planning record located at the Devil's Garden Ranger District Office in Alturas, California. The project record and all references and planning documents cited are hereby incorporated by reference in this Environmental Assessment.

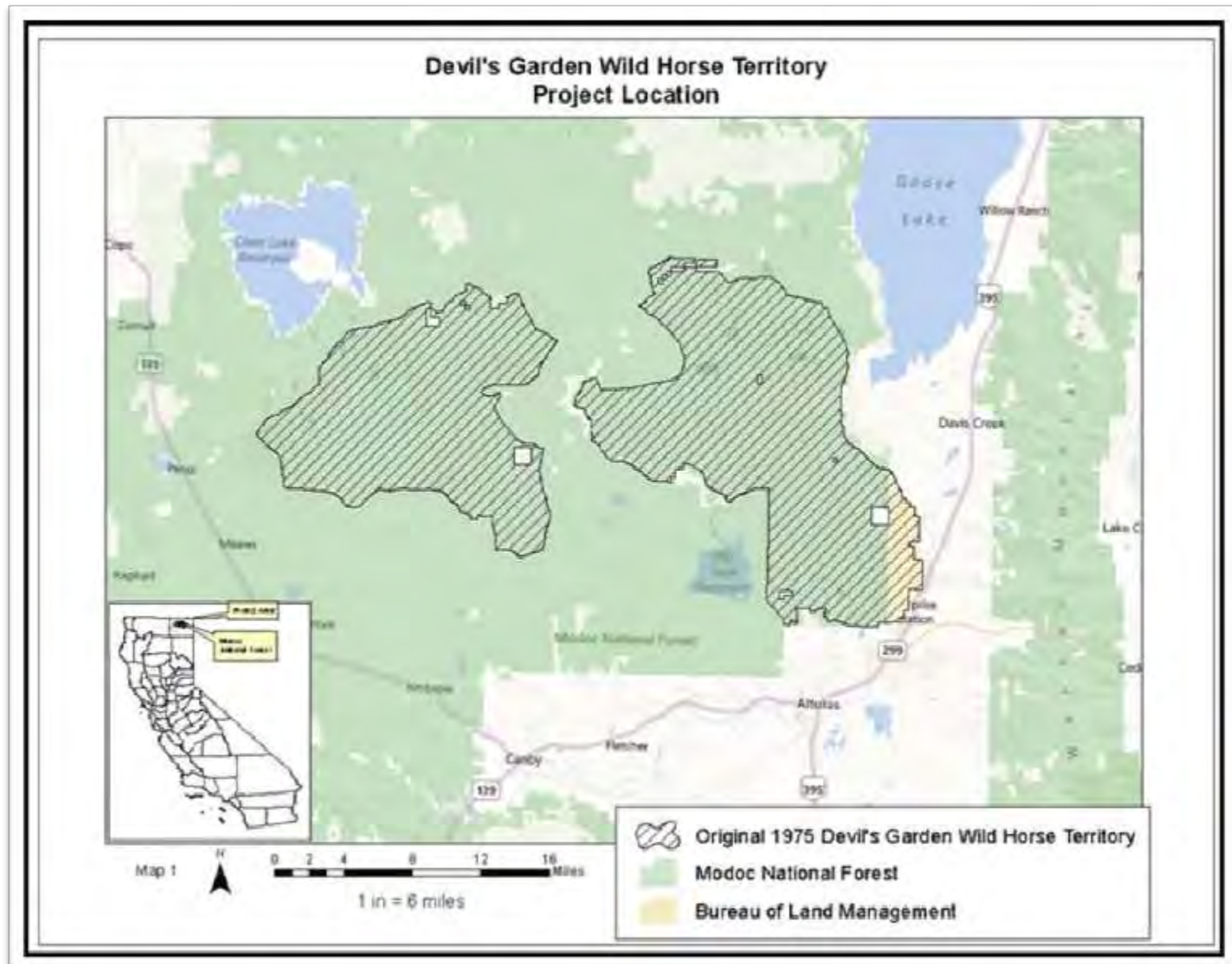
2.2 Background

With the passage of the WFRHBA, the Forest Service and the BLM were required to manage wild horses and burros in the areas where found in 1971 as an integral part of the national system of public lands. In compliance with the law and its subsequent implementing regulations, a territory of approximately 232,520 acres of federal land was established in the Devil's Garden Plateau in the Horse Management Plan approved by Modoc National Forest Supervisor Kenneth Scoggins on May 20, 1975 (Figure 1).

The WHT comprised West and East home ranges in the areas where wild free-roaming horses ranged in 1971. Included were about 224,888 acres of National Forest Systems land and 7,632 acres of BLM public land. The Avanzino and Triangle private ranch lands which lay in between the West and East home ranges were not included in the WHT. The MDF did not acquire the Triangle Ranch private lands until September 21, 1976 (about five years following passage of the WFRHBA).

During the mid-1980's, the MDF appears to have adjusted the WHT boundary for administrative convenience (Figure 2). The revised boundary incorporated about another 23,631 acres of land, including the Triangle Ranch lands acquired in 1976 and the Avanzino Ranch (41 percent of which remains in private ownership). This change resulted in increasing the WHT to approximately 258,000 acres in size. However, an AML was not established for the added lands and few, if any, wild horses were found there.

Figure 1: 1975 Wild Horse Territory



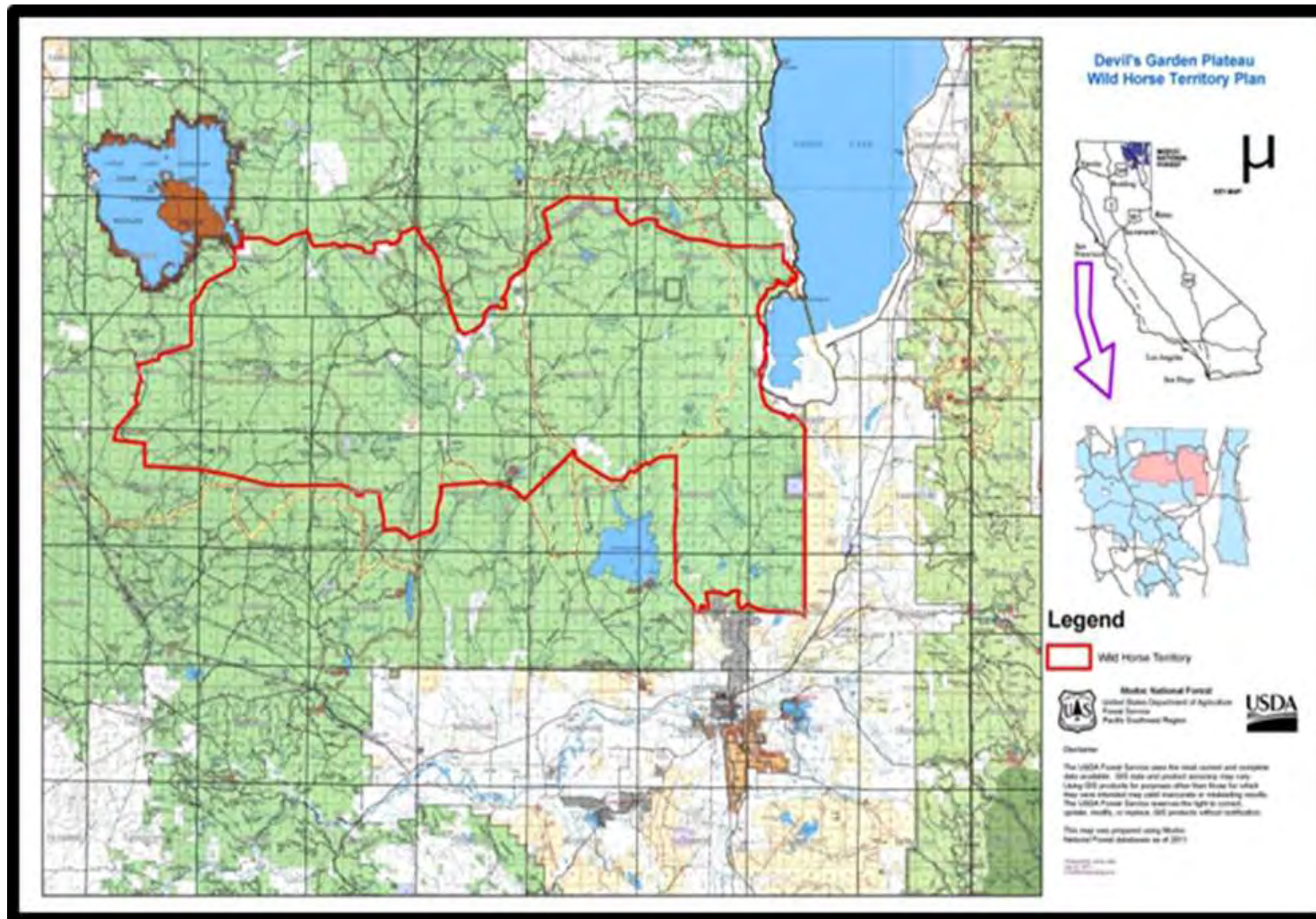


Figure 2: 1980 Wild Horse Territory

An administrative error was made in expanding the WHT beyond the herd's known territorial limits. In accordance with the WFRHBA, the management of wild horses and burros is limited to the areas where wild horses and burros were found in 1971 (36 CFR 222.20(b)(13)). The MDF specifically delineated these territorial areas in the 1975 Devil's Garden Plateau Wild Horse Management Plan Figure 1). Inclusion of the Triangle Ranch lands (which were not acquired by the Forest Service until 1976, nearly five years after the 1971 WFRHBA passed) was clearly in error. In 1991, the MDF issued its Forest Plan. In this Plan, the Forest Service made the decision to manage wild horses on about 258,000 acres, which represents the number designated for wild horse management in the mid-1980s. However, zero AML allocations were assigned to this acquired land.

In conformance with the 1971 WFRHBA, the MDF proposes to return to the management of wild horses within the WHT boundary established in 1971 (Figure 1).

Wild horses have been managed as an integral part of their habitat within the WHT since the WFRHBA passed in 1971. Management Plans were previously developed for the Territory in 1975, 1980 and 1982.

In 1991, the Modoc National Forest Land and Resource Management Plan (Forest Plan) allocated the available forage for use by wild horses, livestock and wildlife. The Forest Plan established the Appropriate Management Level (AML) for wild horses as a range of 275-335 animals and allocated 4,400 Animal Unit Months of forage for their use. Excess wild horses have been periodically removed from the WHT in an effort to achieve population levels in balance with the available forage and water and other multiple uses such as domestic livestock and wildlife. Although the Triangle and Avanzino Ranch lands were included in the WHT boundary in the Forest Plan (through an administrative error), forage was not allocated for wild horses on these lands.

Wild horse population size has exceeded the AML upper limit since 2002. Since 2006 when the last helicopter-assisted gather to remove excess wild horses was conducted, actual use by wild horses has exceeded by 140-369 percent the forage allocated for their use in the 1991 Forest Plan. As of January 2013, wild horse population size was estimated at 1,124 animals (about 3.4 times the AML upper limit). Of these, an estimated 269 animals (24 percent) were residing outside the WHT. Aerial inventory (February 2013) using the direct count method updated this estimate to 1,260 adult wild horses.

2.3 Conformance with Forest Plan Direction

This Environmental Assessment (EA) is tiered to the Final Environmental Impact Statement (FEIS) for the Modoc National Forest Land and Resource Management Plan (USDA-Forest Service 1991a), as amended. This EA also incorporates by reference the Modoc National Forest Land and Resource Management Plan (Forest Plan) (USDA-Forest Service 1991). The Forest Plan guides all natural resource management activities and establishes standards and guidelines for the Modoc National Forest.

The Devil's Garden Plateau WHT is located within portions of three Management Areas (MA) identified in the 1991 Forest Plan. These include MA 51-Devil's Garden (Chapter 4, pages 194-197), MA 53-Hackamore (Chapter 4, pages 202-205) and MA 66-Clear Lake (Chapter 4, pages 230-233). Management area prescriptions relative to wild horse management include providing for healthy ecosystems and making forage available for use by livestock, wildlife and wild horse herds.

Management of wild horses and the rangeland resources they depend on for their habitat is guided by the 1991 Forest Plan as follows:

1. Manage the Forest for improved rangeland condition with permitted grazing and forage capacity in balance (page 4-1). Maintain or enhance satisfactory ecological condition (page 4-18).
2. Measure forage utilization using key forage plants. As a general rule, allow up to 50% utilization by weight on permanent rangelands in satisfactory ecological condition. On permanent rangelands in unsatisfactory ecological condition, allow no more than 30% utilization by weight (4-18).
3. Contribute to the community economy and provide for sustained outputs of forage products (page 4-2).
4. Provide diverse and productive habitat for a variety of wildlife and fish species (page 4-2). Manage allotments to protect soil, water, and streamside-dependent resources (4-18).
5. Maintain soil productivity by applying guidelines to areas where management prescriptions are applies: land for timber production, range allotments, and other areas where healthy or productive vegetation is desired (page 4-21).
6. Manage allotments to protect soil, water and streamside-dependent resources (page 4-19).
7. Protect habitat for sensitive plants (page 4-3).
8. Manage the wild free-roaming horse herds to achieve a Forest population between 275 and 335 (on the average, 305 animals) (4-19).
9. Every ten years revise the herd management plan for each territory, including forage allocation for horses within the carrying capacity of the territory. Cooperate with the Bureau of Land Management in the capture and placement of animals (page 4-19).
10. Monitor the impacts of wild horses on rangeland in allotments where wild horses are present. Determine if wild horse numbers should be adjusted on high impact areas (page 4-19).

Subsequent to the 1991 Forest Plan, three decision documents have amended the Forest Plan. Included are: (1) the 1996 Biological Assessment (BA) for Grazing Management on Allotments within the Range of Lost River sucker, shortnose sucker and Modoc sucker (Big Valley, Doublehead, and Devil's Garden Ranger Districts; (2) the 2004 Sierra Nevada Forest Plan Amendment (SNFPA) Final Supplemental Environmental Impact Statement; and (3) the 2008 Sage Steppe Ecosystem Restoration Strategy. These documents contain management guidance relevant to the management of wild horses and other herbivores as follows:

1. **The 1996 Biological Assessment (BA) for Grazing Management on Allotments within the Range of Lost River sucker, shortnose sucker and Modoc sucker** (Big Valley, Doublehead, and Devil's Garden Ranger Districts). Under the provisions of this document, allowable utilization is limited to:
 - Maximum allowable utilization of total herbaceous forage species within key areas of 50 percent by weight.
 - Maximum allowable utilization of woody species of 40 percent of current year's growth.
 - No more than 20 percent stream bank alteration by grazing animals.
2. **The 2004 Sierra Nevada Forest Plan Amendment (SNFPA) Final Supplemental Environmental Impact Statement** (Volume 1 – Appendix A, pages 358 and 359). Under the provisions of this document, allowable utilization is limited to:
 - Under season-long grazing, utilization of grass and grass-like plants is limited to 30 percent (or minimum 6 inch stubble height) for meadows in early seral status to a maximum of 40 percent for meadows in late seral status.
 - Degraded meadows with greater than 10 percent bare soil and active erosion require total rest from grazing until they have recovered and moved to mid or late seral status.
 - Browsing will not exceed 20 percent of the annual leader growth of riparian shrubs.

3. **2008 Sage Steppe Ecosystem Restoration Strategy.** Under the provisions of this plan, juniper treatment projects would be implemented to restore the sage-steppe ecosystem on the MDF. This would result in the creation of additional forage that would potentially be available in the future for use by wild horses and other herbivores.

The proposed action is in conformance with the goals and objectives outlined in the Forest Plan (pages 4-1 to 4-3, 4-18 and 4-21) but would amend selected Standards and Guidelines on page 4-19. For additional information, refer to page 26 of this Environmental Assessment.

This EA also incorporates by reference the Final Environmental Impact Statement for the Modoc National Forest Noxious Weed Treatment Project (USDA Forest Service 2008).

2.3.1 Forest Plan Amendments

As discussed on page 26, alternatives 2-4 would require site-specific amendments to the 1991 Forest Plan. The needs for these amendments are to facilitate more efficient and adaptive management of the WHT and to correct an administrative error in how the WHT boundary is defined in the Forest Plan. The MDF determined the proposed amendments would be non-significant based on criteria found in FSM 1900, Chapter 1920, Section 1926.5.

If an amendment to a Forest Plan results in “a significant change in the plan,” the NFMA and its 1982 implementing regulation under which this EA has been prepared require the amendment process follow the procedures used in the initial development of the plan. If the proposed changes in the plan are not significant, public notification and completion of NEPA procedures are still required (16 USC 1604 (f)(4)). Determining whether a plan amendment results in a significant change uses different criteria than those used in evaluating significance during the NEPA process. For the NFMA requirement, the Forest Service Manual (FSM 1926.51 and .52) provides specific direction.

- ❑ **FSM 1926.51 – Changes to the Land Management Plan that Are Not Significant.** Several examples are provided in the manual of changes to the land management plan that are not significant. The examples applicable to this project and how they apply are as follows:

- a. *Actions that do not significantly alter the multiple-use goals and objectives for the long-term land and resource management.*

The actions proposed in the action alternatives would not alter the objectives and the multiple-use goals of the MDF's Land and Resource Management Plan as amended. The purpose of the action alternatives analyzed in detail in this EA is to facilitate achieving these goals and objectives. The action alternatives are consistent with the 1971 WFRHBA as amended, as well as, all applicable laws and regulations, while providing for other forest management priorities.

The pertinent goals and objectives related to the proposed Forest Plan amendments and why in the context of the whole plan they are not NFMA significant are discussed below.

- Overall Forest Plan goals and missions pertinent to wild horse management are to improve rangeland condition, provide for sustained outputs of forage, and maintain a level of resource protection (USDA 1991, p.4-1 and 4-2). A more specific Forest Plan objective is to manage wild horses (USDA 1991, p. 4-11). The proposed amendments to remove establishment of the AML for wild horses from the Forest Plan and instead delineate a process by which AML would be established and revised as necessary in the TMP would allow for a more efficient and adaptable process to meet the stated Forest Plan goals and

objectives. The proposed amendment to the guideline related to monitoring the impacts of wild horses better focuses the monitoring on range and riparian health and would better assist in achieving the Forest Plan goals stated above. The proposed amendment to cooperate with the BLM to capture and remove excess wild horses clarifies the relationship between the BLM and Modoc National Forest, as well as specifying the criteria for determining excess numbers of wild horses. The proposed changes would make it easier to achieve Forest Plan objectives and multiple-use goals and would not be NFMA significant.

- The proposed amendment which would manage wild horses within the territorial limits established in the 1975 Wild Horse Management Plan would not alter the multiple-use goals and objectives of the Forest Plan. Appropriate management of wild horses to meet the goals and objectives identified in the Forest Plan would occur. The proposed change would bring the Forest Plan into alignment with the 1971 WFRHBA and would not be NFMA significant.

- b. Adjustments of management area boundaries or management prescriptions resulting from further on-site analysis when the adjustments do not cause significant changes in the multiple-use goals and objectives for long-term land and resource management.*

The proposed amendment to the wild horse territory limits would not significantly change the multiple-use goals and objectives of the Forest Plan. This change would establish the territory limits in the Forest Plan as established following direction in the wild horse territory enabling legislation. The reduction in territory size would not prevent attainment of Forest Plan goals and objectives.

- c. Minor changes in standards and guidelines.*

The proposed forest plan amendments would modify specified standards and guidelines of the 1991 Forest Plan, as shown in Table 29. These changes would be specific to the Devil's Garden Plateau Wild Horse Territory area and would apply only for this specific area. These proposed amendments would not significantly change the key elements of the underlying strategy or standards and guidelines. Modifying the specified standards and guidelines would be a relatively minor change because, as discussed above, the primary goals and objectives of the Forest Plan would be met if the proposed amendments were implemented.

- ☐ **FSM 1926.52 – Changes to the Land Management Plan that are Significant.** The following examples indicate circumstances that may cause a significant change to a land management plan. A brief discussion of why these examples do not apply to this project follows each example.

- a. Changes that would significantly alter the long-term relationship between levels of multiple-use goods and services originally projected (36 CFR 219.10(e)).*

The changes proposed by the action alternatives analyzed in detail in this EA would help achieve, not alter, the relationship between the levels of multiple-use goods and services originally projected. The Forest Plan identified the Devil's Garden Plateau Wild Horse Territory as required by federal legislation and the proposed amendments would not significantly alter the levels of multiple-use goods and services originally projected in the Forest Plan.

- b. Changes that may have an important effect on the entire land management plan or affect land and resources throughout a larger portion of the planned area during the planning period.*

The changes proposed by the action alternatives in this EA are specific to the Devil's Garden WHT area. These changes only apply to this specific area of the MDF and do not affect the entire

land management plan. Also as previously stated, the changes do not affect the key elements of the underlying strategy or standards and guidelines.

2.4 Existing and Desired Conditions

The MDF's proposed action has been developed in response to the differences that presently exist between the existing and desired future conditions of the most important ecosystem elements within the WHT. The existing conditions are those that presently exist in the WHT. The desired future conditions are those the Forest Service expects to attain through implementation of the TMP. These differences are described in detail below.

2.4.1 Existing Condition²

2.4.1.1 Botany

The botanical environment of the WHT is fairly dry. The geology is basalt rock, decomposing into clay soils of variable depth throughout the area. On a number of range sites, native perennial grasses have been replaced by an annual invasive grass, medusahead. Three noxious weeds are also present: dyer's woad (*Isatis tinctoria*) in diffuse infestations within the Carr and Mowitz allotments, and Scotch thistle (*Onopordum acanthium*) and invasive hoary cress (*Lepidium sp.*) in the Emigrant Spring allotment.

Vernal pools occur throughout the project area. They are unusual habitats and can contain rare plant species. Within the WHT, three sensitive plant species occur: *Mimulus evanescens* (disappearing monkeyflower), *Polygonum polygaloides ssp. esotericum* (Modoc knotweed), and *Phacelia inundata*, (playa mesamint). Vernal pools, meadows, reservoirs, and lakes may not always be distinct entities; depressions in topography may grade from vernal habitat along the edges (standing water in winter to dry in summer) to perennially moist or wet meadows, or perennial standing water, in the center.

2.4.1.2 Livestock Grazing

Term grazing permits for 26,880 Animal Unit Months (AUMs) of forage consumption by domestic livestock have been issued by the MDF on all or a portion of the eight grazing allotments within the WHT. During 2006-2011 actual livestock use averaged about 18,547 AUMs (approximately 69 percent of that permitted). Another 4,400 AUMs of forage was allocated for use by the Appropriate Management Level (AML) of 275-335 wild horses in the 1991 Forest Plan. Since 2006, wild horse population size has exceeded the AML upper limit, with actual wild horse use ranging from 6,163 AUMs in 2006 to 16,186 AUMs in 2012 (approximately 140-369 percent of that allocated).

As numbers have grown beyond the AML upper limit, livestock operators have experienced an increasing number of conflicts between wild horses and their permitted livestock use. Fence damage has increased as have maintenance costs. In some locations, wild horses have been very aggressive and kept livestock (and wildlife) from using the available water. In other locations, heavy-severe utilization by wild horses has prevented the operator from making use of all or a part of their term permitted grazing use.

Monitoring indicates existing wild horse numbers are within the available capacity in the Surveyors Valley area. No wild horses are known to have used the Potters since at least 1986. By contrast, monitoring indicates wild horse numbers may be above the available capacity in the Emigrant Spring

² The information summarized in this section of the Environmental Assessment is from the Specialist Reports prepared for this project (2013). These reports are on file at the MDF.

and Pine Springs Allotments as well as the Black Rock Pasture of the Timbered Mountain Allotment and the Timbered Pasture of the Carr Allotment. In these areas, heavy to severe utilization has occurred on a number of upland areas. In addition, little or no residual vegetation remained in spring 2012 due to heavy use by wild horses over the winter. A substantial number of springs, seeps and meadows are nonfunctional due to the degree of loafing, trampling and trailing that has occurred. Many of these exhibited residual stubble heights of less than 2 inches in October 2012, and were altered by more than 70 percent due to trampling. Plant vigor and species diversity have also been negatively impacted.

Wildlife use of vegetation by elk, deer, and antelope appears to be within capacity.

2.4.1.3 Heritage

A total of 612 archaeological sites have been recorded entirely or partially within the WHT. This includes 559 prehistoric sites, 27 historic sites and 26 dual-component archaeological sites. These sites span some 10,000+ years of human occupation and use of the Devil's Garden area. In addition, the easternmost portion of the Eastern Home Range lies within the Strip Allotment on lands administered by the Bureau of Land Management (BLM). The Strip Allotment comprises some 7,632 acres of BLM land (which is included within the FS Emigrant Spring Allotment). Three previous archaeological surveys covering about 120 acres, recorded 31 archaeological sites, of which 29 were prehistoric sites and 2 were historic sites.

Generally, over the past 30 years range allotment management activities within the WHT have been designed to avoid affecting cultural resources by designing and constructing improvements, such as fence lines, stock ponds, holding pastures, salt grounds, etc. away from known sites. Due to these efforts, there has been an overall reduction of livestock concentration in areas of high archaeological sensitivity. Similarly, during previous wild horse capture/round-up actions, archaeological surveys have been done at proposed locations of temporary trap sites and staging areas so that these actions would not affect cultural resources.

Monitoring of seven prehistoric archaeological sites during 2011-2012 indicates there are some negative effects to archaeological resources resulting from the current wild horse overpopulation. Six of the visited sites exhibited impacts due to wild horses greater than "general grazing." Of these, three have effects that may be considered substantial enough to address: FS-05-09-55-0653, FS-05-09-55-0657 and FS-05-09-55-2866. This would involve undertaking determinations of eligibility for the National Register of Historic Places and/or eliminating or minimizing the observable negative effects.

2.4.1.4 Recreation

The Devil's Garden Plateau and surrounding landscapes are best known for their wide-open spaces, rugged and remote nature, and unlimited recreational opportunities far from urban populations. Recreation opportunities are divided into two categories: developed and dispersed. More than 80% of the recreation use in the WHT occurs in dispersed areas. Activities include hunting, fishing, camping, hiking, horseback riding, picnicking, wild horse and wildlife viewing, and recreational firewood cutting. Other visitors enjoy touring by bicycles, four wheel drive vehicles (4WDs), and all-terrain vehicles (ATVs). These activities are enhanced by the abundance of wildlife, a variety of landscape settings, and the uncrowded conditions of the Devil's Garden Plateau and northeastern California.

The Back Country Discovery Trail (about 105 miles in length) traverses the WHT. An 800 acre research natural area (RNA) is also found in the WHT. Habitat conditions within the RNA have deteriorated due to heavy grazing use. Cheatgrass has moved into portions of the RNA and barren soils from loafing,

trampling and trailing by wild horses is evident. No designated wilderness, Inventoried Roadless Areas, or Wild and Scenic Rivers exist within the planning area.

A number of well-maintained roads provide access during the spring, summer and fall. During the winter, these roads are not maintained and much of the area is inaccessible due to snow. The majority of the roads that branch off the main roads are primitive and not maintained. About 86 percent of the planning area is classified as roaded natural, one percent as semi-primitive non-motorized, and 12 percent as semi-primitive motorized.

2.4.1.5 Socio-Economics

Modoc County has seen relatively little growth in population or per capita income over the last decade. Agriculture typically has ranked second in the number of employees and in earnings, with government being first. Modoc has a low population density with 2.5 people per square mile and is thought to have a “*sense of place*” attributed to the rural culture.

2.4.1.6 Watershed (Natural Resources)

Soils

Soil is the basic resource of forest and rangeland areas and is essential to their productivity. Soil directly or indirectly supports all other resources. It serves as a growth medium for plants, filters biological and chemical substances and regulates water transmission. A major goal for soil resource management is long-term maintenance of soil productivity and watershed protection. This requires avoiding management actions that would irreversibly impair soil productivity.

As wild horse numbers have increased, the potential for surface or rill erosion has also increased due to lack of litter, residual vegetation and substantial trailing and trampling. Monitoring indicates little or no residual vegetation or litter remained in the Timbered Pasture (Carr), Black Rock Pasture (Timbered Mountain) or the Emigrant Spring or Pine Springs Allotments in spring 2012 due to moderate or heavier over-winter grazing by wild horses. In Pine Springs, about 7,000 acres impacted by past wildfires have been negatively impacted by heavy utilization, trailing and trampling.

Vegetation

The WHT lies mainly within the sage-steppe ecosystem. The major vegetation species are sagebrush, bitterbrush, various perennial grasses (i.e., needlegrass, wheatgrass, fescue and bluegrass species, among others) and forbs (i.e., mule's ears, bluebells, etc.). A marked increase in the density of Western juniper has occurred over the past one hundred years. This has negatively impacted the existing ecological condition by decreasing the density and production of desirable perennial grasses and forbs. Ephemeral lakebeds are scattered throughout the area and provide important habitat for waterfowl. Scattered springs and seeps provide forage, water and habitat for livestock, wild horses and wildlife. Part of the northern end of the WHT is comprised of stands of east side pine, with bitterbrush, mountain mahogany with perennial grass understories.

At the present time, the Surveyors Valley, Potters, Mowitz, and portions of the Timbered Mountain Allotment appear to be in satisfactory ecological condition with few negative impacts attributable to wild horses. However, wild horse overpopulation has resulted in deteriorated conditions in substantial portions of the Emigrant Springs, Pine Springs, Timbered Mountain (Black Rock Pasture) and Carr Allotments (Timbered Pasture in/around Boles Tank). Portions of these areas appear to be in unsatisfactory ecological condition as indicated by a loss of key forage plants, increased juniper,

increased bare ground, and the presence of invasive species such as medusahead, cheatgrass and other undesirable annual species.

Medusahead (an invasive annual grass) has become established on approximately 11,000 acres of deeper soils in open areas (areas with little or minor amounts of juniper) and around stock tanks and riparian floodplains in the southern portion of the Emigrant Spring Allotment. Some range sites adjacent to McGinty Reservoir and the south end of the Pine Springs Allotment are also dominated by medusahead. Cheatgrass and other annual species are dominant in the 7,632 acres of BLM land within the WHT (Strip Allotment). In the Timbered Pasture (Carr Allotment), *Danthonia unispicata* (Onespike Oatgrass, a perennial grass) is missing entirely from the area adjacent to Boles Tank, yet is abundant in upland range sites near Boles Meadow that are not grazed by wild horses.

Riparian Wetland Areas

The WHT is relatively dry. Of the 430 miles of streams in the planning area, there are a total of 10.7 miles of perennial stream. Included are 8.7 miles of Boles Creek and approximately 2 miles of Mowitz Creek. Both reaches are fenced and livestock grazing is managed to protect riparian habitat values.

Year-round use by wild horse numbers in excess of the established AML appears to be contributing to the nonfunctional condition of a number of springs and seeps within the WHT. These areas exhibit bare soil and alteration from trampling in excess of 70 percent, residual stubble heights of less than 2 inches at the end of the grazing season, denuded vegetation, and the presence of annuals and other undesirable plants.

2.4.1.7 Wild Horses

Population

As of January 2013, an estimated 1,124 wild horses are present in the Devil's Garden Plateau (3.4 times the established AML upper limit). Of these, approximately 269 (24 percent) are residing outside the WHT in areas not designated for their long-term use. Monitoring indicates an average annual population growth rate of 25 percent per year, a sex ratio weighted towards females (43/57 males/females) and an age distribution weighted towards the young age class (age 0-5 years).

Aerial inventory (February 2013) using the direct count method updated this estimate to 1,260 adult wild horses. This compares to the last inventory, conducted in 2010 when 854 total animals were counted. Of these it is estimated 641 were adults.

Habitat

Wild horses occur throughout the WHT, with the exception of Potters. In some areas, wild horses are present only in certain pastures, or have preferred use areas in which they have established home ranges.

The Carr portion of the WHT appears to have adequate suitable habitat to sustain a year-round population of wild horses, but heavy use by wild horses in the Timbered Pasture indicates the existing numbers may not be in balance with the available water and forage. In Emigrant Spring, existing wild horse numbers are contributing to forage overutilization and unsatisfactory upland and riparian conditions. Pine Springs has adequate suitable habitat to sustain a healthy population of wild horses over the long-term, but current wild horse numbers are leading to unsatisfactory upland and riparian conditions over portions of the area.

The Mowitz Allotment has adequate forage, cover and space, but may lack adequate year-round water to sustain a wild horse population over the long-term. Wild horses routinely leave the WHT in search of water (most of the existing water sources dry up by mid-season most years). Wild horses have not been observed in the Horse Camp or Lone Pine Pastures of the Potters Allotment since at least 1986. As the two comprise only 4,812 acres, there may not be the space necessary to sustain a reproducing herd of wild horses long-term. However, Potters may provide suitable habitat for a small number of geldings. In Surveyors Valley, wild horses concentrate their use adjacent to the Surveyors Valley and Deadhorse Flat Reservoirs. Upland utilization is generally moderate indicating adequate suitable habitat to sustain year-round use by the existing number of wild horses.

Wild horses are poorly distributed in the Timbered Mountain Allotment. The majority of wild horse use is on the west side of the Black Rock Pasture. Although wild horses also utilize the Cow Head Pasture, the available water dries up by mid-season most years. As a result, the Cow Head Pasture may not be able to sustain a year-round population of wild horses over the long-term. Wild horse use in the Deer Hill Pasture is minimal and none were observed in the Timbered Mountain Pasture in 2012. This data indicates the Timbered Mountain Allotment has adequate suitable habitat to sustain a healthy herd of reproducing wild horses in the long-term, but the number of wild horses in the Black Rock Pasture has led to deteriorated upland and riparian conditions.

2.4.1.8 Wildlife and Fisheries

The WHT and surrounding area support a diverse assemblage of species adapted to the habitats common to the Great Basin. Deer and antelope are found within the WHT and perennial streams within the WHT provide spawning habitat for the Lost River and Shortnose suckers, two federally listed species. The WHT has numerous ponds that, at least during winter and spring, are filled, providing habitat for waterfowl. Although not native, elk are also found in the WHT, primarily at the north end of the East WHT. Prairie falcons have been sighted within the WHT and bald eagles, designated as a Forest Service Sensitive species, have several nest sites within the WHT and are also found within the WHT during the winter migration. In addition to the bald eagle, the WHT supports populations of other Forest Service Sensitive species such as the greater sage grouse, which utilize healthy sage and shrub habitats, the sandhill crane, which occupies large wet meadow complexes, and the northern goshawk (associated with denser timber stands).

The WHT contains habitat for several management indicator species, including aquatic macroinvertebrates (lake habitat), greater sage grouse (sage brush), the chorus frog (wet meadows), and mountain quail (early and mid seral coniferous forests).

Nineteen species of migratory landbirds (Category 2) could occur in, or have at least some preferred habitat characteristics, in or near the Devil's Garden Plateau WHT. The WHT also contains suitable habitat characteristics preferred by seven (Category 3) of these species (greater sage grouse, ferruginous hawk, golden eagle, loggerhead shrike, sage thrasher, Brewer's sparrow and sage sparrow).

Habitat conditions for many of these species are moderate to poor due to long term grazing by livestock including wild horses. Trampling has affected vegetation which, in addition to depleting forage, sets up conditions for weeds such as medusahead to develop. These weeds provide little forage value for wildlife and once established are difficult if not impossible to eradicate. The range surveys noted that loafing and trailing is evident throughout, affecting cover for species such as grouse and quail. Grazing impacts have reduced nesting habitat for waterfowl in many of the areas.

2.4.2 Desired Condition

A summary of the desired conditions identified in the 1991 Forest Plan for National Forest System lands within the Devil's Garden WHT follows.

2.4.2.1 Botany

Protect habitat for sensitive plants by managing herbivore grazing use in a manner that achieves and maintains satisfactory ecological condition and protects soil, water, and streamside-dependent resources. Achieve and maintain wild horse population size within the AML to promote vernal pool and native bunchgrass health and slow the spread of invasive annual grasses. Treat small sites of noxious weeds, and continue to look for and rapidly treat any new weed infestations.

2.4.2.2 Grazing

Manage grazing use in a manner that achieves and maintains satisfactory ecological condition and protects soil, water, and streamside-dependent resources. Forage is made available for use by livestock, wild horses and wildlife. Actual grazing use by livestock, wild horses and wildlife remains in balance with the available capacity.

2.4.2.3 Heritage

Manage Heritage Resources, both "Historic Properties" and Native American traditional religious and cultural practices and sites, from negative effects from other resource actions. Limit or reduce site disturbance from wild horse (and livestock) use so that archaeological and tribal values are not adversely affected. The sites should show little evidence of grazing effects (i.e., show very little trampling or soil compaction (as caused by wild horses congregating) wallows, trails, or deflation caused by rolling in dry soils, and other related features or activities that may lead to site degradation and loss or reduction of archaeological and tribal values). Similarly, areas of traditional Native American use should be free from obvious visible effects from wild horse disturbances, including traditional plant gathering areas for food and medicinal plants.

2.4.2.4 Recreation

Provide a broad range of recreation opportunities consistent the MDF's Recreation Opportunity Spectrum. Provide information to make the public's visits more enjoyable. Within roaded natural areas, provide interpretive or vista sites and developed recreation sites. In semi-primitive motorized areas, minimize construction or reconstruction of system roads and limit site development to protect the resource. Within semi-primitive non-motorized areas, provide opportunities for a range of dispersed recreation opportunities. Manage the Devil's Garden Research Natural Area to protect the values for which it was established. These include preserving the characteristic native vegetation on the volcanic plateau (old growth western juniper mixed with sagebrush, bitterbrush, and native bunchgrasses and forbs).

2.4.2.5 Socio-Economics

Contribute to the local economy, provide for sustained outputs of forage and timber products, make lands allocated to livestock grazing available for use by qualified livestock operators and manage the wild free-roaming horse herd within AML.

2.4.2.6 Watershed (Natural Resources)

Manage rangeland vegetation to provide for healthy ecosystems, make forage available for livestock, wild horse herds, and wildlife species, and protect soil and water resources. Lakes, perennial reservoirs, meadows, seeps, wetlands, springs, and streamside management zones (including ephemerals and intermittent) are managed to maintain or improve riparian-dependent resources. Best Management Practices (BMPs) are used to meet water quality objectives and degraded watersheds are rehabilitated when needed to improve water quality.

2.4.2.7 Wild Horses

Manage rangeland vegetation in a manner that achieves and maintains satisfactory ecological condition on rangelands and protects soil, water and streamside-dependent resources. Forage is made available for use by livestock, wild horses, and wildlife. Livestock and wild horses are managed to maintain range resource productivity. The Appropriate Management Level (AML) for wild horses is adjusted (either up or down), as needed, based on in-depth analysis of resource monitoring data.

2.4.2.8 Wildlife

Provide diverse and productive habitat for a variety of wildlife and fish species. Manage allotments to protect soil, water, and streamside-dependent resources. Manage allotments to protect soil, water and streamside-dependent resources. Protect habitat for sensitive plants.

2.5 Purpose of and Need for Action

The purpose of the proposed action is to develop and implement a TMP and designate the Forest Service as the lead agency for all wild horse management actions within the WHT, consistent with the authority provided in Forest Service Manual 2261.1, 36 CFR 222 Subpart B, and the 1971 WFRHBA (as amended). The proposed action would identify management and monitoring objectives and actions for future management of the herd and their habitat. The need for the proposed action is to ensure the herd is managed as a self-sustaining population of healthy animals in a thriving natural ecological balance with other uses and the productive capacity of their habitat as required by the WFRHBA.

The current wild horse population has resulted in animals moving outside the WHT in search of water and has led to the deterioration of key portions of the range. In these areas, the desired conditions have not been attained. The proposed action provides for the removal of excess wild horses (both within and outside the WHT), when necessary, to prevent further deterioration of the range. Managing wild horse population size within the established AML would result in achieving the desired conditions and a thriving natural ecological balance within the WHT as required by the WFRHBA.

The genetic health of the herd has not yet been determined. Under the proposed action, baseline genetic diversity would be established and monitored, and management actions would be taken as needed to ensure a healthy, diverse and self-sustaining wild horse population is maintained over the long-term.

The current annual rate of population growth for the Devil's Garden wild horse herd is above average (25 percent per year). Population suppression methods such as application of PZP or sex ratio adjustments would be implemented to slow the average annual growth rate. Because water may be a limiting habitat factor for wild horses in some areas and existing fences may be impacting free-roaming behavior, habitat improvement projects would be undertaken to enhance the habitat available for wild horses within the WHT over the short and long-term.

2.6 Proposed Action

The MDF proposes to develop and implement a TMP for the Devil's Garden Plateau WHT and designate the Forest Service as the lead agency responsible for all wild horse management actions within the WHT. The TMP would establish the short and long term management and monitoring objectives and actions needed to ensure the herd is managed to maintain a self-sustaining population of healthy animals in a thriving natural ecological balance with other uses and the productive capacity of their habitat.

Under the proposed action, an Appropriate Management Level (AML) would be established as a population range of 206-402 wild horses as determined based on in-depth analysis of population inventory, resource monitoring, and other current available information and data. When necessary, gathers to remove excess wild horses from within and outside the WHT would be conducted and would begin as soon as October 2013. Annual gathers would be needed to achieve a wild horse population size within AML. Once AML is attained, fewer gathers to maintain AML would be needed.

During the first gather following plan approval, DNA-based material (hair samples) would be collected from a number of wild horses to establish baseline genetic diversity. Thereafter, samples would be collected at a minimum of every other gather to detect any change from the baseline. If genetic diversity should fall below the minimum acceptable level, management actions such as increasing the number of breeding age horses, adjusting the sex ratio to favor males or releasing 1-2 young mares from similar habitats every 8-10 years would be implemented.

Once AML is achieved, population suppression methods would be implemented to slow population growth rates, reduce gather frequency, and decrease the number of excess wild horses which need to be removed over time. These would include application of fertility control (one year or 22-month Porcine Zona Pellucida agents) and adjustment of sex ratios to 50/50 males/females or slightly in favor of males (60/40 males/females).

The proposed action would also amend the 1991 Forest Plan as follows:

- Delete Standard 5 (LRMP, 4-19) which states: "Manage the wild free-roaming horse herds to achieve a Forest population between 275 and 335 (on the average, 305) animals." Replace Standard 5 (LRMP, 4-19) as follows: "5. (S) Revise the herd management plan for the Devils Garden Plateau WHT approximately every ten to twenty years. Evaluate the appropriate management level (AML) for wild horses as part of the herd management plan analysis and decision process."
- Delete Guideline 5A (LRMP, 4-19) which states: "Every ten years revise the herd management plan for each wild horse territory, including forage allocation for horses within the carrying capacity of the territory. Cooperate with the Bureau of Land Management in capture and placement of the animals. Replace Guideline 5A (LRMP, 4-19) as follows: "A. (G) When review of resource monitoring and population inventory data indicates the appropriate management level (AML) for wild horses may no longer be appropriate, complete an in-depth analysis of resource monitoring data. If indicated, adjust the AML either up or down in order to maintain a thriving natural ecological balance and multiple-use relationship within the WHT. Express the AML as a population range with a lower and upper limit within which wild horses can be managed for the long-term. Establish the AML upper limit as the maximum number which results in a thriving natural ecological balance and avoids a deterioration of the range and the AML lower limit at a number that allows the population to grow (at the annual population growth rate) to the upper limit over a 4-5 year period without any interim gathers to remove excess wild horses. The AML

will specify the number of adult wild horses to be managed within the population (excludes current year's foals)."

- Delete Guideline 5B (LRMP, 4-19) which states: "Monitor the impacts of wild horses on rangelands in allotments where horses are present. Determine if wild horse numbers should be adjusted on high impact areas." Replace Guideline 5B (LRMP, 4-19) with the following: "Monitor the impacts of wild horses on range ecological condition. Monitoring data may include studies of grazing utilization, range ecological condition and trend, actual use, and climate (weather) data. Population inventory, use patterns, animal distribution, and progress toward attainment of other site-specific and landscape-level objectives may also be considered. Three to five years of data is preferred."
- Add Guideline 5C (LRMP, 4-19) as follows: "Cooperate with the Bureau of Land Management to capture and remove excess wild horses when analysis of grazing utilization and distribution, trend in range ecological condition, actual use, climate (weather) data, current population inventory, wild horses located outside the WHT in areas not designated for their long-term maintenance and other factors such as the results of land health assessments demonstrate removal is needed to restore or maintain the range in a thriving natural ecological balance with other uses and the productive capacity of their habitat."
- Establish a boundary for the WHT based on the long-term needs of the Devils Garden wild horse herd and within the herd's known territorial limits (1971 WFRHBA) rather than for administrative convenience. This boundary will provide for future management of two distinct home ranges: West and East.

2.7 Deciding Official and Decision Framework

The deciding official for the MDF will be the Forest Supervisor. Given the purpose and need for action and based upon the effects of the alternatives, the deciding official will select a management strategy for the Devil's Garden Plateau wild horse herd and their habitat. The selected management actions, together with the associated management and monitoring objectives will guide management of the Devil's Garden wild horse herd over the life of the plan. The Forest Supervisor will make the following decisions:

- Whether or not to amend the Forest Plan.
- The AML for wild horses expressed as a population range with an upper and lower limit.
- The techniques to be used to maintain or improve the herd's genetic health.
- The population suppression methods that may be implemented to slow herd growth rates and reduce the number of excess animals which must be removed over time.
- The frequency of population management activities (gathers and/or removals).
- The criteria to be considered when determining whether excess wild horses are present and require removal.
- The methods to be used to gather and remove excess wild horses.
- The habitat improvement projects which would be implemented.

2.8 Public Involvement

On July 27, 2011, the MDF issued a scoping notice concerning our proposal to develop the Devil's Garden Plateau Wild Horse Territory Plan. In response to the scoping notice, written comments from 18 individuals, groups, local and/or state government or other agencies and email comments from 2,382

individuals were received (Appendix A). In view of additional resource monitoring data and other information collected since the July 27, 2011 scoping notice, the MDF issued a second scoping notice on December 14, 2012. In response to this notice, written comments from 37 individuals, groups, local and/or state government or other agencies and approximately 8,600 email comments were received (Appendix B).

Based on the comments received in response to the initial July 2011 and December 2012 scoping notices, the Forest Service has separated the issues identified to date into two groups: key and non-key issues (Appendix C). Key issues were defined as those directly or indirectly caused by implementing the proposed action. Non-key issues were identified as those: (1) outside the scope of the proposed action; (2) already decided by law, regulation, Forest Plan or other higher level decision; (3) irrelevant to the decision to be made; or (4) conjectural and not supported by scientific or factual evidence. The Council on Environmental Quality (CEQ) NEPA regulations require this delineation in Sec. 1501.7, "...identify and eliminate from detailed study the issues which are not significant or which have been covered by prior environmental review (Sec. 1506.3)..."

2.9 Issues

The Forest Service identified five key issues during scoping Table 1.

Table 1: Key Issues and Measurement Indicators

Key Issues	Measurement Indicators
1. <i>Impacts to wild horses that would result from managing herd size and habitat within the Appropriate Management Level (AML) established as a population range with a lower and an upper limit.</i>	<p>Population</p> <ul style="list-style-type: none"> • Herd Size (AML) • Herd Sex Ratio, Age Distribution and Genetic Diversity • Average annual rate of population growth • Body condition (Henneke Body Condition Score) • Gather method(s), frequency, projected gather/removal numbers (Win Equus population modeling) • Fertility control or other population suppression methods • Capture and Handling Stress • Potential impacts to herd social structure • Potential for wild horses to emigrate outside the WHT <p>Habitat</p> <ul style="list-style-type: none"> • Water availability (year-round) • Habitat management (free-roaming behavior)
2. <i>Impacts to the natural resources needed to sustain wild horse use on a year-round basis over the long-term.</i>	<p>Soils/Vegetation</p> <ul style="list-style-type: none"> • Utilization (Uplands and Riparian/Wetlands) • Noxious Weeds <p>Riparian/Wetland Areas</p> <ul style="list-style-type: none"> • Residual stubble height • Alteration (trailing and trampling)
3. <i>Impacts to wildlife, migratory birds, and threatened, endangered, and special status species and their habitat.</i>	<p>Wildlife, Migratory Birds, and Threatened, Endangered and Special Status Species (TES Wildlife)</p> <ul style="list-style-type: none"> • Changes in habitat • Competition factors <p>Botany</p> <ul style="list-style-type: none"> • Threatened and Endangered Plants/Sensitive Plants
4. <i>Impacts to heritage resources.</i>	<ul style="list-style-type: none"> • Changes to site stability and integrity • Damage to and/or redistribution of individual artifacts

Key Issues	Measurement Indicators
5. <i>Impacts to local social and economic factors, including the permitted livestock grazing use.</i>	<p>Livestock Grazing</p> <ul style="list-style-type: none"> • Changes in forage availability (Livestock AUMs) • Changes in grazing strategy <p>Local Social and Economic Conditions</p> <ul style="list-style-type: none"> • <i>Changes in recreational opportunities</i> <ul style="list-style-type: none"> ○ Horse Viewing ○ Changes in Hunting Opportunity/Success ○ Watchable Wildlife • <i>Changes in local economic activity</i> <ul style="list-style-type: none"> ○ Economic impact to community ○ Economic impact to livestock operators ○ Employment ○ Environmental Justice

3.0 ALTERNATIVES

This chapter describes the Proposed Action and alternatives, including any alternatives that were considered but eliminated from detailed analysis. Alternatives analyzed in detail include the following:

- ☐ **Alternative 1: No Action (Continue Existing Management).** Continue existing management by implementing a strategy to manage wild horse population size within the current established AML range of 275-335 wild horses.
- ☐ **Alternative 2: Proposed Action.** Develop a TMP which would establish AML as a population range of 206-402 wild horses and implement a management strategy to manage wild horse population size within the established AML. Implement additional methods to slow population growth. Existing fences and water developments would be maintained and/or reconstructed but no new pasture fences would be constructed.
- ☐ **Alternative 3: Enhance Wild Horse Management.** This alternative would be the same as the Proposed Action with the exception that additional management actions would be taken to enhance future wild horse management and assist in slowing population growth. Included would be the removal of about 30 miles of existing fence.
- ☐ **Alternative 4: Sustain Current Wild Horse Numbers.** This alternative would develop a TMP which would establish AML as a range of 700-900 wild horses. The AML upper limit would represent the approximate number of wild horses presently within the WHT. Authorized livestock use would be adjusted as needed to provide additional forage for use by wild horses and to improve and/or maintain rangelands in satisfactory ecological condition. About 50 miles of existing fence would be removed to provide increased opportunities for free-roaming behavior.

The action alternatives (2-4) were developed to meet the Purpose and Need and respond to the key issues to varying degrees. The No Action Alternative meets the Purpose and Need in part, but may not fully comply with the WFRHBA (as amended). In this chapter, the alternatives are also compared to sharply define their differences. This provides the decision maker with a clear basis for choice when making a decision. It also allows the public to compare and contrast the differences between each alternative.

3.1 Management Actions

Management Actions Common to Alternatives 1-4

1. Gather and removal operations would be conducted by either the BLM or the Forest Service.
2. Gathers would be conducted in accordance with the Standard Operating Procedures (SOPs) detailed in the most current approved Gather Contracts (Appendix D). The agencies have developed the SOPs over time to ensure the safe and humane care and handling of the animals. Future changes in the SOPs can be expected with additional experience.
3. Excess wild horses removed from the WHT would be placed as follows:
 - a. The first priority would be to place excess wild horses in private care through adoption or sale to qualified individuals. Authorized agency personnel would be responsible for adoption compliance and title transfer of these animals.
 - b. The second priority would be to place excess animals that are not adopted or sold in approved long-term holding pastures or sanctuaries. Authorized agency personnel would be responsible for ensuring the animals are cared for in a safe and humane manner.
4. Wild horse population numbers would be estimated based on the results of aerial inventory at intervals of about every 3 years and within 6-12 months of a planned gather and removal.
5. Utilization by all herbivores would be limited to the following:
 - a. 30% on rangelands in unsatisfactory condition;
 - b. 50% on rangelands in satisfactory condition;
 - c. 30-40% on meadows in early seral status; also retain a 6-inch stubble height; ensure $\leq 10\%$ bare soil; and $\leq 20\%$ use on shrubs.
6. Annual resource monitoring would continue. This includes:
 - a. Pre-livestock turnout monitoring in key wild horse-use areas.
 - b. Monitoring total herbivore use within established key areas (Landscape Appearance Method) at the end of the livestock grazing season.
 - c. Locating any additional key areas that may be necessary and monitoring total herbivore use within those areas.
 - d. Monitoring utilization, stubble height, bare soil (alteration) and use on shrubs (if applicable) of key springs, seeps and meadows annually using methods outlined in the MDF 2008 Implementation Monitoring Guide.
 - e. Animal condition would be observed as part of routine range and riparian monitoring (Henneke Body Condition Method).
7. Wild horses that are severely injured or sick, deformed, or have dangerously aggressive behavior would be humanely euthanized by individuals specifically authorized to do so by the responsible official (Forest Supervisor).
8. All activities pertaining to protection, management and control of wild horses would be documented.
9. Conduct a cultural resource inventory in conformance with Section 106 of the National Historic Preservation Act (NHPA), before designating any new wild horse trap sites. Relocate proposed trap sites outside the area of potential effect, if needed.
10. Conduct a cultural resource inventory in conformance with NHPA Section 106 prior to the construction/implementation of any new habitat improvement projects (i.e., fences, water developments, etc.). Relocate proposed improvements outside the area of potential effect, if needed.
11. Threatened and Endangered Plant Integrated Design Features

- a. Wild horse traps will be situated at least 250 feet from the edge of a vernal pool, unless surveys for *Orcuttia tenuis* or *Tuctoria greenei* conducted according to the protocol described below have shown that neither species is present in that vernal pool.
- b. If a trap site must have some component located within 250 feet of the edge of a vernal pool, surveys for *Orcuttia tenuis* or *Tuctoria greenei* will take place. Surveys by qualified botanists for these species will occur between July 20 and the end of the year. Either species can be considered absent from potential habitat if, after two consecutive years of surveys, at least one of which follows a winter of average or greater precipitation for the Modoc region, neither species has been found.
- c. New discoveries of sites of either *Orcuttia tenuis* or *Tuctoria greenei* will be assessed to determine what management action may be most appropriate for the conservation of that site.

Management Actions Common to Alternatives 1-3

1. Gather methods would include the assistance of helicopters and the use of bait and/or water trapping.
2. Opportunities for the public to view capture and removal operations would be made available as appropriate. The safety of the public, the animals, and the individuals involved in conducting capture and removal operations would be the highest priority at all times.
3. Capture and removal operations conducted with the assistance of a helicopter would be limited to July 1 through February 29 (6 weeks before and following the peak foaling period or April 15-May 15). When possible, due to terrain, weather, road access and other site-specific considerations, helicopter-assisted capture and removal operations would be scheduled for late September through October.
4. Gathers would be scheduled as soon as reasonably practicable in order to remove excess wild horses and would begin in October 2013.
 - a. The highest priority would be to gather and remove wild horses residing outside the WHT and in areas where resource damage is occurring due to overpopulation.
 - b. The second priority would be to gather and remove animals as necessary to achieve and maintain AML.
5. Helicopter-assisted gathers would utilize a number of capture sites (traps) constructed from portable steel corral panels.
 - a. Gather operations would be supervised by a Contracting Officer's Representative (COR) with the assistance of one or more Project Inspectors (PIs).
 - b. SOPs would be strictly enforced to ensure humane treatment and minimize stress to the animals.
 - c. During gather operations, a veterinarian would be on call to treat any animals which may be injured.
 - d. Captured animals would be transported in stock trailers or single deck semi-trailers to the nearest approved holding facility with the available space.
 - e. At the facility, the animals would be inspected by a veterinarian, treated for any injuries, and fed, watered, vaccinated, and prepared for adoption or long-term holding.
6. Bait and/or water trapping would also be used to capture small numbers of animals residing outside the WHT, in areas with heavy tree cover, or in areas where there is excellent vehicle access.
7. Comprehensive animal welfare procedures would be incorporated into all aspects of herd management activities.

8. Standard policy excludes helicopter assisted gathers between February 29 and July 1. In order to protect goshawk, Swainson's hawk and bald eagle nesting activity, the following stipulation measures will also apply to helicopter gathers occurring within the WHT.
 - a. If helicopter assisted gathers occur between February 15 and February 29 or July 1 and September 15, all PACs that may be disturbed by operations during the gather would be monitored/surveyed prior to such activity to determine whether goshawks are actively nesting in the PAC that year. Active nest sites would be appropriately protected within a buffered area.
 - b. Currently Swainson's hawks are not known to nest in the vicinity of the Devil's Garden WHT; however if nesting occurs in the future, known active nest sites would be buffered and protected from potentially disturbing helicopter assisted gathers occurring between July 1 and August 15.
 - c. If helicopter assisted gathers occur between January 1 and February 29 or July 1 and August 30, all bald eagle nest sites that may be disturbed by operations during the gather would be monitored/surveyed prior to such activity to determine whether known nest sites are active that year. Active nest sites would be appropriately protected within a buffered area.

Management Actions Common Alternatives 2 and 3

1. The herd would be managed to achieve a 50/50 male/female sex ratio and a more natural age distribution over time:
 - a. Ages 0-5: 10-25%; Young Age Class
 - b. Ages 6-15: 50-80% Middle Age Class
 - c. Ages 16+: 10-25% Old Age Class
2. When possible, older animals would be released back to the WHT during gather operations to minimize the stress that can result from transportation and handling.
3. Population estimation would be conducted through aerial inventory using scientifically-based methods and procedures to produce a reliable estimate of wild horse population numbers.
4. To provide for seasonal movement of wild free-roaming horses and burros, no new pasture division fences would be constructed within the WHT.
5. Baseline genetic diversity would be determined by sampling a portion of the herd during the first gather cycle following completion of the TMP. Further samples would be taken at a minimum of every other gather (e.g., 8-10 years) to detect any change in genetic diversity from the baseline.
 - a. The herd would be managed for an acceptable level of genetic diversity, i.e., observed heterozygosity (H_o) values of 0.66 for DNA-based (hair) samples.
 - b. If H_o falls one standard deviation below the mean values outlined above, the following management actions would be implemented: maximizing the number of breeding age wild horses (animals aged 6-10 years) within the herd, adjusting the sex ratio in favor of males to increase the number of harems and effective breeding males, and releasing 1-2 young mares from similar habitats every generation (about 10 years).

Management Actions Common to Alternatives 2-4

1. Under Alternatives 2-4, the Forest Service would amend the 1991 Forest Plan as shown in Table 2.

Table 2: Proposed Amendments to the Forest Plan (Non-Significant)

Forest Plan (Page 4-19)	Delete	Insert
Standard 5	Manage the wild free-roaming horse herds to achieve a Forest population between 275 and 335 (on the average, 305) animals.	Revise the herd management plan for the Devils Garden Plateau WHT approximately every ten to twenty years. Evaluate the appropriate management level (AML) for wild horses as part of the herd management plan analysis and decision process.
Guideline 5A	Every ten years revise the herd management plan for each wild horse territory, including forage allocation for horses within the carrying capacity of the territory. Cooperate with the Bureau of Land Management in capture and placement of the animals.	When review of resource monitoring and population inventory data indicates the appropriate management level (AML) for wild horses may no longer be appropriate, complete an in-depth analysis of resource monitoring data. If indicated, adjust the AML either up or down in order to maintain a thriving natural ecological balance and multiple-use relationship within the WHT. Express the AML as a population range with a lower and upper limit within which wild horses can be managed for the long-term. Establish the AML upper limit as the maximum number which results in a thriving natural ecological balance and avoids a deterioration of the range and the AML lower limit at a number that allows the population to grow (at the annual population growth rate) to the upper limit over a 4-5 year period without any interim gathers to remove excess wild horses. The AML will specify the number of adult wild horses to be managed within the population (excludes current year's foals).
Guideline 5B	Monitor the impacts of wild horses on rangelands in allotments where horses are present. Determine if wild horse numbers should be adjusted on high impact areas.	Monitor the impacts of wild horses on range ecological condition. Monitoring data may include studies of grazing utilization, range ecological condition and trend, actual use, and climate (weather) data. Population inventory, use patterns, animal distribution, and progress toward attainment of other site-specific and landscape-level objectives may also be considered. Three to five years of data is preferred.
Guideline 5C		Cooperate with the Bureau of Land Management to capture and remove excess wild horses when analysis of grazing utilization and distribution, trend in range ecological condition, actual use, climate (weather) data, current population inventory, wild horses located outside the WHT in areas not designated for their long-term maintenance and other factors such as the results of land health assessments demonstrate removal is needed to restore or maintain the range in a thriving natural ecological balance with other uses and the productive capacity of their habitat. Establish a boundary for the WHT based on the long-term needs of the Devils Garden wild horse herd and within the herd's known territorial limits (1971 WFRHBA) rather than for administrative convenience. This boundary will provide for future management of two distinct home ranges: West and East.

2. New water developments and fence removal called for in Alternatives 2-4 would be completed pending additional site-specific environmental analysis.

3.2 Alternatives

3.2.1 Alternative 1 - No Action (Continue Existing Management)

Under the No Action Alternative (Table 3), wild horses would continue to be managed as a range of 275-335 (an average of 305) animals. Wild horse management would be guided by the goals and objectives established in the 1982 Devil's Garden Plateau Wild Horse Management Plan and the 1991 Forest Plan, as amended, and in conformance with Forest Service policy.

Population Management

- ☐ Gathers to remove excess wild horses would begin as early as October 2013 to attain population size within AML. Once AML is achieved, 60 and 90 wild horses would be removed each year to maintain population size.
- ☐ The herd would be maintained at the existing sex ratio of approximately 43 percent males and 57 percent females.
- ☐ The herd would be maintained at the existing age distribution:
 - Less than 1 Year of Age – 25%;
 - Horses Ages 1-5 – 52%;
 - Horses Ages 6-12 – 18%;
 - Age 13 and Over – 5%.
- ☐ Population estimation would continue to be based on the direct count aerial survey method and supplemented with periodic ground observations.
- ☐ AML would be adjusted, as needed, on high impact areas.
- ☐ Fertility control would not be applied to animals released back to the range following future gathers.
- ☐ Baseline genetic diversity would not be established.

Habitat Management

- ☐ Existing water developments and fences would be periodically maintained, and would be replaced or reconstructed when they outlive their useful life.

Table 3: No Action (Continue Existing Management) in TMP Format

Management Objective(s)	Monitoring Objective(s)	Implementation Objective(s)
Population Management		
A. <u>Control Population Size</u> Manage wild horse populations within the established AML range provided that resource damage is not occurring.	Conduct an aerial inventory to estimate population size about every 3 years. Direct count method. Determine population number and average annual growth rate.	<input type="checkbox"/> Conduct consecutive gathers as needed to remove excess wild horses to attain AML. Gathers would begin as soon as October 2013. <ul style="list-style-type: none"> The highest priority would be to gather and remove wild horses residing outside the WHT and in areas where resource damage is occurring due to overpopulation. The second priority would be to gather and remove animals as necessary to achieve and maintain AML. <input type="checkbox"/> Once AML is achieved, remove 60-90 wild horses each year to maintain population size within AML.
B. <u>Herd Sex Ratio</u> Maintain the existing sex ratio of 43/57 males/females.	Monitor post-gather results.	As needed, during gather operations, release small numbers of captured wild horses to the range in order to maintain a ratio of 43/57 males/females.
C. <u>Herd Age Distribution</u> Maintain the existing age distribution.	Monitor post-gather results.	As needed, during gather operations, release small numbers of captured wild horses to the range in order to maintain the existing age distribution.
D. <u>Ensure Herd Health</u> Ensure the herd is managed to maintain a self-sustaining population of healthy animals.	Observe animal condition as part of routine range and riparian monitoring (Henneke Body Condition Method).	<input type="checkbox"/> Individuals specifically authorized by the Forest Supervisor will humanely euthanize any severely injured or sick animals. <input type="checkbox"/> Document all activities pertaining to protection, management and control of wild horses.
Habitat Management		

Management Objective(s)	Monitoring Objective(s)	Implementation Objective(s)
<p>E. Ensure Range and Riparian Health</p> <p>Objective 1. Reduce deterioration of rangeland habitat and watershed conditions by maintaining existing infrastructure (fences and water developments) to facilitate proper grazing management.</p> <p>Objective 2. Monitor the impacts of wild horses on rangelands where horses are present. Determine if wild horse numbers should be adjusted on high impact areas.</p> <p>Objective 3. Limit utilization by all herbivores to the following:</p> <ul style="list-style-type: none"> a. 30% on rangelands in unsatisfactory condition; b. 50% on rangelands in satisfactory condition; c. 30-40% on meadows in early seral status; also retain a 6-inch stubble height; ensure $\leq 10\%$ bare soil; and $\leq 20\%$ use on shrubs. 	<p>Continue annual resource monitoring:</p> <ul style="list-style-type: none"> • Monitor key wild horse use areas prior to livestock turnout. • Monitor total herbivore use within established key areas (Landscape Appearance Method) at the end of the livestock grazing season. • Locate any additional key areas that may be necessary and monitor total herbivore use within those areas. • Monitor utilization, stubble height, bare soil (alteration) and use on shrubs (if applicable) of key springs, seeps and meadows annually using methods outlined in the MDF 2008 Implementation Monitoring Guide. 	<ul style="list-style-type: none"> <input type="checkbox"/> Maintain and/or replace or reconstruct existing water developments and fences when they outlive their useful life. <input type="checkbox"/> Achieve and maintain wild horse population size within AML. <input type="checkbox"/> Re-adjust wild horse numbers on high impact areas when needed based on the results of resource monitoring.

3.2.2 Alternative 2 – Proposed Action

Under Alternative 2, AML would be adjusted to a range of 206-402 (an average of 304) wild horses, based on in-depth analysis of population inventory, resource monitoring and other current available data and information. The Forest Service would be designated as the lead agency responsible for all wild horse management actions within the WHT and a TMP would be developed and implemented as described below and in Table 4.

Population Management

- ☐ Consecutive gathers to remove excess wild horses would begin as early as October 2013 to attain population size within AML.
- ☐ After AML is achieved, gathers would be conducted less often.
- ☐ Once AML is achieved methods to slow population growth, reduce gather frequency and decrease the number of excess wild horses which need to be removed over time would be implemented. These methods would include:
 - Application of either the one-year or 22-month (PZP-22) Porcine Zona Pellucida (PZP) agent in accordance with the Standard Operating Procedures (Appendix E).
 - The use of PZP would be under an investigational exemption held by the Humane Society of the United States.
 - For maximum effectiveness, PZP-22 would be administered during the winter prior to the spring breeding season (November–February).
 - To effectively reduce population growth rates, the capture of 80-100 percent of the actual population would be needed in order to apply PZP-22 to 70-90 percent of the breeding-age mares.
 - Should the above management actions not effectively slow population growth rates by a minimum of 5 percent per year, sex ratios would be further adjusted to slightly favor males

(60/40 male/female sex ratio). This would be accomplished by managing the number of each sex returned to the WHT following future gathers.

- ☐ When monitoring and other available data and information indicates the AML may no longer be appropriate, the Forest Service would conduct an in-depth analysis to determine if the AML is still appropriate, or needs to be adjusted (either up or down), in order to maintain a thriving natural ecological balance and multiple-use relationship within the WHT.

Habitat Management

- ☐ Existing boundary and pasture division fences would be maintained to Forest Service Standards (MDF Manual Supplement) or reconstructed when needed.
- ☐ The use of snow fence or other means to improve visibility of existing fences would be considered in concentration areas.
- ☐ Fourteen miles of existing boundary fences and another ten to fifteen miles of pasture fence would be proposed for reconstruction within the next five years pending completion of additional site-specific NEPA analysis. Included is 5 miles of boundary fence between Emigrant Springs and Big Sage and 8 miles of boundary fence between Black Rock and Avanzino. The Crowder Mountain, Deadhorse, Emigrant Springs riparian exclosure fences would also be proposed for reconstruction.
- ☐ The condition of springs, seeps and meadows in the Emigrant Springs-Pine Springs areas would be re-evaluated once AML has been achieved and maintained for two years. If these areas have not substantially improved in condition, additional management actions such as construction of exclosure fences and development of off-site water would be considered, pending additional site-specific environmental analysis.
- ☐ Wide gates would be constructed in heavily traveled areas to encourage free-roaming behavior and improve distribution of wild horses in portions of the WHT.

Table 4: Proposed Action in TMP Format

Management Objective(s)	Monitoring Objective(s)	Implementation Objective(s)
Population Management		
<p>A. <u>Control Population Size</u></p> <p>Objective 1. Conduct gathers to remove excess wild horses as needed to maintain wild horse population size within the established AML.</p> <p>Objective 2. Implement methods to slow population growth rates, reduce gather frequency, and decrease the number of excess wild horses which need to be removed over time.</p>	<p>Conduct an aerial inventory about every 3 years to estimate population size and determine the average annual growth rate.</p> <p>Use scientifically-based methods and procedures to produce a reliable estimate of wild horse population numbers.</p>	<p><input type="checkbox"/> Consecutive gathers to remove excess wild horses would begin as early as October 2013 to attain population size within AML.</p> <ul style="list-style-type: none"> • The highest priority would be to gather and remove wild horses residing outside the WHT and in areas where resource damage is occurring due to overpopulation. • The second priority would be to gather and remove animals as necessary to achieve and maintain AML. <p><input type="checkbox"/> Once AML is achieved, schedule gathers to maintain population size within AML as needed.</p> <p><input type="checkbox"/> Apply the one-year or 22-month (PZP-22) Porcine Zona Pellucida (PZP) agent:</p> <ul style="list-style-type: none"> • For maximum effectiveness, administer PZP-22 during the winter (November–February). • If possible, capture 80-100 percent of the actual population in order to apply PZP-22 to 70-90 percent of the breeding-age mares.
<p>B. <u>Herd Sex Ratio</u></p> <p>Achieve and maintain a sex ratio of 50/50 males/females unless the above management actions do not effectively slow population growth rates by a minimum of 5% per year.</p>	<p>Monitor post-gather results.</p>	<p><input type="checkbox"/> As needed, during gather operations, release small numbers of captured wild horses back to the range in order to achieve and maintain a ratio of 50/50 males/females.</p> <p><input type="checkbox"/> If needed, further adjust sex ratios to slightly favor males (up to 60/40 males/females) to assist in slowing population growth.</p>

Management Objective(s)	Monitoring Objective(s)	Implementation Objective(s)
C. <u>Herd Age Distribution</u> Manage to maintain age distribution normally found in a herd over time.	Monitor post-gather results.	<input type="checkbox"/> As needed, during gather operations, release small numbers of captured wild horses back to the range in order to achieve and maintain a more normal age distribution over time: <ul style="list-style-type: none"> • Young Age Class (Age 0-5): 10-25% • Middle Age Class (Age 6-15): 50-80% • Old Age Class (Age 16+): 10-25% <input type="checkbox"/> Release older animals back to the WHT during gathers to minimize the stress that can result from transportation and handling.
D. <u>Genetic Diversity</u> Manage for an acceptable level of genetic diversity, i.e., observed heterozygosity (Ho) values of 0.66 for DNA-based (hair) samples.	Establish baseline genetic diversity by sampling a portion of the herd during the first gather and removal operation conducted following completion of the TMP. Collect further samples at a minimum of every other gather (e.g., every 8-10 years) to detect any change in genetic diversity from the baseline.	If Ho falls one standard deviation below the mean values outlined above, the following management actions would be implemented: maximizing the number of breeding age wild horses (animals aged 6-10 years) within the herd, adjusting the sex ratio in favor of males to increase the number of harems and effective breeding males, and releasing 1-2 young mares from similar habitats every generation (about 10 years).
F. <u>Ensure Herd Health</u> Ensure the herd is managed to maintain a self-sustaining population of healthy animals.	Observe animal condition as part of routine range and riparian monitoring (Henneke Body Condition Method).	<input type="checkbox"/> Individuals specifically authorized by the Forest Supervisor will humanely euthanize any severely injured or sick animals. <input type="checkbox"/> Document all activities pertaining to protection, management and control of wild horses.
Habitat Management		

Management Objective(s)	Monitoring Objective(s)	Implementation Objective(s)
<p>E. Range and Riparian Health</p> <p>Objective 1. Manage the wild horse population in a thriving natural ecological balance with the land's productive capacity and other multiple uses. Facilitate proper grazing management by maintaining and/or reconstructing existing infrastructure when needed.</p> <p>Objective 2. Limit utilization by all herbivores to the following:</p> <ol style="list-style-type: none"> 30% on rangelands in unsatisfactory condition; 50% on rangelands in satisfactory condition; 30-40% on meadows in early seral status; also retain a 6-inch stubble height; ensure \leq 10% bare soil; and \leq 20% use on shrubs. 	<p>Continue annual resource monitoring:</p> <ul style="list-style-type: none"> Monitor key wild horse use areas prior to livestock turnout. Monitor total herbivore use within established key areas (Landscape Appearance Method) at the end of the livestock grazing season. Locate any additional key areas that may be necessary and monitor total herbivore use within those areas. Monitor utilization, stubble height, bare soil (alteration) and use on shrubs (if applicable) of key springs, seeps and meadows annually using methods outlined in the MDF 2008 Implementation Monitoring Guide. 	<ul style="list-style-type: none"> <input type="checkbox"/> Conduct gathers as needed to maintain wild horse population size within the AML. <input type="checkbox"/> When monitoring and other data and information indicates the AML may no longer be appropriate, complete an in-depth analysis to determine if the AML is still appropriate or needs to be adjusted (either up or down).

Management Objective(s)	Monitoring Objective(s)	Implementation Objective(s)
<p>F. <u>Habitat Improvements</u></p> <p>Objective 1. Maintain wild horses within the established WHT by ensuring existing boundary fences are maintained to standards, or reconstructed when necessary.</p> <p>Objective 2. Remove potential hazards to wild free-roaming horses in the WHT by removing old, historic and nonfunctional fences.</p> <p>Objective 3. Once AML has been achieved and maintained for two consecutive years, evaluate the condition of springs, seeps and meadows in the Emigrant Springs-Pine Springs areas.</p> <p>Objective 4. Encourage free-roaming behavior.</p>	<p>Monitor range improvement maintenance annually prior to livestock turnout.</p>	<ul style="list-style-type: none"> <input type="checkbox"/> To provide for seasonal movement of wild free-roaming horses and burros, no new pasture division fences would be constructed within the WHT. The use of snow fence or other means to improve visibility of existing fences would be considered in concentration areas. <input type="checkbox"/> Pending additional site-specific environmental analysis: <ul style="list-style-type: none"> • Propose reconstruction of fourteen (14) miles of existing boundary fence within the next five years: <ul style="list-style-type: none"> ○ 5 miles of fence between Emigrant and Big Sage. ○ 8 miles of fence between Black Rock and Avanzino. • Propose reconstruction of a 100 yard section of the boundary fence between Black Rock and Avanzino on or before September 30, 2014. Consider placing snow fence along this section to increase its visibility to wild horses. • Propose reconstruction of the Crowder Mountain, Dead Horse, Emigrant Springs and Lauer Reservoir fences within the next five years. <input type="checkbox"/> If springs, seeps and meadows in the Emigrant Springs-Pine Springs areas have not substantially improved in condition, consider additional management actions such as construction of additional riparian pasture fences and the development of off-site water pending additional site-specific environmental analysis. <input type="checkbox"/> Construct wide gates in heavily traveled horse use areas to encourage free-roaming behavior and improve distribution of wild horses in portions of the WHT.

3.2.3 Alternative 3 (Enhance Wild Horse Management)

Under Alternative 3 management of wild horses and their habitat would be the same as described in Alternative 2 (Proposed Action), with the exception that additional management actions would be taken to enhance future wild horse management and assist in slowing population growth.

Population Management

- ☐ Gathers to remove excess wild horses would be conducted only in those areas within the WHT where monitoring indicates:
 - Resource conditions have deteriorated due to wild horse overpopulation;
 - Resource conditions have deteriorated due to concentrated use by wild horses;
 - In areas where wild horses are permanently residing outside the WHT.
- ☐ Wild horses would be encouraged to expand into areas where little or no use is presently occurring.
- ☐ Gelded animals would be placed in areas within the WHT with the necessary habitat components, but where no or few wild horses presently exist. Such placement of gelded animals will be done only after it is determined Forest Plan objectives are being met in the specific area.

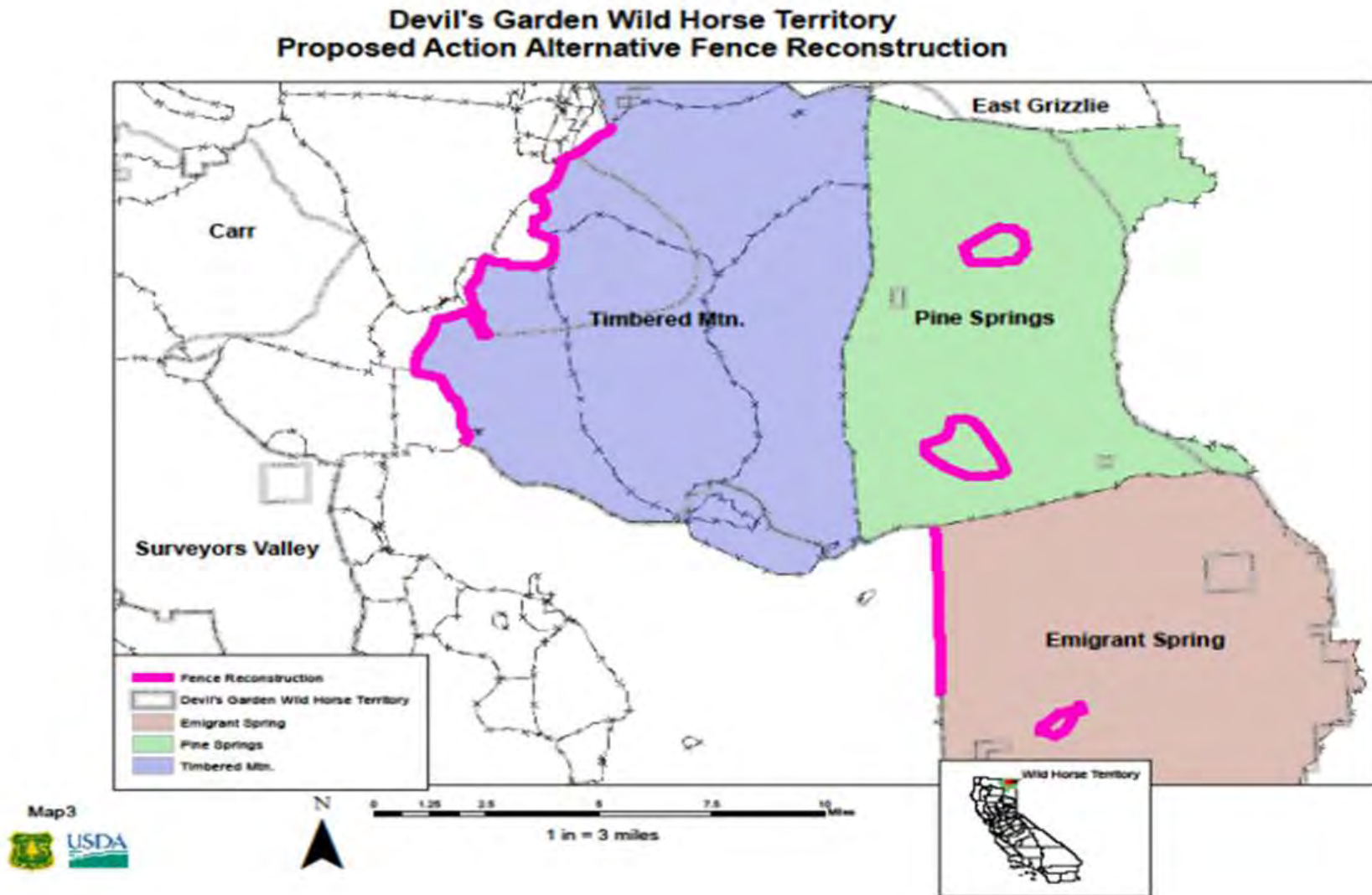
Habitat Management

- ☐ Management actions would be taken to encourage free-roaming behavior, including the removal of approximately 30 miles of existing fence.
- ☐ Water would be developed in areas such as Mowitz or Timbered Mountain that are not currently well watered.

Table 5: Alternative 3 in TMP Format

Management Objective(s)	Monitoring Objective(s)	Implementation Objective(s)
<i>Same as the Proposed Action, with the exception that:</i>		
Population Management		
G. <u>Control Population Size</u> Conduct gathers to remove excess wild horses to reduce impacts in areas where resource deterioration is occurring.	Conduct an aerial inventory about every 3 years to estimate population size and determine the average annual growth rate. Use scientifically-based methods and procedures to produce a reliable estimate of wild horse population numbers.	<input type="checkbox"/> Conduct gathers to remove excess wild horses only in those areas within the WHT where monitoring indicates: <input type="checkbox"/> Resource conditions have deteriorated due to wild horse overpopulation; <input type="checkbox"/> Resource conditions have deteriorated due to concentrated use by wild horses; <input type="checkbox"/> In areas where wild horses are permanently residing outside the WHT.
Habitat Management		
H. <u>Habitat Improvements</u> Encourage free-roaming behavior.	Monitor wild horse numbers and use patterns post- implementation.	<input type="checkbox"/> Remove approximately 30 miles of existing fence. <input type="checkbox"/> Develop water in areas such as Mowitz or Timbered Mountain that are not currently well watered.
I. <u>Improve Wild Horse Distribution</u> Encourage wild horses to expand into areas of the WHT where little/no use presently occurs (areas where year-round water is the limiting habitat component).	Monitor/track the development of water in areas such as Mowitz or Timbered Mountain that are currently not well watered.	Once adequate year-round water is developed, place gelded animals in areas within the WHT with the necessary habitat (forage, cover, space), but where no or few animals presently exist.

Figure 3: Devil's Garden Wild Horse Territory Proposed Action Alternative Fence Reconstruction



3.2.4 Alternative 4 (Sustain Current Wild Horse Numbers)

Under this alternative, AML would be established as a population range of 700-900 (average of 800) wild horses. The AML upper limit would be equivalent to the number of wild horses currently present in the WHT. Authorized livestock use would be adjusted, as needed, to provide additional forage for use by wild horses and avoid further deterioration of the range. Approximately 50 miles of existing fence would be removed to provide greater opportunity for free-roaming behavior. Fertility control (one year or 22-month PZP agents) would be applied to slow population growth. Helicopter-assisted gathers would be conducted to remove excess wild horses residing outside the WHT. Within the WHT, annual bait trap gathers would be conducted to maintain wild horse population size within the AML range. The Forest Service would be designated as the lead agency responsible for all wild horse management actions within the WHT and a TMP would be developed and implemented as described below and in table-6.

Population Management

- ☐ Helicopter gathers to remove excess wild horses that are residing outside the WHT would begin as early as October 2013.
- ☐ Within the WHT, gathers and removals to maintain wild horse population size within the AML (700-900 animals) would be conducted by bait trapping.
- ☐ The one-year Porcine Zona Pellucida (PZP) agent would be remotely applied (through darting). The 22-month PZP would be applied to mares during bait trap operations. Treated mares would then be released back to the range. The use of PZP would be under an investigational exemption held by the Humane Society of the United States, as applicable, and would be administered in accordance with the Standard Operating Procedures (Appendix E).

Habitat Management

- ☐ Current authorized livestock grazing use would be adjusted, as needed, to make more forage available for use by wild horses and avoid a deterioration of the range. Adjustments would include reduced numbers, season, or total removal and would be made when monitoring and other available data and information indicates Forest Plan standards and guidelines are not being met.
- ☐ Approximately 50 miles of existing fence would be removed to provide increased opportunity for free-roaming behavior. Fences would be removed as livestock grazing use is adjusted.
- ☐ Existing stock water developments would not be maintained or reconstructed.

Table 6: Alternative 4 in TMP Format

Management Objective(s)	Monitoring Objective(s)	Implementation Objective(s)
Population Management		
A. Control Population Size Objective 1. Comply with the 1971 WFRHBA to limit the management of wild horses to their known territorial limits. Objective 2. Conduct gathers to remove wild horse numbers as needed to maintain wild horse population size within the AML range of 700-900 animals. Objective 3. Slow population growth.	Conduct an aerial inventory about every 3 years to estimate population size and determine the average annual growth rate. Use scientifically-based methods and procedures to produce a reliable estimate of wild horse population numbers.	<input type="checkbox"/> Conduct helicopter-assisted gathers to remove excess wild horses that are residing outside the WHT. <input type="checkbox"/> Within the WHT, conduct bait trap gathers to maintain wild horse population size within a range of 700-900 animals. <input type="checkbox"/> Apply PZP (one-year or 22-month) to slow population growth.
B. Genetic Diversity Manage for an acceptable level of genetic diversity, i.e., observed heterozygosity (H_o) values of 0.66 for DNA-based (hair) samples.	Establish baseline genetic diversity by sampling a portion of the herd during the first gather and removal operation conducted following completion of the TMP. Collect further samples at a minimum of every other gather (e.g., every 8-10 years) to detect any change in genetic diversity from the baseline.	If H_o falls one standard deviation below the mean values outlined above, 1-2 young mares from similar habitats would be released every generation (about 10 years).
Habitat Management		
C. Maintain Land Health Objective 1. Adjust authorized livestock use, as needed, to provide additional forage for use by wild horses and avoid a deterioration of the range. Objective 2. Limit utilization by all herbivores to the following: a. 30% on rangelands in unsatisfactory condition; b. 50% on rangelands in satisfactory condition; c. 30-40% on meadows in early seral status; also retain a 6-inch stubble height; ensure $\leq 10\%$ bare soil; and $\leq 20\%$ use on shrubs.	Continue annual resource monitoring: <ul style="list-style-type: none"> • Monitor key wild horse use areas prior to livestock turnout. • Monitor total herbivore use within established key areas (Landscape Appearance Method) at the end of the livestock grazing season. • Locate any additional key areas that may be necessary and monitor total herbivore use within those areas. • Monitor utilization, stubble height, bare soil (alteration) and use on shrubs (if applicable) of key springs, seeps and meadows annually using methods outlined in the MDF 2008 Implementation Monitoring Guide. 	<input type="checkbox"/> Adjust authorized livestock use within the WHT when monitoring indicates: <ul style="list-style-type: none"> • Resource conditions have deteriorated due to wild horse overpopulation; or • Resource conditions have deteriorated due to concentrated use by wild horses. <input type="checkbox"/> Adjustments would include reduced numbers, season, or total removal.
D. Habitat Improvements Objective 1. Encourage free-roaming behavior. Objective 2. Manage the herd at the minimum feasible level of management necessary to meet Forest Plan standards and attain desired conditions.	Monitor wild horse numbers and use patterns post-implementation.	<input type="checkbox"/> As livestock grazing use is adjusted: <ul style="list-style-type: none"> • Remove about 50 miles of existing fence. • Do not maintain or reconstruct existing water developments.

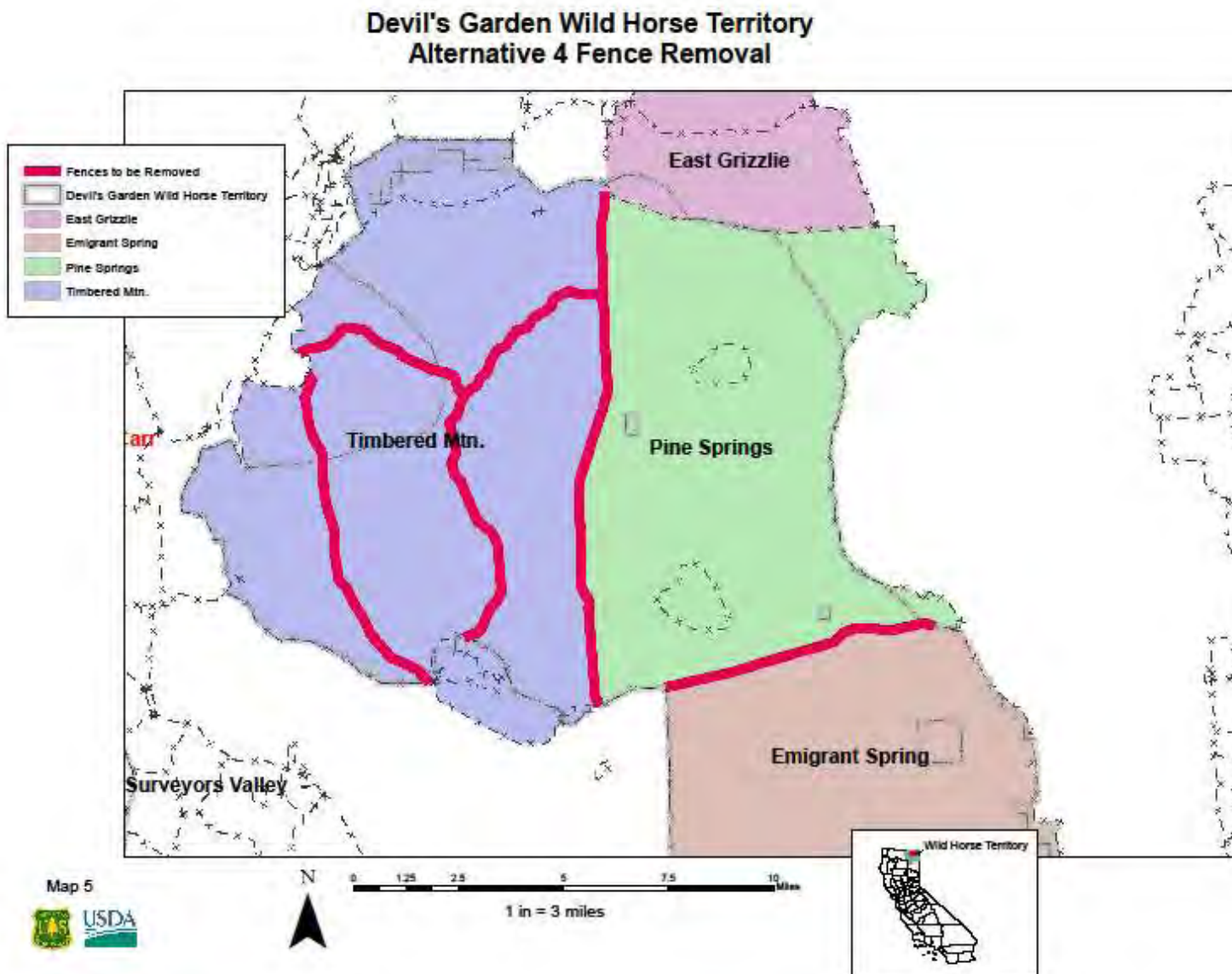


Figure 4: Alternative 4 Fenced Removals

3.3 Mitigation Measures Common to All Alternatives and Suggested Monitoring

Proven mitigation and monitoring are incorporated into all the alternatives through the Standard Operating Procedures (SOPs) which have been developed over time. These SOPs represent the “best methods” for reducing impacts associated with gathering, handling, transportation, herd data collections, and application and monitoring of fertility control. Additional mitigation and monitoring identified as a result of this site-specific environmental analysis is described below.

The Devil's Garden Plateau WHT will be monitored annually. Management may be adjusted when monitoring data and other information indicates a need. In addition to monitoring, evaluations will be completed, as needed, based on the results of annual evaluations. Monitoring objectives are outlined in the Monitoring Plan. Monitoring is designed to answer two primary questions:

“Did we do what we said we were going to do?”
“Was what we did effective in meeting/moving toward our objectives?”

The objective for the long-term evaluation is to determine:

“Are our objective(s) still current...or do they need to be modified?”
“Is our management on track...or do we need to make some changes?”

Significant management changes needed as a result of annual or long-term evaluations may require appropriate NEPA analysis and documentation prior to implementation.

3.3.1 Heritage Resources

Mitigation

A map showing the placement of all existing water sources and salt licks was supplied to the Heritage Resource Program Manager for review. Certain locations were selected for active monitoring. The monitoring objective was to evaluate these sites to determine whether there were any negative impacts due to the current wild horse population. Other proposed actions with wild horse management, such as horse gather corral locations, are subject to a case-by-case review for Section 106 compliance needs and documentation.

As per the Modoc National Forest LRMP archaeological sites should be evaluated for eligibility to the National Register of Historic Places. The determination of eligibility (DOE) is a necessary step in developing reasonable management options and opportunities to facilitate other resource needs. If monitoring reveals on-going negative or adverse effects on archaeological sites, then the nature of the offending action needs to be identified and modified or eliminated. This may require a DOE of the affected site and consultation with the SHPO and the associated tribal entity to develop a management plan for the site.

Monitoring

The archaeological sites within the WHT should be rated by known or anticipated level of significance and susceptibility to wild horse disturbance. The highest rated sites (“priority heritage assets”) will be monitored on a five-year cycle. Additionally, random monitoring of locations likely to contain archaeological sites coinciding with locations of high wild horse concentration/use should be undertaken. At least five locations within each home range should be examined each year.

3.3.2 Noxious Weeds

Mitigation

The following mitigation measures will be implemented to reduce the risk of noxious weed establishment and spread. These mitigations are in compliance with the Modoc National Forest Integrated Weed Management Strategy (USDA Forest Service, 2005).

- Clean vehicles, helicopters, horse traps, equipment, and shoes before entering National Forest System lands, so that there are no weed pieces nor mud which could carry weed seeds onto the project site.
- Hay used as bait or feed will be certified weed-free hay.

Monitoring

Trap and holding facilities sites will be monitored the spring following their use to determine if there are any new infestations of noxious weeds. If noxious weeds are detected, they will be treated to prevent their establishment and expansion.

3.4 Comparison of Alternatives

Table 7: Alternative Comparisons

Item	Alternative 1 – No Action	Alternative 2 – Proposed Action	Alternative 3	Alternative 4
Potential Impacts to Individual Wild Horses, Family Bands, and the Herd				
Herd Size (AML)	275-335	206-402		700-900
Sex Ratio	43/57 males to females	50/50 males to females unless annual population growth is not reduced by at least 5%. Then sex ratios would be adjusted to slightly favor males.		50/50 males/females
Age Distribution	Maintain existing (25/52/16/5 young to old).	Adjust to achieve a more natural age distribution over time (10-25/50-80/10-25 young to old).		TBD
Genetic Diversity	Baseline not established.	Establish baseline and re-sample at least every other gather to detect any change from the baseline.		
Average Annual Rate of Population Growth	25%	15.6%	15.6%	16.3%
Body Condition	Observe as part of routine range and riparian monitoring.			
Primary Gather Method(s)	Helicopter assisted capture and removal and bait and/or water trapping.			Bait/water trapping.
Standard Operating Procedures	Strict adherence to the Standard Operating Procedures outlined in the most current Gather Contract(s).			
Gather Frequency to Achieve AML/Projected Removal Numbers	Consecutive helicopter-assisted gathers would begin as soon as October 2013.			Helicopter-assisted capture/removal of excess horses residing outside the WHT would begin as soon as October 2013.
Gather Frequency Once AML is Achieved/Projected Removal Numbers	Annually to capture and remove 60-90 wild horses.	Every 4 or more years, as needed.		Annually to capture 200-250 horses and apply fertility control to mares.
Target Gather Period	July 1-February 29	July 1-February 29. When possible, schedule helicopter-assisted capture and removal operations for late September through October.		Bait trapping operations would take place year-round depending on ground conditions.
Peak Foaling Period	Mid-April through Mid-May (no helicopter-assisted gathers to remove excess wild horses would be conducted within the 6 weeks before or the 6 weeks following this period).			

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Item	Alternative 1 – No Action	Alternative 2 – Proposed Action	Alternative 3	Alternative 4
Removal/Release Criteria	None	As needed during capture operations, release a small number of captured wild horses back to the range to achieve a more normal age distribution and sex ratio.		None
Fertility Control or Other Population Suppression Methods	None	Once AML is achieved, apply the one-year or 22-month PZP agent.		One year or 22-month PZP would be applied either remotely or through injection on an annual basis.
Capture and Handling Stress	Annually	Every 4 or more years.		Annually
Herd Social Structure	Annual disruption of a portion of the bands.	Minimal disruption every 4-5 years.	Minimal disruption every 4-5 years.	Annual disruption of a portion of the bands.
Potential for Wild Horses to Emigrate Outside the WHT	Low	Low	Low	Moderate to High
Year-Round Water Availability	Water availability would remain unchanged.	Construction of enclosure fences and development of off-site water would be considered, if needed, pending additional site-specific environmental analysis.	Additional water would be developed in areas such as Mowitz or Timbered Mountain that are not currently well watered, pending additional site-specific environmental analysis.	Existing water developments would not be maintained or reconstructed.
Free Roaming Behavior	Maintain existing improvements. Do not replace when they have outlived their useful life (no longer needed to meet objectives).	No new pasture division fences would be reconstructed, but existing fences would be maintained and/or reconstructed. Wide gates would be constructed in heavily traveled areas to encourage free-roaming behavior and improve distribution of wild horses in portions of the WHT.	30 miles of existing fence would be removed to provide greater opportunity for free-roaming behavior and improve distribution of wild horses.	As livestock grazing use is adjusted, 50 miles of existing fence would be removed to provide greater opportunity for free-roaming behavior and improved wild horse distribution. Existing stockwater developments would not be maintained or reconstructed.
Potential Impacts to Natural Resources				
Soils/ Vegetation (Uplands and Riparian/Wetlands)	Achieving and maintaining wild horse population size within the AML would be expected to result in attainment of Forest Plan utilization standards and the desired conditions.		Same as Alternative 2, with the exception that the removal of 30 miles of existing fence would increase the potential for Forest	Year-round and long-term use by 900 wild horses, coupled with the removal of 50 miles of fence would increase the potential for Forest Plan utilization standards and

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Item	Alternative 1 – No Action	Alternative 2 – Proposed Action	Alternative 3	Alternative 4
			Plan utilization standards and desired conditions to not be met, even with livestock grazing adjustments.	desired conditions to not be met, even with livestock grazing adjustments.
Potential Impacts to Wildlife, Migratory Birds, and Threatened, Endangered and Special Status Species (TES) and Their Habitat				
Changes in Habitat	A reduction in the horse population would reduce grazing impacts within watersheds, riparian areas, and on native grass/forb communities in upland ecosystems.	A reduction in the horse population plus fertility control measures would lead to a relatively greater reduction in grazing impacts than Alternative 1.	Same as Alternative 2, but with less effective control over grazing patterns.	Adverse impacts caused by relatively high horse populations within watersheds, riparian areas, and on native grass/forb communities in upland ecosystems would continue.
Competition Factors	A reduction in the horse population would reduce competition with other ungulates	A reduction in the horse population plus fertility control measures would lead to a relatively greater reduction in competition with other ungulates than Alternative 1.	Same as Alternative 2, but with less effective control over grazing patterns.	Competition resulting from the relatively high horse population would continue.
Botany (Sensitive Plants)	No impacts to Sensitive plant species and populations.	No impacts to Sensitive plant	No impacts to Sensitive plant species.	May impact individuals or habitat, but will not likely contribute to a trend toward Federal listing, or cause a loss of viability for Region 5 Sensitive species.
Potential Impacts to Heritage Resources				
Changes to Site Stability and Integrity	Wild horses would be managed at a level of 375-335 animals. As compared to current numbers, this would reduce negative impacts to site stability and integrity.	Fewer wild horses would be managed than are currently present. However, year-round use by 206-402 animals would result in increased negative impacts to site stability and integrity.	Same as Alternative 2, except: the removal of 30 miles of existing fence would be expected to result in less effective livestock grazing management than at present. This would result in increased negative impacts to site stability and integrity.	Up to 900 wild horses would use area on a year-round basis. Although livestock grazing would be reduced to provide additional forage for wild horses, year-round horse use (especially during the wet season) would result in increased negative effects to site stability and integrity.
Potential Impacts to Social and Economic Factors				
Livestock Grazing	Once AML is attained, less competition between livestock and	Ease of management would be	Ease of management would be reduced with the	A permanent loss of an estimated 11,594 AUMs of livestock forage would

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Item	Alternative 1 – No Action	Alternative 2 – Proposed Action	Alternative 3	Alternative 4
	wild horses for the available forage would be expected. Fence maintenance costs would also be expected to decrease.	maintained but an estimated 1,390 AUMs of livestock forage would be lost due to the increase in authorized wild horse use (AML).	removal of 30 miles of existing fence. The use of an estimated 4,424 AUMs of livestock forage would be lost due to the increase in the AML and fence removal.	be expected due to the increase in the AML and the removal of 50 miles of fence.
Wild Horse Viewing	Once AML is attained (275-335 animals) there would be fewer wild horses available for potential viewing.	The increased AML (up to 402 wild horses) would maintain the opportunity for wild horse viewing.	Removal of 30 miles of fence would allow wild horses to potentially roam further than at present allowing for improved viewing opportunities.	Removal of 50 miles of fence and establishing an AML of 700-900 wild horses would result in the greatest probability (or opportunity) for the public to view wild horses.
Hunting Opportunity	Better hunting opportunities and hunter success rate would result with higher quality wildlife habitat.	Slightly higher hunter success rate would be expected with higher quality wildlife habitat.	The removal of 30 miles of fence would result in greater potential impacts to upland habitats and riparian resources, resulting in reduced hunting opportunities and lower hunting success rates.	Mule deer numbers would be unlikely to change and hunter success rates would remain low.
Watchable Wildlife	Fewer negative impacts to watchable wildlife and viewing areas and a more natural setting would result once AML is attained. Slight improvement in recreational fisheries would result.	Improvement in riparian/wetland vegetation, would improve wildlife viewing opportunities. Slight increase in recreational fisheries and a more natural setting would occur.	A less natural setting would result with the removal of 30 miles of fence. Increased alteration to riparian and upland habitats would result in reduced opportunities for wildlife viewing and recreational fishing.	The removal of 50 miles of fence would result in increased potential for resource impacts and a less natural setting. There would be increased risk to riparian seeps and springs from year-round wild horse use which would lead to reduced opportunity for bird-watching and watchable wildlife, and the highest potential impacts to recreational fishing.
Economic Impact to Community	A beneficial effect to the local economy would be expected once AML is achieved and maintained.	The conversion of 1,390 AUMs from livestock to wild horse forage would result in a direct loss of \$132,050 in receipts to the local economy.	The conversion of 4,424 AUMs from livestock to wild horse forage would result in a direct loss of \$420, 280 in receipts to the local economy.	The conversion of 11,594 AUMs from livestock to wild horse forage would result in a direct loss of \$1,101,430 in receipts to the local economy.
Economic Impact to	Attainment of AML	An additional loss	An additional loss of	An additional loss of

Item	Alternative 1 – No Action	Alternative 2 – Proposed Action	Alternative 3	Alternative 4
Livestock Operators	would result in more forage available for use by livestock and a positive effect on individual ranch operations.	of 1,946 AUMs and \$184,870 in receipts to the local economy would result as ranchers adjust livestock numbers to compensate for reductions in their permitted livestock use.	6,194 AUMs and \$588,392 in receipts to the local economy would result as ranchers adjust livestock numbers to compensate for reductions in their permitted livestock use.	16,231 AUMs and \$1,542,000 in receipts to the local economy would result as ranchers adjust their livestock numbers to compensate for reductions in their permitted livestock use.
Employment	There would be some potential for additional income or job opportunities.	The cumulative effect would be a loss of 3,336 AUMs of livestock forage and an estimated 3 jobs.	The cumulative effect would be the loss of a total of 10,618 AUMs of livestock forage and an estimated 10 jobs.	The cumulative effect would be the loss of a total of 27,825 AUMs of livestock forage and an estimated 26 jobs.
Environmental Justice	As above.	A one-time beneficial effect for temporary labor to reconstruct 14 miles of fence would not offset the loss of 3 jobs.	The creation of temporary jobs to remove 30 miles of existing fence would not offset the loss of 10 jobs.	The creation of temporary jobs to remove 50 miles of existing fence would not offset the loss of more than 26 jobs.

3.5 Alternatives Considered But Eliminated From Further Analysis

The following alternatives were suggested during scoping but were eliminated from detailed analysis as described below:

- ☐ *Reserve Design.* Suggested was managing wild horses in a “Reserve Design”. This method would include stopping the eradication of predators, employing natural barriers to limit population expansion, and allowing density factors to limit wild horse populations. This management approach is conjectural and is not supported by scientific or factual evidence. Additionally, the Devil's Garden Plateau is relatively flat and no suitable natural barriers exist within the herd's known territorial limits. This approach would be expected to result in wild horses eventually expanding hundreds of miles beyond the habitat they occupied in 1971 which is specifically prohibited in the 1971 WFRHBA. Wild horses have already expanded outside the WHT into areas not designated for their use. Mountain lions are already protected from hunting within the State of California (their management is under the jurisdiction of the California Department of Fish and Game). Resource monitoring indicates the presence of mountain lions, particularly in the Pine Springs and Timbered Mountain areas. However, field (ground) observations during summer 2012 indicate a foal crop of 25-26% indicating that mountain lions are not having a measurable influence on wild horse numbers at this time.
- ☐ *Increase Water Sources and Other Range Improvements in order to Increase the Current Established Appropriate Management Levels.* The action alternatives (2-4) contain these elements to varying degrees. Therefore, no further consideration was given to this alternative.

- ❑ *Promote Ecotourism for Wild Horse Viewing and Give the Proceeds to Livestock Operators to Convert Livestock AUMs to Wild Horses.* This action would require a significant amendment to the Modoc National Forest Land and Resource Management Plan as it would require a change in resource allocations and is outside the scope of this environmental analysis. Eco-sanctuaries are intended to provide habitat to sustain excess wild horses that have been removed from the range. Implementation of this approach would require the capture and removal of all of the wild horses from the Devil's Garden WHT as the horses held in eco-sanctuaries must be separated from wild herds to allow for separate management and prevent reproduction. Given the terrain, varying density of tree cover and other area-specific factors, it would be unlikely this would be accomplished.
- ❑ *Collect More Resource Data on the Devil's Garden WHT by Using Partnerships with Universities, Non-Government Agencies and Volunteers.* The Forest Service eliminated this alternative from further consideration as it assumes there is not sufficient data available to evaluate whether or not the existing AML is still valid or needs to be adjusted (either up or down). Monitoring data has been collected on an ongoing basis since the Forest Plan was issued (1991). Additional comprehensive monitoring was completed in 2012 using approved methods and procedures.
- ❑ *Eliminate Livestock Grazing.* This alternative would result in the permanent removal of all livestock grazing use within the WHT. This alternative was eliminated from detailed study because this issue was previously decided. Total removal of livestock grazing use would not be in conformance with the decision made in the 1991 Forest Plan to make forage available for use by **livestock**, wildlife and wild horses (emphasis added).
- ❑ *Utilize SpayVac™ or Gonacon™ to Suppress Population Growth.* SpayVac™ is an experimental fertility control vaccine. Research into the use of SpayVac™ in wild horse mares is currently ongoing. However, the product is not commercially available and there is no regulatory approval through the EPA or FDA that would provide for its use on a population-management basis. GonaCon™ was approved by EPA on February 13, 2013 and has proven to be effective in reducing foaling rates for multiple years. As data is currently limited from which to assess the effects of GonaCon™ in wild horse populations on the range, it was dismissed from detailed study in this environmental analysis, however, may be considered in the future, pending supplemental environmental analysis.
- ❑ *Use Tools such as Spaying Mares, Vasectomizing Studs, or IUDs.* Spaying mares involves abdominal surgery, can be risky, and requires good post-operative care. Similarly, performing vasectomies on stallions is not a widely practiced procedure within veterinary medicine. These tools would be considered in the future if safe, effective and humane surgical methods and post-operative care procedures can be perfected for use on wild horses. The use of coil-type intrauterine devices (IUDs) and glass balls or marbles as IUDs during pilot studies have failed to demonstrate a long-lasting effect on conception in mares. For these reasons, this alternative was dismissed from detailed study.

4.0 ENVIRONMENTAL CONSEQUENCES

This section summarizes the physical, biological and social and economic environments of the affected project area and the potential effects to those environments that would result with implementation of the Proposed Action Alternative and the other alternatives considered in detail. It also presents the scientific and analytical basis for the comparison of alternatives presented in the previous chapter.

4.1 Brief Description of the General Environment

The Devil's Garden WHT is located on a large plateau within the sage steppe ecosystem. The majority of the area is relatively flat. Elevations are mostly below 5,200 feet above sea level (ASL). The Boles-Mowitz-Surveyors Valley area is about 4,600-4,900 feet ASL, while the Emigrant-Pine Springs-Timbered Mountain area is about 4,700-5,300 feet ASL.

Sagebrush, bitterbrush and perennial grasses are the major vegetation species. Western juniper occurs throughout the area and has markedly increased in density over the past one hundred years, impacting ecological condition. Ephemeral lakebeds are scattered throughout the area and provide important habitat for waterfowl. Scattered springs and seeps provide forage, water and habitat for livestock, wild horses and a host of wildlife species. In some areas, primarily in the northern portions of the WHT, there are stands of east side pine, with bitterbrush, mountain mahogany with perennial grass understories. Some areas within the WHT have become monocultures of non-native grass species including cheatgrass and medusahead. The largest of these occur on the east side of the WHT.

In addition to providing habitat for wild horses, other uses include timber harvest, livestock grazing, wood cutting, hunting, fishing, camping and day use. Big game animals, including mule deer, antelope, and a growing elk population (currently estimated at some 600 animals), occupy the area. The area also provides habitat for many game and non-game birds. Predators including coyotes and mountain lions occur throughout the area.

4.2 Environmental Consequences

4.2.1 Direct and Indirect Effects

Direct effects are defined as effects caused by the action and occurring at the same time and place. Indirect effects are defined as effects caused by the action but occurring later in time or further removed in distance. The proposed action and alternatives would potentially generate direct and indirect effects. These are described in detail below.

4.2.2 Cumulative Effects

Cumulative effects result from the incremental impact of the action when added to other past, present and reasonably foreseeable future actions. These actions are separate from, and not included in, the proposed activities that result in direct and indirect effects. Actions that are included in the cumulative effects analysis varies by resource area because of differing areas of influence both in time and space for different resources. The past, present and reasonably foreseeable future actions that are considered in the analysis for each resource vary depending upon if they have been judged to have an effect on the outcome of the analysis. The past, present, and future activities that are planned or known in the Analysis Area for this project are described below. The Analysis Area includes the grazing allotments in or near the WHT (Figure 3).

Past actions that have occurred within the Analysis Area since the Forest Plan was completed in 1991 are summarized in Table 8.

There are several ongoing and future activities planned or known in the Analysis Area that are not specifically related to the management of the Devil's Garden Plateau wild horses but may contribute to cumulative effects. The need to include these actions in the individual resource analysis is dependent on

the cumulative effects and the duration of effects for each resource. The landowners or managers that are responsible for these actions include the Forest Service, BLM, private landowners and Native American Tribes. These activities include livestock grazing; land exchange involving Forest Service and private land; fence construction and maintenance; water development construction and maintenance; road construction, maintenance and use; firewood gathering; sage steppe restoration projects; and forest management throughout the analysis area.

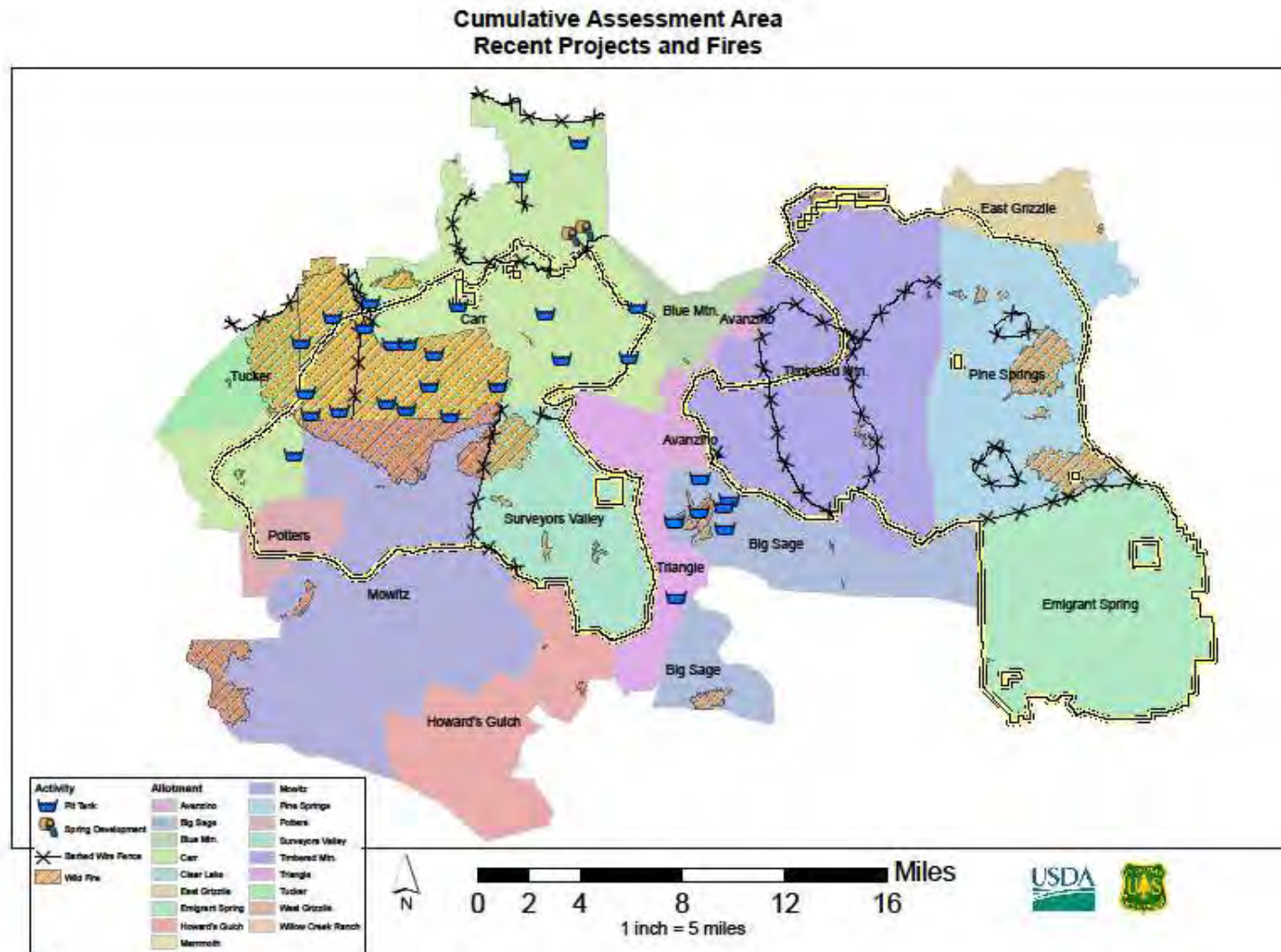


Figure 3: Cumulative Effects Analysis Area

Table 8: Past Actions

Water Development (Number)			
Allotment	Pit Tank	Spring Development	Total
Big Sage	6	0	6
Carr	23	2	25
Triangle	1	0	1
Subtotal			32
Fence Construction (Miles)			
Carr	25.8		25.8
Emigrant Springs	6.6		6.6
Mowitz	8.2		8.2
Pine Springs	9.1		9.1
Surveyors Valley	1.2		1.2
Timbered Mountain	25.0		25.0
Tucker	3.7		3.7
Subtotal			79.6
Wildfire (Acres)			
Big Sage	1,489		1,489
Blue Mountain	17		17
Carr	21,336		21,336
East Grizzlie	30		30
Emigrant Spring	35		35
Howard's Gulch	79		79
Mowitz	10,263		10,263
Pine Springs	5,734		5,734
Surveyors Valley	2,341		2,341
Timbered Mountain	1,211		1,211
Tucker	4,144		4,144
Subtotal			46,679

Livestock Grazing

The Forest Service and the BLM will manage livestock grazing in compliance with the standards and guidelines in their land management plans and grazing permit terms and conditions. These determine the timing, duration, and intensity of grazing.

Land Exchange

The Forest Service and Avanzino Ranch private landowners are considering a possible exchange of federal and privately owned land to improve the area's manageability. At the present time due to the rocky, rough terrain, portions of Forest Service administered lands are included inside the ranch's fenced boundary, while portions of Avanzino Ranch private lands lie outside the boundary. The

exchange would help “block up” Forest Service administered lands making it accessible to the general public.

Fence Construction and Maintenance/Water Development Construction and Maintenance

Private landowners, livestock operators, and Native American Tribes maintain their existing fences on an annual and ongoing basis and their existing water developments on an as needed basis. These fences and water developments are designed to help control and manage livestock use consistent with the standards and guidelines in Forest Service and BLM land use plans or the private landowners or Native American Tribes site-specific management objectives. Other than the fence reconstruction or water development in the Proposed Action, no new fences are known or planned for implementation. Implementation of new construction or reconstruction of existing fences or water developments could not occur on Forest Service and BLM administered lands until site-specific NEPA analysis is completed. Some new fences could be constructed or existing fences rebuilt on private or Tribal lands.

Road Construction, Maintenance or Use

The Pit River Tribe is currently reconstructing 10.6 miles of road to Lauer Reservoir. This road traverses public land administered by the BLM or the Forest Service as well as Tribal lands. Road construction on public lands is in compliance with the terms and conditions of special use permits administered by the respective Federal agencies. No new roads are likely to be constructed by the Forest Service or the BLM because there are no current projects under planning or implementation that would require construction of new permanent roads. However, the use of temporary roads would occur on Forest Service or BLM managed lands for sage steppe restoration or forest management. These roads would involve minimal ground disturbance and would be reclaimed following use (one to three years). Decommissioning of existing permanent roads would also occur on federal lands where appropriate. Some new permanent and temporary roads may be constructed on private lands.

Firewood Gathering

Firewood gathering would continue at various locations in the Analysis Area and would likely remove mature juniper trees in those areas. Firewood gathering would also increase fine fuels and ground cover because the slash is left on site. Cutting of old growth juniper is prohibited under current Forest Service and BLM firewood permits.

Sage Steppe Restoration Projects

Sage steppe restoration projects are designed to remove the juniper which has increased in density throughout the Analysis Area over the past 100-150 years. Increased juniper has resulted in unsatisfactory ecological conditions throughout a substantial portion of the area by reducing the diversity, density, and production of native grasses, shrubs, and forbs. This loss of production has reduced the habitat available for wildlife, wild horses and domestic livestock. Sage steppe restoration projects are guided by the provisions in the April 2008 Sage Steppe Ecosystem Restoration Project Environmental Impact Statement³ and could not occur until site-specific NEPA analysis is completed. Juniper removal projects could also be completed on private lands.

³ This document is available at <http://www.blm.gov/ca/st/en/fo/alturas.html>

The Modoc National Forest Schedule of Proposed Actions (SOPA) lists the Timbered Mountain Sage Steppe restoration project (8,400 acres). The objective of this project is to remove juniper where it has increased in density to improve the health of the sage steppe habitat.

Forest Management

Forest management, primarily by the Forest Service, is expected to continue at its current level. Some resources could have cumulative effects due to forest management within the Analysis Area.

Currently, there are no forest management projects are currently listed in the SOPA for the Modoc National Forest. It is expected, however, that such projects will be planned and implemented in the future. These projects generally involve thinning to improve forest health.

4.3 Botany

4.3.1 Affected Environment

The botanical environment of the wild horse territory is fairly dry. The geology is basalt rock, decomposing into clay soils of variable depth throughout the area. Forested areas feature two types of conifers: eastside yellow pine (*Pinus ponderosa*, *P. jeffreyi*) on the deepest soils, and western juniper (*Juniperus occidentalis*) in places with drier or shallower soils. Mountain mahogany (*Cercocarpus ledifolius*) is intermediate between a shrub and a tree, and usually occurs below conifer canopy.

Rocky areas with very shallow soils and little slope often feature low sagebrush (*Artemisia arbuscula*) as the dominant species, but other sagebrushes (*A. cana*, *A. tridentata* spp.) are also common throughout the project area. Other shrubs, such as bitterbrush (*Purshia tridentata*), rabbittbrush (*Ericameria* spp.), plum (*Prunus* spp.), and manzanita (*Arctostaphylos patula*) also occur in small pockets throughout the area.

Grass species are important components of the project area vegetation, providing forage for use by herbivores (livestock, wildlife, and wild horses). Commonly encountered native grass species are perennial bunchgrasses such as Nevada bluegrass (*Poa secunda*), Idaho fescue (*Festuca idahoensis*), bluebunch wheatgrass (*Elymus spicatus*), needlegrass (*Stipa* spp.), and Great Basin wildrye (*Elymus cinereus*); these native grasses provide most of the nutrition for grazing animals and are also key to ensuring soil stability due to their long, fibrous roots. The bulk of nonnative grass species in the project area are invasive annual grasses such as cheatgrass (*Bromus tectorum*) North Africa grass (*Ventenata dubia*) and Medusahead rye (*Elymus caput-medusae*), which are not particularly nutritious for grazing animals, outcompete native vegetation, and are not effective at preventing soil erosion due to their small, shallow roots. A variety of forbs, mostly native, also grow throughout the project area.

Threatened and Endangered Plant Species and Habitats

Tuctoria greenei is an annual grass which grows in vernal pool habitat (Reeder 2012). As an annual, it depends on seed set to replenish its seed bank for the continued survival of the population.

The main habitat requirement for *Tuctoria greenei* is standing water of sufficient quantity and duration to drown out most competition and provide prolonged inundation, followed by a period of gradual, total desiccation. The plants apparently do not tolerate complete inundation, and therefore prefer the margins of deeper vernal pools (USFWS 2007). Populations can fluctuate dramatically from year to year,

depending on variations in precipitation. Seeds germinate in the spring while under water, but do not send up long, floating leaves like *Orcuttia* (USFWS 2005). The two known Modoc National Forest vernal pools containing *T. greenei* are in sagebrush flats rimmed by juniper and yellow pine. Vernal pool habitats in the Central Valley occur in grasslands, while the only other Modoc Plateau vernal pool with *T. greenei* is surrounded by pine forest (USFWS 2005).

The range of *Tuctoria greenei* is mostly the northern part of the Northeastern Sacramento Valley and Southern Sierra Foothills Vernal Pool Regions, with two other locations in the Solano-Colusa and Modoc Plateau Vernal Pool Regions (USFWS 2005). It is currently known from 46 occurrences, of which 31 are presumed to be extant (CNPS 2012). Two extant occurrences are known on the Modoc National Forest, both within Modoc County; no other occurrences are known within Modoc County.

Tuctoria greenei was listed as Endangered by the USFWS on March 26, 1997, concurrently with *Orcuttia tenuis* and other members of the Orcuttiae grass tribe and two vernal pool herbs. Threats to these species identified in the listing notice include urbanization and agricultural land conversion as primary factors, and competition with non-native plants, highway projects, off-highway vehicle use, incompatible grazing practices, landfill projects, and other human impacts as secondary factors (Rogers 1997). *T. greenei* is also listed by the State of California as rare (CDFG 2012).

Orcuttia tenuis is also an annual grass which grows in vernal pool habitat (Reeder 2012). As an annual, it depends on seed set to replenish its seed bank for continued survival of the population.

The main habitat requirement for *Orcuttia tenuis* is standing water of sufficient quantity and duration to drown out most competition and supply *O. tenuis*' physiological requirements for prolonged inundation, followed by a period of gradual (to total) desiccation. The seeds germinate in the spring while under water, after which the plants send up long, floating leaves. As the pool dries, the plants put out shorter terrestrial leaves, and then flowering stalks. *O. tenuis* is limited to relatively deep vernal pools or vernal pool-type habitat with clay soil. Modoc National Forest pools containing *O. tenuis* may be found in either eastside pine forest or in sagebrush flats. Occurrences in the Central Valley, where the species is more common (although still rare), are in vernal pools within blue oak woodlands or valley grasslands. Since *O. tenuis* generally matures later than other vernal pool annuals, they are often the only vegetation in the vernal pool bed that is still green by mid-summer (Corbin and Schoolcraft 1990).

Orcuttia tenuis is endemic to northern California, with the majority of occurrences in Tehama and Shasta Counties, mostly found on private lands. Its range is mostly the northern part of the Central Valley and western edge of the Modoc Plateau. It is currently known from 101 occurrences, of which 91 are presumed to be extant (CNPS 2012, Modoc National Forest data). There are currently 25 known occurrences of on the Modoc National Forest.

Orcuttia tenuis was listed as Threatened by the USFWS on March 26, 1997, along with *Tuctoria greenei*, other members of the Orcuttiae grass tribe, and two vernal pool herbs, and with the same threats as described for *T. greenei* above (Rogers 1997). *O. tenuis* is also listed by the state of California as endangered (CDFG 2012).

Sensitive Plant Species and Habitats

Vernal pools are unusual habitats and can contain rare plant species. Within the WHT, three Region 5 Sensitive plant species (Table 9) occur: *Mimulus evanescens* (disappearing monkeyflower), *Polygonum polygaloides* ssp. *esotericum* (Modoc knotweed), and *Phacelia inundata*, (playa mesamint). Vernal pools, meadows, reservoirs, and lakes may not always be distinct entities; depressions in topography may

grade from vernal habitat along the edges (standing water in winter to dry in summer) to perennially moist or wet meadows, or perennial standing water, in the center. Many of the vernal pools in the WHT are of this kind. Vernal pool locations within the WHT are shown on Figure 4.

Mimulus evanescens is an annual forb related to snapdragons. It grows in vernal pools that often have basalt rock margins, and are associated with low-density conifer woodlands. Two sites (7 and 8), both located within the eastern home range, are known from within the WHT. Site 7, at Telephone Flat, was last visited by botany staff in 2004, when its site condition was listed as fair. In late July 2012 it was receiving light use from both cattle and horses.⁴ Site 8 was last visited by botany staff in 2005; they described the site condition as good. In early May 2012, light signs of non-recent horse use were found. By late August, however, cattle were present and heavily impacting a non-functioning enclosure containing part of Site 8; concurrent horse use in the vicinity was also noted. According to the recent WHT monitoring data, both known sites of this species inhabit areas whose native vegetative communities are compromised, as indicated by the low densities of native perennial grasses, and the dominating role of invasive plants and the proximity of Medusahead.

Phacelia inundata is an annual forb related to forget-me-nots. It grows in vernal pools usually surrounded by low sagebrush or with a very light scattering of juniper. When site 3, the only known site within the Territory, was first discovered and last visited in 2003, the site was thought to be in very good condition, even though its surroundings had burnt in the Bump Heads wildfire of 1999. Possibly related to this fire, recent vegetation mapping shows a patch of annual grasslands several square miles large to be located just ½ mile south of this occurrence; whether this patch is expanding and poses a threat to Site 3 is not presently known. Nov., 2012 WHT monitoring data was collected within the vicinity of this occurrence (Carr Allotment, Red Lake Pasture).

Polygonum polygaloides ssp. *esotericum* is an annual forb related to buckwheat. It grows in vernal moist areas such as vernal pools and swales Site 1, at Rimrock Valley Res. near the Devils Garden Natural Area, has not been monitored recently by botany staff, but nearby WHT monitoring shows a diversity of native perennial grasses, although invasive grasses and bare ground were also present. In early July 2012, the WHT monitoring crew found evidence of cattle, wild horse, and elk use, and the area heavily trampled. When they last monitored in the vicinity in late September 2012, it was being still being actively utilized by both livestock and wild horses. Sites 20 and 21 appear to be in areas with relatively well-functioning habitats. When these sites were last monitored by botanists in 1993, their site quality was very good; WHT monitoring in early August 2012 nearby both these sites showed light to moderate livestock use and very little wild horse use. Site 28 at Cow Head Lake was listed in very good condition when last visited in 1993, but while monitoring data show the site to still be in an intact plant community, and receiving no wild horse use and only light use by livestock, the surrounding monitoring sites were in an unsatisfactory ecological condition due to a high density of invasive plants and high degree of bare ground.

⁴ Devil's Garden WHT, Resource Monitoring Report, December 2012.

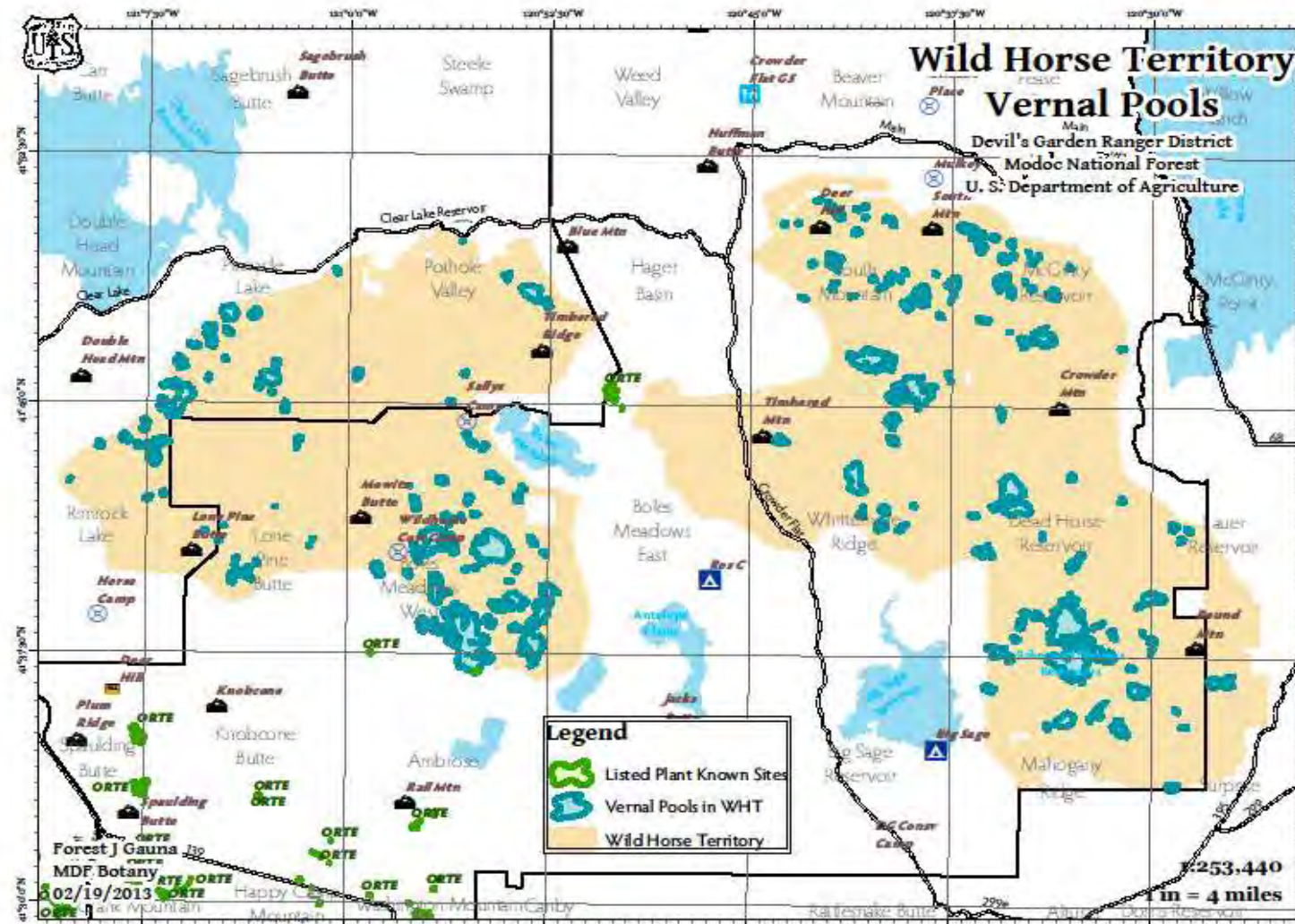


Figure 4: Vernal Pool Habitat within the Devils Garden Plateau WHT

Table 9: Sensitive Plant Species Occurrences within the WHT

Species Name	Occurrence Number	Location	Pedestalling	Forage Grasses	Invasives	Litter & Residual Grasses	Bare Ground
Mimulus evanescens (disappearing monkeyflower)	MDF-MIEV-007	Timbered Mtn. Allot., Cow Head Pasture, Telephone Flat Res.	High	None to Slight	High (Medusahead ½ mi. away)	None to Light.	Light
	MDF-MIEV-008	Emigrant Spring Allot., Lauer Res.	High	Light	High (overlaps with Medusahead)	Light	Light
Phacelia inundata (playa mesamint)	MDF-PHIN3-003	Carr Allot., Red Lake Pasture, dry lake	-	-	High (Medusahead ½ mi. away)	-	-
Polygonum polygaloides ssp. esotericum (Modoc knotweed)	MDF-POPOE-001	Rimrock Valley Res. area	High	Moderate to High	High (Medusahead ¼ mi. away)	Moderate to High	Moderate to High
	MDF-POPOE-020	SE of Dorris Brother's Res.	High	None	Light (Medusahead ⅔ mi. away)	None	None
	MDF-POPOE-021	1¼ mi. W of Cow Head Spr.	High	None to Light	Light (but overlaps with Medusahead)	Slight	None
	MDF-POPOE-028	Cow Head Tank	High	Light	High to Light (overlaps with Medusahead)	Light to High	Slight to High

Noxious Weeds

Medusahead (class C) and three other invasive nonnative species listed as “noxious weeds” by the California Department of Food and Agriculture exist within the WHT. They include the class B listed weed dyer's woad (*Isatis tinctoria*) in diffuse infestations within Carr and Mowitz allotments; the class A weed Scotch thistle (*Onopordum acanthium*) and one site of invasive hoary cress (*Lepidium* sp., class B) in the Emigrant Springs allotment.

Table 10 lists the location of the noxious weed species (except medusahead) known to occur within the WHT.

The known extent of annual grass species and broadleaf noxious weeds across the Devil's Garden WHT are shown on Figure 5 and Figure 6

Table 10: Noxious Weed Species Occurrences within the WHT

Species Name	Occurrence Number	Approximate Location	Years Treated	Size/Population
hoary cress	CACH441226J	Emigrant Spring Allot., Raker and Thomas Res.	2009, '10	0.3 ac.
dyer's woad	ISTI440701M	Potters Allot., Lone Pine Pasture, NW of Lone Pine Butte	2012	3.3 ac.
	ISTI440711A	Potters Allot., Horse Camp Pasture, 1 mi. SW of Lone Pine Butte	-	0.1 ac
	ISTI440802J	Mowitz Allot., 1 ½ mi SW of Mowitz Butte	2011	1 ac.
	ISTI440806C	Potters Allot., Horse Camp Pasture, ¾ mi. NE of Lone Pine Butte	2012	0.1 ac.
	ISTI440806M	Potters Allot., Horse Camp Pasture, ¾ mi. E of Lone Pine Butte	2012	0.2 ac; 50 indiv. in 3 subpop.
	ISTI440808H	Mowitz Allot., 1 mi SSE of Lone Pine Butte	2009	0.1 ac.
	ISTI440811F	Mowitz Allot., 2 mi SW of Mowitz Butte	2011	0.4 ac.; 12 indiv.
	ISTI440811J	Mowitz Allot., 44N10 and 44N11 intersection	2011	0.1 ac.; 20 indiv.
	ISTI440812D	Mowitz Allot., ½ mi S of Mowitz Butte Tank	2009	0.1 ac.; not found in 2012
	ISTI440812J	Mowitz Allot., 1 mi SW of Mowitz Butte Tank	2011	0.1 ac.
	ISTI440816J	Mowitz Allot., NW of Badger Well	2011	0.1 ac.
	ISTI450712I	Carr Allot., Red Lake/Lone Pine Pastures, 1 mi E of Doublehead Lk.	2011	4 indiv.
	ISTI450728X	Carr Allot., Lone Pine Pasture, along OTHB Radar road	-	~40 ac.
	ISTI450736L	Potters Allot., Lone Pine Pasture, 1½ mi. NW of Lone Pine Butte	2012	0.1 ac.; 30 indiv.
	ISTI450736P	Potters Allot., Lone Pine Pasture, 1¼ mi. NW of Lone Pine Butte	-	> 0.1 ac.
	ISTI450831L	Potters Allot., Lone Pine Pasture, 1 mi. N of Lone Pine Butte	2012	0.5 ac. in 2 subpop.
	ISTI450908C	Carr Allot., Pothole Pasture, 46N10, ¾ mi. SSW of Boles Ck.	2009	1 indiv.
	ISTI450908L	Carr Allot., Pothole Pasture, 46N10, 1 ¼ mi SSW of Boles Ck.	2009	4 indiv.
	ISTI450917N	Surveyors Valley Allot., 2 mi. E of Sally's Camp	-	5 indiv.
	ISTI450919X	Mowitz Allot., 46N10, between Mowitz Butte and Boles Ck.	2010	~13 ac.
Scotch thistle	ONAC431201G	Emigrant Spring Allot., Emigrant Spring	1999, 2002, '09, '10	0.3 ac.
	ONAC431202X	Emigrant Spring Allot., Emigrant Spring Res.	2002, '09, '10	1.2 ac.; 700 indiv. in 11 subpop.
	ONAC431307E	Emigrant Spring Allot., Wood Flat Res.	1999, 2000, '02, '10	1.7 ac.; 55 indiv.
	ONAC441235D	Emigrant Spring Allot., S end of Raker and Thomas Res.	2002	0.1 ac.; not found in 2010
	ONAC441235H	Emigrant Spring Allot., S end of Raker and Thomas Res.	1999	0.1 ac.
	ONAC441330I	Emigrant Spring Allot., E end of Raker and Thomas Res.	-	0.1 ac.



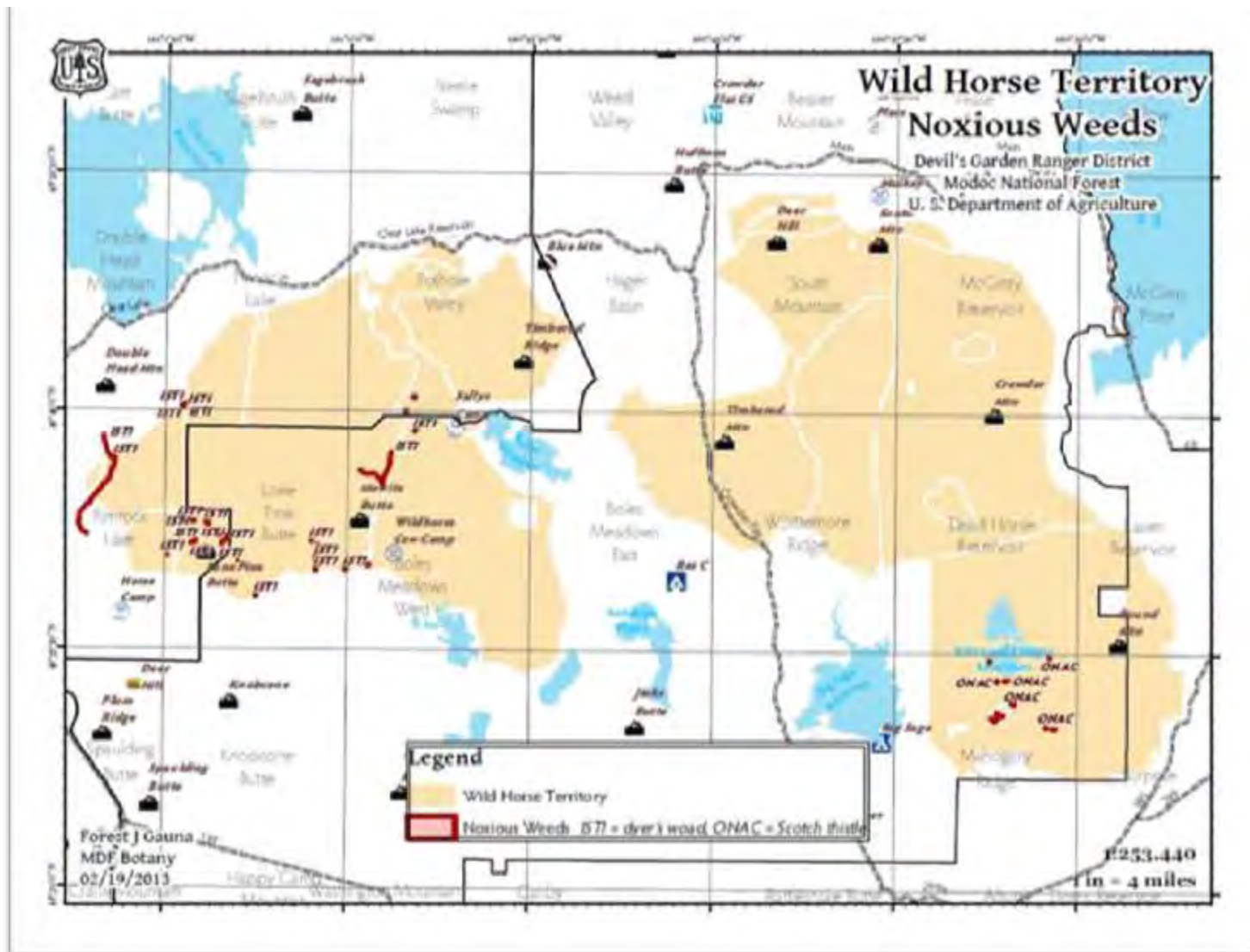


Figure 6: Broadleaf Noxious Weeds within the Devils Garden WHT

4.3.2 Environmental Impacts

Effects Common to All Alternatives

Threatened, Endangered and Sensitive Plant Species and Habitats

Direct and Indirect Effects

The effects of wild horse use on botanical resources, particularly threatened, endangered and sensitive plant species and habitats are generally the same for all alternatives; the difference between alternatives would be more a matter of the degree of the same impacts, rather than of different kinds of impacts.

In general terms, the botanical environment is changing quickly: it is becoming less diverse, less native, and less perennial, mostly due to the rapid spread of invasive grasslands. The invasive annual grasses (primarily cheatgrass, medusahead, and North Africa grass) are not generally preferred forage for either livestock or wild horses (Scheinost *et al.* 2008, Skinner *et al.* 2008, Stannard *et al.* 2010). This may be an important factor in the rapidity of their spread in the Wild Horse Territory and vicinity. For all practical purposes, once areas of high desert sagebrush steppe are invaded by these annual grasses, they cannot return to the previous native perennial-dominated condition (Wagner *et al.* 2001, Sheley *et al.* 2008). Since the non-preferred forage is gaining ground at the expense of preferred perennial (mostly native) bunchgrasses, competition between livestock and horses for the remaining native grasses would continue to increase. According to Sheley *et al.*, the only feasible means of defending native plant communities against invasive grasses is to insure the health of remaining deep-rooted perennial bunchgrasses by preventing overgrazing.

Medusahead and other invasive grasses have often been noted on the peripheries of vernal pools in the Devil's Garden Plateau by Forest botany staff. This is a concern because vernal pools are habitat for the three sensitive species known to exist within the WHT. Given their annual reproductive cycle and high genetic diversity (McKell *et al.* 1962; Kao *et al.* 2008; Novak & Sforza 2008), the invasive grasses may be evolving quickly to invade these habitats (Leger *et al.* 2009; *cf.* Blank & Sforza 2007). According to Barry (1995), Marty (2004), and Robins & Vollmar (2002), well-managed livestock grazing around vernal pools infested with non-native annuals is beneficial to vernal pool native plant communities, since the invasive grasses are removed by grazing animals. Invasive grasses around vernal pools are more likely than their upland counterparts to be grazed because, with nearby water available, they are greener for a longer period.

Besides invasive species, the other relevant factor affecting vernal pools is trampling (USFWS 2005), although, with our present level of understanding, it is debatable whether or not trampling is a negative impact. While well-managed grazing regimes are beneficial to vernal pool plant species, as mentioned above, year-round grazing and watering by wild horses may not be (*cf.* Gosejohan 2012). Wild horses may impact vernal pool margins during the time of year when the vernal pools margins are most susceptible to alteration.

Potential vernal pool habitats were identified from aerial photos by Dr. Robert Holland in 2006. According to these data, there are about 180 potential vernal pools in the Wild Horse Territory (please see Map 7). No sites of either the endangered species *Tuctoria greenei* or the threatened species *Orcuttia tenuis* are known to exist anywhere within the Territory; however, given the distribution of *Orcuttia tenuis* nearby, it is very possible that this species exists within the Territory. *Tuctoria greenei* is

not known to occur within either ranger district. Until adequate surveys for these species can be completed, the effects analyses in this document are based on the assumption that potential habitat within the Wild Horse Territory is occupied by the listed plant species.

The Standard Operating Procedures for conducting wild horse gathers do not permit traps to be placed on potential rare plant habitat (vernal pools) without prior botany resource surveys to determine whether a proposed trap site will cause a negative impact. This policy would exist under all alternatives; there would therefore be no impacts to rare plant species or habitats resulting from the construction and use of horse traps.

Wild horse use relevant to *Orcuttia tenuis* and *Tuctoria greenei* differs from permitted cattle use in that wild horses range more widely than cattle do, and they remain on the forest year-round, as opposed to permitted livestock whose season of use is limited to the dry season. According to Gosejohan (2012) who studied Modoc N.F. *Orcuttia tenuis* sites outside the Wild Horse Territory, grazing impacts have a weakly negative impact on slender Orcutt grass presence and vigor, with the negativity of the impact increasing with increasing grazing pressure. On the other hand, other literature cited in Gosejohan and the Vernal Pool Recovery Plan (USFWS 2005) suggests that grazing is often beneficial to vernal pools, since it helps remove nonnative species such as thatch-forming annual grasses.

Cumulative Effects

The past, present and future foreseeable effects include livestock grazing, impacts from lands actions, range improvement (water and fence) construction and maintenance, road construction, maintenance and use, firewood gathering, sage steppe ecosystem restoration projects and forest management activities. Past actions have probably been responsible for negative impacts to the listed plant species' vernal pool habitats such as invasions of nonnative grass species and alterations of vernal pool habitats as a result of impoundment or stock tank creation. No projects are presently occurring or planned that are impacting or would impact vernal pool habitats within the WHT.

Sensitive Plant Species and Habitats

Direct and Indirect Effects

All three sensitive species are very small forbs, measuring at most a few inches. Modoc botany staff have never observed indications that these or related species are being grazed by large animals.

As mentioned above, the impacts of the alternatives upon sensitive plants would vary not in kind as much as in degree. A discussion of site-specific impacts by species follows:

Disappearing monkeyflower site 7 is receiving only light use from horses, and there appears to be no livestock use in the area. Therefore adjusting AML would likely have no effects on this population of plants. Site 8 is receiving heavy use from horses and livestock, therefore any reduction in grazing animals would benefit this site.

Playa mesamint site 3 is not currently being affected by wild horses.

Modoc knotweed site 1 is being heavily trampled by livestock, wild horses, and wildlife. Removal of some wild horses would benefit this site. Sites 20 and 21 are not being heavily impacted by either livestock or wild horses at this time; reduction in grazing animals would not likely affect these sites. Site 28 would benefit from a reduction in wild horse use to help slow the spread of nearby invasive weeds, and reduce trampling.

Wild horses residing outside the Wild Horse Territory would be removed under all four alternatives. The areas within which they are presently residing are also grazed by cattle, so that beneficial impacts of grazing to vernal pools would continue even if wild horses are completely removed. However, the negative effects from year-round utilization and trampling due to wild horse use would be curtailed. Sensitive plant populations outside the WHT would either not be impacted, or beneficially impacted, as a result of implementing any alternative.

Cumulative Effects

The past, present and future foreseeable effects include livestock grazing, impacts from lands actions, range improvement (water and fence) construction and maintenance, road construction, maintenance and use, firewood gathering, sage steppe ecosystem restoration projects and forest management activities.

All of these activities occurred prior to the discovery of the sensitive plant populations (with wild horse use, grazing, and wildlife continuing to the present), and impacts to populations that occurred before their discovery are not known. Except for grazing, none of the above-mentioned activities are known to have occurred near any known sensitive plant occurrence. No projects are presently planned within the WHT that would impact known sensitive plant sites or potential habitats, except for a road improvement to Lauer Reservoir, which would potentially facilitate cattle management in the vicinity of disappearing monkeyflower site 8 (a beneficial effect for that site).

A combination of livestock and wild horse use in disappearing monkeyflower occurrence (site 8), and that of wild horse, livestock and elk use in Modoc knotweed occurrence (site 1), have negatively impacted the habitats of those occurrences. Removing some of the large animals impacting those sites would result in a beneficial impact.

Alternative 1 – No Action

Threatened, Endangered, and Sensitive Plant Species and Habitats

Direct and Indirect Effects

The current AML range of 275-335 wild horses is narrower than that of the Proposed Action (206-402 wild horses), but comes to about the same average number of animals. If the population of wild horses is maintained near this average, the direct (trampling) and indirect (hydrologic changes, disturbance leading to weed vulnerability and spread) impacts on threatened, endangered, and sensitive species and habitats would be about the same as those for Alternative 2- Proposed Action.

Cumulative Effects

The past, present and future foreseeable effects include livestock grazing, impacts from lands actions, range improvement (water and fence) construction and maintenance, road construction, maintenance and use, firewood gathering, sage steppe ecosystem restoration projects and forest management activities. Past actions have probably been responsible for negative impacts to vernal pool habitats such as invasions of nonnative grass species and alterations of vernal pool habitats as a result of impoundment or stock tank creation. Except for grazing, none of the above-mentioned activities are known to have occurred near any known sensitive plant occurrence. Except for a road improvement to Lauer Reservoir, which would potentially facilitate cattle management in the vicinity of disappearing monkeyflower site 8 (a beneficial effect for that site), no projects are presently occurring or planned

within the WHT that are impacting or would impact known sensitive plant sites or potential threatened, endangered, or sensitive plant habitat.

In combination with the above activities, as wild horses are managed at an AML of 275-335, vegetative conditions would improve over time, slowing the rate of spread of invasive annual grass grasslands, and lessening the amount of trampling at vernal pool habitats during the wet seasons. This would result in an overall beneficial impact to the botanical resource.

Noxious Weeds Habitat Alteration and Vectors

Under the No Action Alternative, achieving and maintaining the wild horse population at AML would reduce habitat alteration and the number of weed vectors, slowing the spread of medusahead and promoting stronger, more resilient native plant communities that could more successfully resist invasion by noxious weeds.

4.4 Heritage Resources

4.4.1 Affected Environment

Archaeology

This portion of northeastern California has been occupied and used by Native American populations for at least 10,000 years. Native peoples continue to live in and use the area today. The prehistoric past, prior to 1826, has been divided into several time periods based upon the types and styles of tools used by the Native peoples. The earliest known period is called the *Early Holocene* and dates between 10,000 – 5,000 BC. It is followed by the *Early Archaic* from 5,000 – 1500 BC, and the *Middle Archaic* from 1500 BC to AD 700, and the *Late Archaic* from AD 700 – 1350. The *Terminal Prehistoric* period goes from AD 1350 to the early 1800s.

Ethnography

The Devil's Garden Wild Horse Territory lies within the ethnographic territories of the *Kokiwas* band (northern portion) of the Modoc Tribe and the *Hewisedawi* and *Astariwari* bands of the Pit River Tribe (southern portion). Both the Modocs and the Pit River folks were hunters and gatherers who were adapted to lacustrine riverine environments, occupying fairly permanent winter villages in the lower, more sheltered elevations. As different resources became available throughout the year, the aboriginal groups broke into small family bands and traveled to various locations within their territory to fish, hunt, and gather edible and medicinal plants. These seasonal rounds took them to outlying areas where they established seasonal base camps and a series of radiating temporary camps and task-related activity stations. Tribal members still use this area, continue to harvest plant resources (e.g., epos and other tubers and roots), and maintain certain areas for traditional cultural uses.

History

Native American lifestyles changed drastically with the arrival of Euro-Americans. The first Euro-American entry into the general area was in 1826 when Peter Skene Ogden led a Hudson's Bay Company "fur brigade" across the western portion of the Devil's Garden from across the "panhandle" area and Tule Lake to the Pit River (Gates 1983; King et al. 2004). Other fur trappers passed through the area in the 1830s and early 1840s. These were followed by other explorers, such as John C. Fremont, U.S. military Topographic Engineers seeking railway routes, and the first emigrant party in 1843 led by Joseph

Chiles. In 1846, Lindsay and Jesse Applegate, blazed the Applegate Trail, South Road to Oregon, and led an emigrant party from Ft. Hall in Idaho westward, crossing the Devil's Garden, and into the Willamette Valley in Oregon Territory. In 1848 Peter Lassen and Peter Burnett blazed other trails across the area heading to the goldfields of California (Ibid.). Thousands of emigrants used these trails to go to Oregon and California. Today the vestiges of these trails have been designated by Congress as part of the National Historic Trails System.

Homestead patents began with the Homestead Act of 1862, which permitted settlers to claim tracts of public domain land up to 160 acres in size. This was considered as much land as one farmer with animal-powered technology could feasibly cultivate. Permanent settlement of the Tucker Allotment area by Euro-Americans began in the 1870s with livestock grazing near the permanent water sources. Livestock grazing became a prominent early industry, followed by agriculture and logging, the latter two primarily for local consumption (Gates 1983; Hawthorne 1995; King et al. 2004).

Based on the urgings of local stockmen, the Modoc Forest Reserve was established in 1904 to control out of state livestock (mainly sheep). Before that time transient herds coming from out-of-state overgrazed the land, leaving little forage of use for local stock. In 1908, this reserve and the nearby Warner Mountain Forest Reserve were combined into the Modoc National Forest. It has been estimated that up to 100,000 sheep came in between 1917 and 1920, using the area between Mt. Dome and Doublehead. This area was added to the Forest in 1920, again at the suggestion of local stockmen desiring to limit transient sheep grazing (Brown 1945). The Forest Service began more rigorous control and management of permitted livestock usage. Throughout the 20th Century the number of livestock and their period of grazing use steadily were reduced in order to help restore range conditions and wildlife habitat. However, wild horse management was not specifically considered in the improvement of rangeland conditions until after the passage of the Wild Horse and Burro Act of 1971, and amended by the Public Rangelands Improvement Act (PRIA) of 1978 (PL 95-514).

Attempted homestead settlement of the Devils Garden area began in the late 1870s with homesteads patents filed for under various land acts; the last of the homesteads were filed for as late as the 1920s (Adkison 2006).

Subsequent Homestead Acts recognized that 160 acres was not an economically viable parcel in many of the drier Western lands; would-be settlers were hesitant to claim the poorer quality lands on that basis. The Enlarged Homestead Act of 1909 increased the allowable acreage to 320 acres so that dryland farming would be more feasible. In 1916 the Stock Raising Homestead Act raised the allowable claim to 640 acres, which was considered suitable for a ranch. Family members sometimes claimed contiguous parcels to form a larger property that they worked together; this may have been the case with the two Swanson claims.

Inventory and Monitoring

Within the Devil's Garden Wild Horse Territory there have been 78 project-related archaeological surveys conducted over the past 35 years. Because some of the surveys have been of very small areas or cover ground only partially within this area, to date only about 12% of the total area has been acceptably surveyed for the presence of heritage resource properties. Table 11 and Table 12, below, summarize projects and acres of the Devil's Garden Wild Horse Territory surveyed and documented in Archaeological Survey Reports (ASRs).

Table 11: Heritage Resource Surveys undertaken within the Devils Garden Wild Horse Territory - West Home Range

ASR Number	ASR NAME – Western Territory	ACRES
48	TRIANGLE RANCH WETLANDS EXCHANGE	500
441	MOWITZ CREEK RIPARIAN HABITAT FENCE	114
638	OTHB WILDLIFE MITIGATION IV	1104
1027	RED LAKE FENCE	23
1053	DEADHORSE FLAT WETLANDS DEVELOPMENT	998
1063	OTH-B RADAR INSTALLATION Lone Pine	675
1067	MOWITZ ROAD IMPROVEMENT	101
1091	OTH-B GEOLOGICAL TESTING	135
1140	MOWITZ SOIL IMPROVEMENT	370
1146	TIMBERED RIDGE BRUSH IMPROVEMENT	308
1169	MOWITZ TIMBER SALE	4200
1184	OTH-B RADAR INSTALLATION	1291
1202	POTHOLE SPRING TSI	288
1252	BOLES DAM RECONSTRUCTION	17
1272	TIMBERED RIDGE BRUSH PROJECT	179
1274	WEASEL BEND PLANTATION THIN	43
1304	BADGER III BORROW PITS	37
1349	BADGER SHORT TIMBER SALE	1765
1378	BOLES CREEK FENCE	27
1384	BOLES MEADOW FENCE RELOCATION	10
1415	MOWITZ FIRE SALVAGE TIMBER SALE	130
1439	WEST BOLES PASTURE FENCE	53
1441	S. POTHOLE & E. BOLES FENCES	128
1470	PINE FIRE FIRELINE	50
1481	DALTON SALVAGE TIMBER SALE	118
1482	BADGER SHEAR CHIP & REMOVE	116
1487	BELL FIRE SALVAGE TIMBER SALE	256
1505	MOWITZ WELL EXPANSION	5
1521	NORTH HACKAMORE RX BURN	50

ASR Number	ASR NAME – Western Territory	ACRES
1550	WILD HORSE WELL	180
1555	POTHOLE SPRINGS EXCLOSURES	5
1580	OSU JUNIPER STUDY	848
1581	E. GRIZZLIE PEASE FENCE	16
1591	DEVILS GARDEN PLANTATIONS	140
1597	DALTON TREE PLANTING	7
1625	MOWITZ CREEK JUNIPER	223
1661	LONE PINE BRUSH MANAGEMENT	661
1238	EAGLE HAB PCT	67
	TOTAL ACRES	15,228

Table 12: Heritage Resource Surveys undertaken within the Devil's Garden Wild Horse Territory - Eastern Home Range

ASR Number	ASR NAME – Eastern Territory	ACRES
121	LOGAN SPRING FENCE	163
207	DEADHORSE RESERVOIR WETLANDS DEV.	276
210	COMM. FUELWOOD SALES 1982	363
324	SRI/LOGAN SLOUGH OTH-B RADAR	1115
348	COMMERCIAL FUELWOOD 83-84	1088
349	FLETCHER TSI	16
358	CAREY LAND EXCHANGE	104
366	MINERAL PERMIT - CLIFF CLOSE	81
371	EMIGRANT SPRING RESERVOIR IMPROV	333
398	BOLES SPRING EXCLOSURE	78
402	TIMBERED MOUNTAIN JUNIPER CONTROL	89
403	PENCIL ROAD RECONSTRUCTION	16
418	CLIFF CLOSE - MINERAL PERMIT II	77
421	CROWDER MOUNTAIN RESERVOIR FENCE	520
434	PENCIL ROAD ROCK SOURCE	1
474	DE CAMP STOCK TANK CINDER PIT	41

ASR Number	ASR NAME – Eastern Territory	ACRES
483	GREEN TANK WETLANDS	318
554	DORRIS BROS. RES JUNIPER STRUCTURES	263
590	DORRIS BROS. RESERVOIR RAMP	5
594	GREEN SPRING ANALYSIS AREA	48
612	TIMBERED MOUNTAIN UNDERBURN	783
614	TIMBERED MOUNTAIN ALLOTMENT FENCES	658
643	TIMBERED MOUNTAIN JUNIPER CONTROL II	160
666	DEVILS GARDEN UNDERBURN	444
729	JUNIPER THIN I	238
734	SOUTH MOUNTAIN RX BURN	100
767	RAKER AND THOMAS SPRING REHAB	2.5
797	BOLES SPRING EXCLOSURE II	33
804	TIMBERED MOUNTAIN JUNIPER THIN	288
816	LAUER DAM IMPROVEMENT	820
822	EMIGRANT CG	2
861	TIMBERED MOUNTAIN RANGE IMP	19
869	TIMBERED MOUNTAIN JUNIPER THIN II	142
870	TIMBERED MOUNTAIN JUNIPER THIN III	179
896	TIMBERED MOUNTAIN JUNIPER THIN IV	339
925	SECTION 110 INVENTORY 2009	50
972	SECTION 110 INVENTORY 2010	178
1014	TIMBERED MOUNTAIN WILDLIFE HABITAT	1500
1017	SECTION 110 INVENTORY 2011	52
	TOTAL ACRES	10,982.5

A total of 612 archaeological sites have been recorded entirely or partially within the territory, though not all as part of project-related surveys. This includes 559 prehistoric sites, 27 historic sites and 26 dual-component archaeological sites. These sites span some 10,000+ years of human occupation and use of the Devil's Garden area. In addition, the easternmost portion of the Eastern Home Range lies within the Strip Allotment on lands administered by the Bureau of Land Management (BLM). This allotment covers some 7,632 acres of BLM land (which is included within the FS Emigrant Spring Range Allotment). Three previous archaeological surveys were undertaken in the Strip Allotment covering about 120 acres. Of the 31 recorded archaeological sites, there are 29 prehistoric sites and 2 historic sites.

Generally, over the past 30 years range allotment management activities within the wild horse territory have been designed to avoid affecting cultural resources by designing and constructing improvements, such as fence lines, stock ponds, holding pastures, salt grounds, etc. away from known sites. Due to these efforts, there has been an overall reduction of livestock concentration in areas of high archaeological sensitivity. Similarly, during previous wild horse capture/round-up actions archaeological surveys have been done at proposed locations of temporary containment corrals and staging areas so that these actions would not affect cultural resources.

As specific future round-ups are planned, case-by-case inventories of those areas will take place in compliance with the National Historic Preservation Act to assure that these activities do not adversely affect significant cultural or heritage properties.

Table 13: Summary Data: Heritage Resources - Wild Horse Territory

Home Range and Allotment	Total FS Acres	Arch Survey Acres	% of Allotment w/Arch Survey	# of Recorded Arch Sites
West - Mowitz	22,516	5,128	22%	85
West - Carr	44,180	4,363	10%	139
West - Potters	4,812	1,410	29%	17
West – Surveyor's Valley	25,754	4,327	17%	95
<i>Subtotal</i>	<i>97,262</i>	<i>15,228</i>	<i>16%</i>	<i>336</i>
East – Pine Springs	40,278	2,231	6%	26
East – East Grizzlie	712	234	33%	7
East – Timbered Mtn.	50,475	6,940	14%	148
East – Emigrant Spring	43,793	1,577	4%	95
<i>Subtotal</i>	<i>135,258</i>	<i>10,982</i>	<i>8%</i>	<i>276</i>
TOTAL	232,520	26,210	11%	612

Field work in conjunction undertaken during the 2011 and 2012 field seasons targeted 7 known sites to monitor for potential wild horse impacts. Of these, six sites exhibited some level of wild horse (and livestock) effects more than “general grazing.” Of these, three have affects that may be considered substantial enough to address: FS-05-09-55-0653, FS-05-09-55-0657 and FS-05-09-55-2866. This would involve undertaking determinations of eligibility for the National Register of Historic Places and/or eliminating or minimizing the observable negative effects.

4.4.2 Environmental Impacts

Effects Common to All Alternatives

Each alternative would be subject to the Forest LRMP standards and guidelines designed to comply with existing Historic Preservation laws (e.g., National Historic Preservation Act), rules and regulations.

Table 11 above identifies the past actions that have taken place within the West and East Home Range of the WHT. All the past actions were undertaken in compliance with Section 106 of the National Historic Preservation Act (NHPA). All foreseeable future proposed actions would also be undertaken in compliance with Section 106 of the NHPA. Following these procedures and those allowed under the Regional Programmatic Agreement (RPA), most undertakings would not have a significant effect on Heritage Resources. However, natural erosion, on-going “general grazing” activities by both livestock and wild horses, and activities by large-hoofed ungulates (such as elk) would continue to slowly degrade archaeological site integrity. This effect would be common to all of the proposed alternatives in regards to past, present and foreseeable actions.

Management designed to maintain the number of wild horses within the WHT at the current AML (as in Alternative 1), or at the level called for in Alternative 2 - Proposed Action or Alternative 3, would substantially reduce these negative effects, including effects to sites FS-05-09-55-0653, FS-05-09-55-0657 and FS-05-09-55-2866, discussed above. Conversely, management direction that maintains current wild horse populations, as in Alternative 4, would be expected to negatively affect heritage resources.

Alternative 1 – No Action – Continue Existing Management

Direct and Indirect Effects

Year-round use by an increasing number of wild horses (both within and outside the designated WHT) continues to increase the potential for substantial negative effects to some archaeological sites. Under Alternative 1, excess wild horses would be removed from the WHT in order to achieve and maintain AML. Managing wild horses within the AML of 275-335 animals would minimize the potential negative effects associated with “wallowing” in house pit depressions, shading/loafing, trampling the peripheral areas adjacent to natural springs, riparian areas and watering places, traversing prehistoric concentrations of lithic materials under muddy soil conditions and laterally displacing and transporting archaeological materials.

Surface vegetation, primarily grasses and other browse over-utilized by wild horses would also potentially increase, allowing for better surface vegetation coverage, and reducing overall surface visibility. This would help to mask surface identification of archaeological remains (e.g., surface lithics). The present surface visibility in some areas of wild horse overutilization allows for “pot hunters” to easily see surface artifacts and increases the risk of illegal collection. However, an increase in surface vegetation (fuels) may result in slightly increased potential for high temperature wildfires which would negatively affect surface obsidian artifacts by altering or destroying the obsidian “hydration” rind that is useful in dating the age of archaeological sites. This alternative has the greatest potential to reduce the risk of negative impacts to heritage resources from year-round wild horse use.

By contrast, maintaining current wild horse populations, as called for in Alternative 4, would be expected to continue to negatively affect Heritage Resources.

Cumulative Effects

The past, present and future foreseeable effects include livestock grazing, impacts from lands actions, range improvement (water and fence) construction and maintenance, road construction, maintenance and use, firewood gathering, sage steppe ecosystem restoration projects and forest management activities.

Alternative 1, in combination with the above actions, would have the greatest potential to reduce the risk of negative impacts to heritage resources as it would manage for the lowest number of animals (275-335) year-round.

Alternative 2 – Proposed Action

Direct and Indirect Effects

Under Alternative 2, excess wild horses would be removed from within and outside the WHT to achieve and maintain an AML of 206-402 wild horses. This would be expected to result in reduced levels of site disturbances and degradation due to trampling, lateral displacement or redistribution of artifacts, and soil compaction. Similar to Alternative 1- No Action, surface vegetation would potentially increase, resulting in both adverse and beneficial effects.

Cumulative Effects

The past, present and future foreseeable effects include livestock grazing, impacts from lands actions, range improvement (water and fence) construction and maintenance, road construction, maintenance and use, firewood gathering, sage steppe ecosystem restoration projects and forest management activities.

Cumulative impacts would be similar to Alternative 1- No Action.

Alternative 3

Direct and Indirect Effects

This alternative, like Alternatives 1 and 2, would be expected to decrease the negative effects to heritage resources from the current wild horse overpopulation/concentration by removing excess animals from within and outside the WHT. As in Alternatives 1 and 2, an increase in surface vegetation (fuels) would be expected and the potential for high temperature wildfires affecting surface obsidian artifacts may result. At the same time, increased surface vegetative cover would help to protect surface artifacts by decreasing their visibility. Unlike Alternative 2, the removal of 30 miles of existing fence may result in wild horses roaming more freely and utilizing areas they have not previously used. As a result, this alternative would have a greater potential to increase the risk for additional heritage resource sites to be negatively impacted.

Cumulative Effects

The past, present and future foreseeable effects include livestock grazing, impacts from lands actions, range improvement (water and fence) construction and maintenance, road construction, maintenance and use, firewood gathering, sage steppe ecosystem restoration projects and forest management activities.

Alternative 3 would have greater potential risk for additional heritage resource sites to be negatively impacted than would Alternatives 1 and 2 due to the removal of 30 miles of existing fence. Removal of fencing would also impact livestock management in the East Home Range area. The cumulative effect of reduced livestock control, and potential for wild horses to range more widely would result in greater impacts to heritage resources than Alternatives 1 or 2.

Alternative 4

Direct and Indirect Effects

This alternative would have the greatest potential negative impact to heritage resources. A range of 700-900 wild horses would be managed within the WHT year-round. This would increase the potential risk for site disturbances and degradation due to trampling, lateral displacement or redistribution of artifacts, and soil compaction. Under Alternative 4, the removal of 50 miles of existing fence may result in wild horses roaming more freely or concentrating in areas they have not previously used. This would result in potential negative impacts to additional heritage resource sites. Included would be the potential for increased surface visibility, greater risk of illegal surface artifact removal, and increased erosion of exposed soils which would degrade archaeological deposits. As with Alternative 3, wild horses would potentially be relocated or allowed to move into pastures they are not currently using. This would increase the potential risk for negative effects to archaeological sites. By comparison, the removal of wild horses residing outside the WHT would reduce the negative effects presently occurring to heritage resources in these areas.

Cumulative Effects

The past, present and future foreseeable effects include livestock grazing, impacts from lands actions, range improvement (water and fence) construction and maintenance, road construction, maintenance and use, firewood gathering, sage steppe ecosystem restoration projects and forest management activities.

Alternative 4 would have the greatest potential negative effects to cultural resources. Managing 700-900 wild horses year-round, coupled with the removal of 50 miles of existing fence would allow animals to roam more freely. Animals potentially ranging into areas they are not currently using would increase the negative impacts associated with trampling, lateral displacement of surface artifacts and soil compaction. This Alternative would also have the greatest potential to reduce livestock control in the area. Cumulatively, this Alternative would be the most detrimental to heritage resources.

4.5 Livestock Grazing

4.5.1 Affected Environment

Historic Livestock Use

Livestock grazing has taken place within the analysis area since the mid-late 1800's. Prior to 1921, livestock grazing was largely uncontrolled. High numbers of cattle, sheep, and horses grazed the area throughout the year. Many of the livestock owners did not have a permanent base of operations and moved their livestock from place to place depending on the season and the forage available. Heavy stocking and nearly year-long use led to deteriorated range conditions. Sagebrush dominated the landscape; bitterbrush was severely browsed, dead or unthrifty; the few remaining bunchgrasses sat on pedestals; annual weeds were common; and soil erosion was occurring. In 1904, local ranchers

petitioned to have Forest Reserves created by President Theodore Roosevelt. The Warner Mountain and Modoc Forest Reserves later became the Modoc National Forest. In 1921, the Doublehead addition to the Modoc National Forest occurred.

Forest grazing records show an increase in permitted numbers from 1910 to the early 1920s. The numbers then remained relatively constant into the mid-1930s when they began to drop. Even as late as 1939, the Forest permitted 270,000 AUMs, more than double the current permitted use. Grazing remained heavy throughout the Depression and World War II with a 5-year average high of 168,000 permitted AUMs in 1945. After the war, livestock numbers were reduced, and reduced further in the 1960's when cheat grass invasion on rangelands became extensive. Other changes included construction of fences to control cattle drift and construction of water developments to better distribute livestock use. Reseeding depleted range with grass and browse was also completed in a number of areas. By the late 1960's, allotment boundaries were fenced and pasture units established in order to implement rotational grazing systems. More recently, riparian pasture fences, reductions in stocking rates, and intensive riding have been implemented to better manage riparian areas.

Affected Livestock Grazing Allotments

All or a portion of eight grazing allotments managed by the Devil's Garden and Doublehead Ranger Districts of the Modoc National Forest lie within the WHT (Table 14 and Figure 7).

Table 14: Allotments, Land Ownership, and Acres within Devils Garden Wild Horse Territory

Allotment	Acres in WHT	Total Acres	Percent in WHT	Landownership
Carr	44,180	108,437	40.7%	National Forest
East Grizzlie	712	35,055	2.0%	National Forest
Emigrant Springs	43,793	46,131	94.9%	National Forest and BLM
Mowitz	22,516	69,282	32.5%	National Forest
Pine Springs	40,278	44,538	90.4%	National Forest
Potters	4,812	26,311	18.3%	National Forest
Surveyors Valley	25,754	26,403	97.5%	National Forest
Timbered Mountain	50,475	63,092	80.0%	National Forest
	232,521	419,249		

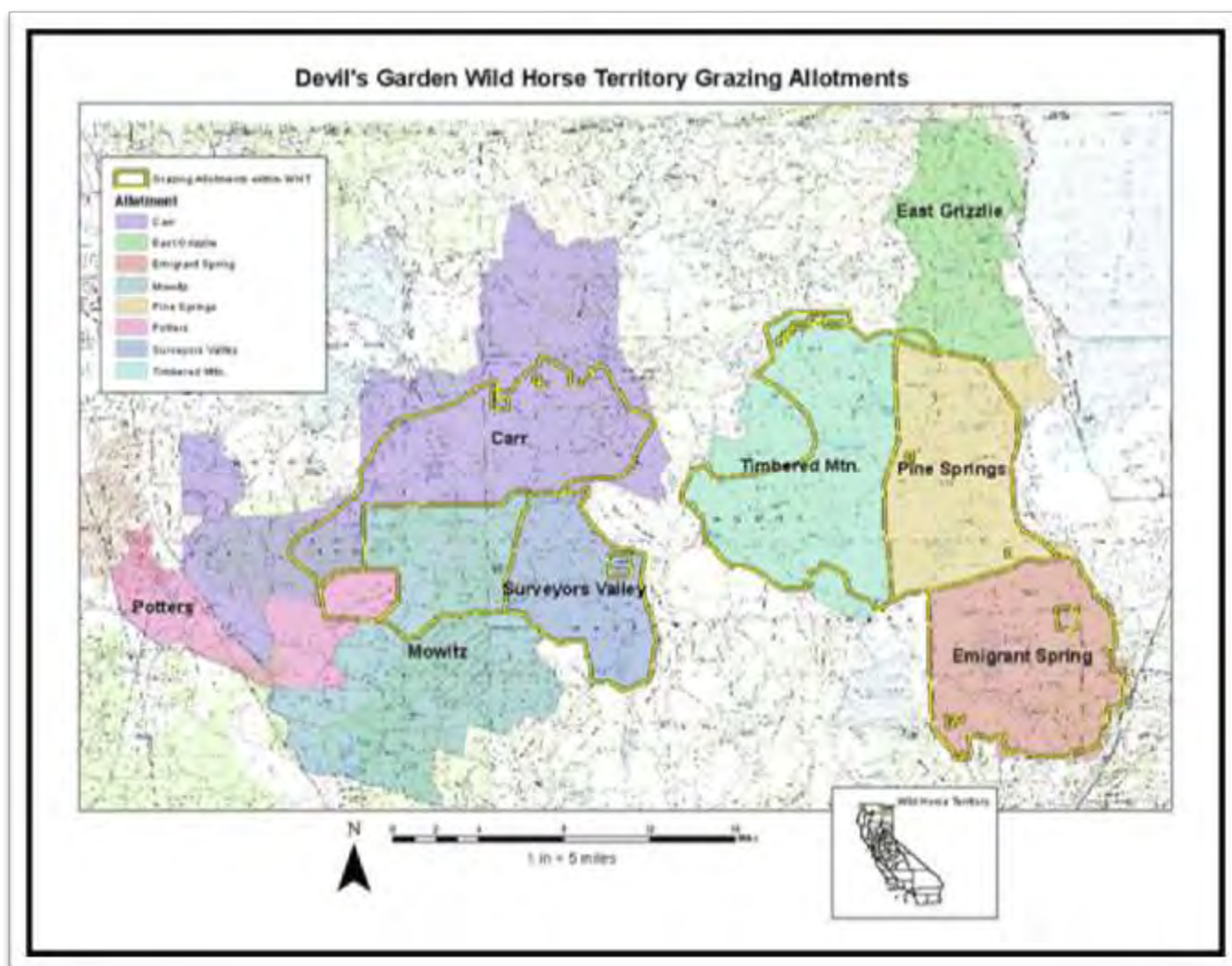


Figure 7: Devils Garden Wild Horse Territory Land Ownership

Current Permitted Livestock Use

Term grazing permits for 26,880 Animal Unit Months⁵ (AUMs) of forage consumption by domestic livestock have been issued by the Modoc National Forest. The current permitted livestock use is summarized in Table 15.

Table 15: Current Permitted Livestock Use

Allotment	Number	Class	Season of Use	Permitted AUMs
Carr (Timbered, Pinnacle, Pothole, Red Lake and Lone Pine)	Variable	Cattle	Variable	5,000
East Grizzlie	n/a (only 712 acres of this allotment is included in the WHT)			
Emigrant Springs	379	Cattle	5/1-9/30	2,516
Mowitz	2,900	Sheep	5/16-9/30	3,947

⁵ An AUM is 1,000 pounds of air-dried forage needed to support one cow (one animal unit) for one month. A horse is considered 1.2 Animal Units (AUs) per Forest Service Policy.

Allotment	Number	Class	Season of Use	Permitted AUMs
Pine Springs	600	Cattle	5/1-9/30	3,984
Potters (Horse Camp and Lone Pine)	495	Cattle	Variable	1,052
Surveyors	420	Cattle	4/15-10/15	2,796
Timbered Mountain	1,076	Cattle	4/15-10/15	7,585
Total Permitted Livestock Use (AUMs)				26,880

Authorized Livestock Use

Annual adjustments are made through the Operating Instructions issued to each livestock operator for the coming year (Table 16) Adjustments may be made due to drought conditions; wet, cool or late spring; or to protect an area from grazing due to wildfire, etc.

Table 16: Authorized Livestock Use for Allotments within the WHT (2006 - 2012)

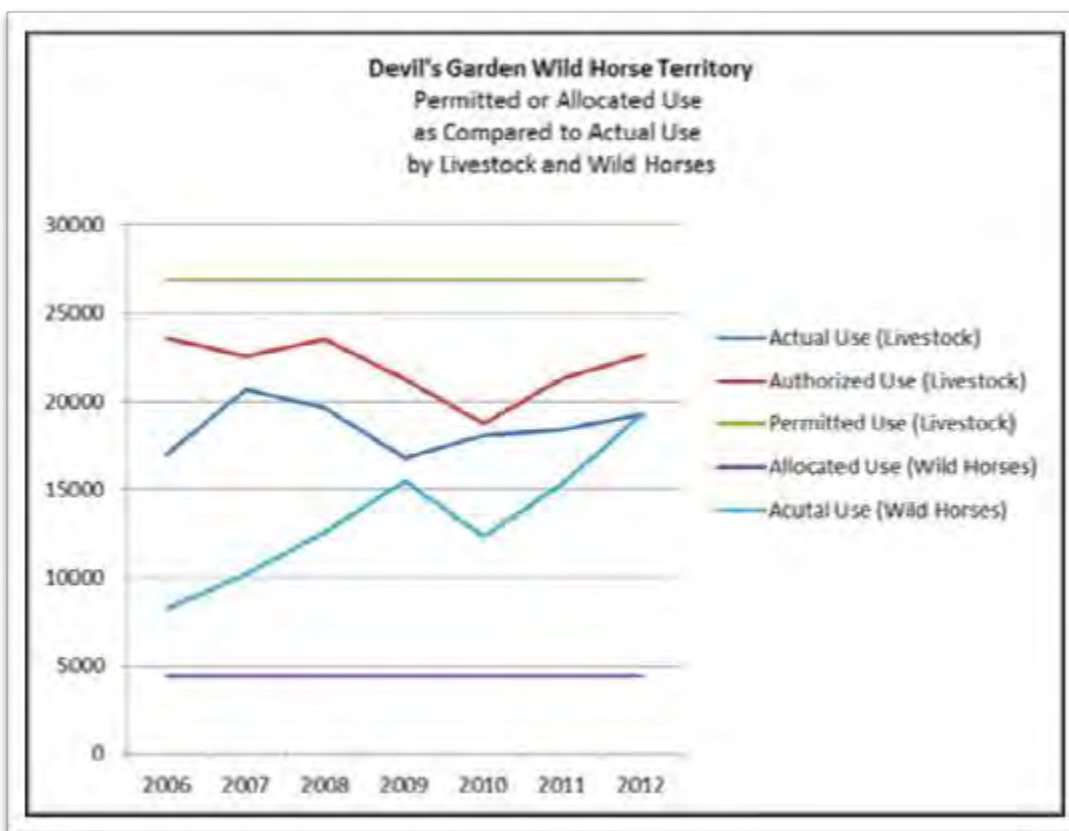
Allotment	2006	2007	2008	2009	2010	2011	2012
Carr (Timbered, Pinnacle, Pothole, Red Lake & Lone Pine)	4,623	4,948	3,354	4,624	3,775	4,446	4,179
East Grizzlie	n/a (only 712 acres of this allotment is included in the WHT)						
Emigrant Springs	2,516	2,516	2,516	2,516	2,516	2,516	2,516
Mowitz	2,780	2,407	3,947	2,742	2,111	2,722	2,722
Pine Springs	3,984	2,988	3,984	3,984	3,320	3,593	3,593
Potters (Horse Camp and Lone Pine)	1,052	1,026	1,066	1,066	985	857	965
Surveyors	2,325	2,325	2,325	2,325	2,325	2,325	2,325
Timbered Mountain	6,308	6,308	6,308	3,984	3,711	4,847	6,308
Total Authorized	23,588	22,518	23,500	21,241	18,743	21,306	22,608

Actual Livestock Use

Actual livestock use for allotments within the WHT for 2006-2012 is summarized in Table 17.

Table 17: Actual Livestock Use for Allotments within the WHT (2006 - 2012)

Allotment	2006	2007	2008	2009	2010	2011	2012
Carr (Timbered, Pinnacle, Pothole, Red Lake & Lone Pine)	n/a	5,083	2,952	3,031	3,706	2,404	3,522
East Grizzlie	n/a (only 712 acres of this allotment is included in the WHT)						
Emigrant Springs	2,479	2,430	2,393	2,298	2,400	2,536	2,135
Mowitz	2,549	2,428	1,006	1,933	1,948	2,078	2,680
Pine Springs	3,197	3,021	2,837	2,996	3,263	3,858	4,140
Potters (Horse Camp & Lone Pine)	n/a	1,057	1,052	950	969	868	828
Surveyors	2,402	1,906	2,530	2,034	2,037	2,114	2,097
Timbered Mountain	6,344	4,746	6,837	3,572	3,788	4,547	3,853
Total Actual Use (AUMs)	16,971	20,671	19,607	16,814	18,111	18,405	19,255


Figure 8: Livestock Use as Compared to Wild Horse Use (2006 - 2012)

Livestock Use Compared to Wild Horse Use for Allotments within WHT (2006-2012)

During 2006-2012 actual livestock use averaged about 18,548 AUMs (approximately 69 percent of that permitted). Wild horse population size has exceeded the AML upper limit since 2002. Since 2006, actual use by wild horses has exceeded by 140-369 percent of the forage allocated for their use in the 1991 Forest Plan (Figure 11). As of January 2013, wild horse population size was estimated at 1,124 animals (about 3.4 times the AML upper limit). Of these, about 855 (approximately 76 percent of the total number) reside within the WHT.

Habitat Improvements

About 14 miles of existing fence (5 miles between the Emigrant Springs and Big Sage area and 8 miles between the Avanzino and Black Rock areas) is no longer functioning properly. Another 10-15 miles of fence at Crowder Mountain and Dead Horse Reservoirs, and Emigrant Springs is no longer functioning properly and represent a potential hazard to wild free-roaming horses and some wildlife species.

Current Impacts to Livestock from the Existing Wild Horse Population Size

As wild horse population size has increased, competition between permitted livestock and wild horses for the available forage and water has also increased. Livestock operators report the current wild horse overpopulation in the Carr, Emigrant Spring, Pine Springs and Timbered Mountain Allotments has substantially increased their operating costs for fence maintenance, monitoring, and replacement pasture rental for the grazing the operators were required to forego due to the degree of wild horse use.

4.5.2 Environmental Impacts

Alternative 1 – No Action (Maintain Current Management)

Direct and Indirect Effects

Once AML is achieved and maintained, more forage would be available for use by the permitted livestock. Damage to existing fences associated with the current wild horse overpopulation in the Carr, Emigrant Spring, Pine Springs and Timbered Mountain Allotments would be reduced as would the costs associated with maintaining these fences. Achieving and maintaining AML would also be expected to result in increased weight gains and income from calf sales due to decreased competition between domestic livestock and wild horses for the available forage and water.

Cumulative Effects

The past, present and future foreseeable effects include livestock grazing, impacts from lands actions, range improvement (water and fence) construction and maintenance, road construction, maintenance and use, firewood gathering, sage steppe ecosystem restoration projects and forest management activities.

Impacts to livestock grazing use would be reduced by achieving and maintaining wild horse population size within the AML.

Alternative 2 – Proposed Action

Direct and Indirect Effects

Under the Proposed Action Alternative, the AML range for wild horses would increase from 275-335 (4,400 AUMs) to 206-402 wild horses (5,789 AUMs). The direct effect to ranchers would be the re-allocation of 1,390 AUMs from permitted livestock to wild horse forage if found necessary. The ease of livestock management would be improved over the existing situation with the reconstruction of up to 14 miles of existing fence and the heavy maintenance and/or reconstruction of the Crowder Mountain and, Deadhorse Reservoirs, and Emigrant Springs fences. Under this alternative, reduced competition between livestock and wild horses for the available forage and water would be expected. Reduced fence maintenance costs would also be expected due to fence reconstruction.

Cumulative Effects

The past, present and future foreseeable effects include livestock grazing, impacts from lands actions, range improvement (water and fence) construction and maintenance, road construction, maintenance and use, firewood gathering, sage steppe ecosystem restoration projects and forest management activities.

Although impacts to livestock grazing would be reduced over the existing situation, the use of an estimated 1,390 AUMs of permitted livestock forage would be foregone.

Alternative 3

Direct and Indirect Effects

The potential impacts to permitted livestock forage use would be similar to Alternative 2 in the short-term. The removal of 30 miles of existing fence would require livestock operators to intensify their livestock/grazing management practices. Potential changes would include hiring one or more riders to manage livestock in a manner that would provide periodic rest or deferment to vegetation resources without the assistance of pasture fences. Over the longer term, an additional 3,034 permitted AUMs could be lost due to the removal of 30 miles of existing fence. Reduced income from calf sales would result from reduced weight gains as a result of the additional riding that would be required (increased stress from more frequent movement). Minimal benefit to livestock use would be expected with the construction of additional water developments in areas such as Mowitz or Timbered Mountain. These areas currently have ample available water for seasonal livestock use under current management.

Cumulative Effects

The past, present and future foreseeable effects include livestock grazing, impacts from lands actions, range improvement (water and fence) construction and maintenance, road construction, maintenance and use, firewood gathering, sage steppe ecosystem restoration projects and forest management activities.

Although impacts to livestock grazing would be reduced over the existing situation, the use of a total of about 4,424 AUMs of permitted livestock forage would be foregone.

Alternative 4

Direct and Indirect Effects

Under this alternative, the AML range would increase from 275-335 (4,400 AUMs) to 700-900 wild horses (12,960 AUMs). The direct effect to ranchers would be the re-allocation of 8,560 AUMs from livestock to wild horse forage. As livestock grazing use is adjusted to make additional forage available for use by wild horses, about 50 miles of existing fence would also be removed. This would require livestock operators to intensify their livestock management practices as described in Alternative 3. Over the longer term, an additional 3,034 permitted AUMs could be lost due to the removal of 30 miles of existing fence.

Cumulative Effects

The past, present and future foreseeable effects include livestock grazing, impacts from lands actions, range improvement (water and fence) construction and maintenance, road construction, maintenance and use, firewood gathering, sage steppe ecosystem restoration projects and forest management activities.

Although impacts to livestock grazing would be reduced over the existing situation, the use of a total estimated 11,594 AUMs of permitted livestock forage would be foregone.

4.6 Recreation

4.6.1 Affected Environment

More than 80% of the recreation use in the WHT is dispersed (occurs in undeveloped areas). No developed recreation sites are within the WHT, and there are no Inventoried Roadless Areas or wild or Wild and Scenic Rivers. Big game and waterfowl hunting, fishing, recreational woodcutting, and driving for pleasure are the major recreation activities.

The WHT lies within the California Department of Fish and Game's X2 hunting zone. Hunting for Pronghorn and Mule deer remains a popular activity. The hunting success rate has plummeted as have the Mule deer populations on the Devil's Garden and much of the West. An extensive wetland development program that began in the 1970s, has led to some of the best waterfowl hunting in northeastern California. In the past, gathers to capture and remove excess wild horses have been scheduled to avoid the hunting season within this zone. This was done to minimize the potential to disturb or displace wildlife as a result of helicopter-assisted capture operations.

Three Special Recreation Permits are issued annually on the Devil's Garden area: one to a fishing guide for up to ten clients per year, and two hunting guide permits for Mule deer, pronghorn, and elk, with up to five clients each per year.

The Back Country Discovery Trail (about 105 miles in length) traverses the WHT. An 800 acre research natural area (RNA) is also found in the WHT. Habitat conditions within the RNA have deteriorated due to heavy grazing use. Cheatgrass has moved into portions of the RNA and barren soils from loafing, trampling and trailing by wild horses is evident.

A number of well-maintained roads provide access during the spring, summer and fall. During the winter, these roads are not maintained and much of the area is inaccessible due to snow. The majority of the roads that branch off the main roads are primitive and not maintained.

The area classifications for the Recreational Opportunity Spectrum accounts for about 86 percent of the planning area as roaded natural, one percent as semi-primitive non-motorized, and 12 percent as semi-primitive motorized. At the present time, roaded natural areas receive about 79 percent of the recreation use in the WHT while semi-primitive motorized areas receive about 12 percent. Of this, only a small fraction is attributed to wild horse viewing. According to staff on the Devils Garden Ranger District, less than ten public inquiries regarding wild horse viewing in the WHT have been received over the past decade.

4.6.2 Environmental Impacts

Effects Common to All Alternatives

Wild horses would be available for the public to view within the WHT boundary under all alternatives. However, the number of wild horses potentially available for viewing would vary by alternative. If possible, helicopter-assisted gathers would be scheduled outside the mule deer hunting season to minimize potential conflicts with hunting success.

Alternative 1 – No Action

Direct and Indirect Effects

Once AML is attained (275-335 animals), there would be fewer wild horses available for potential viewing. Managing wild horse population size within AML would be expected to result in fewer negative impacts to watchable wildlife viewing areas, recreational fishing, hunting opportunities and hunter success rate. Achieving and maintaining wild horse population size within the AML would also result in fewer resource impacts and a more natural setting.

Cumulative Effects

The past, present and future foreseeable effects include livestock grazing, impacts from lands actions, range improvement (water and fence) construction and maintenance, road construction, maintenance and use, firewood gathering, sage steppe ecosystem restoration projects, recreation and forest management activities.

Over the long-term, by meeting and maintaining wild horse numbers within AML, the condition of wildlife habitats, riparian seeps, springs and meadows would be expected to improve. This would create enhanced viewing opportunities at these select habitats for bird-watching and wildlife viewing. Recreational fishing would have the greatest potential improvement with reduced year-round wild horse use on the vegetation and water. Hunting opportunities and hunter success rates would gradually increase over time with better wildlife habitat and possibly more big game animals. The number of wild horses available for viewing would decrease when AML is achieved. This alternative would provide the least opportunity to view wild horses.

The current population of wild horses has contributed to increased erosion and siltation into streams and reservoirs resulting in negative impacts to recreational fisheries. Watchable wildlife and hunting opportunities are being negatively affected by encroaching juniper, high wild horse numbers, and

erosion of sensitive riparian soils associated with unfenced springs, seeps, reservoirs, and meadows. Past unrestricted Off Highway Vehicle (OHV) activities and off-road driving has created erosion and sediments, as well as negative impacts to riparian resources and upland habitats. Alternative 1- No action would result in less erosion and siltation, providing the greatest potential improvement to recreational fisheries. Improved riparian habitat would result in improved bird-watching and other watchable wildlife opportunities. If animals are maintained at an AML of 275-335, coupled with sage steppe restoration and forest management activities, future hunting opportunities and success rates would have the greatest potential of all Alternatives due to improved habitat and potentially higher species numbers. In accordance with the Modoc Motorized Travel Management Plan, OHV use is confined to existing roads. This would lead to improved upland and riparian habitats and enhance opportunities for watchable wildlife and result in less siltation into recreational fisheries. Wild horse viewing opportunities have been optimal in the past and present, but as AML is reached the viewing opportunities would decrease. As more sage steppe restoration projects are implemented, viewing of wild horses may improve in some areas due to additional open spaces with reduced juniper cover. The enhanced viewing opportunities created with sage steppe restoration may be slightly off-set with fewer timber sales at present and in the future.

The cumulative effect of sage steppe restoration projects, forest management activities, management of wild horses at an AML of 275-335 head, and the provisions of the Modoc Motorized Travel Management Plan would result in Alternative 1 - No Action leading to positive overall effects for the recreation resource.

Alternative 2 – Proposed Action

Direct and Indirect Effects

Alternative 2- Proposed Action would result in improved wildlife habitat available (particularly bitterbrush and mountain brush species). This would result in a slight increase in mule deer and a slightly higher hunter success rate. The increased AML (up to 402 wild horses) would maintain the opportunity for wild horse viewing. With the expected improvement in riparian/wetland vegetation, other wildlife viewing opportunities would be enhanced on the WHT, particularly at critical water sources. Enhanced quality and quantity of riparian vegetation quality would provide improved habitat for wildlife and a greater opportunity for wildlife viewing. With an increase in insects associated with the enhanced riparian and aquatic vegetation, recreational fisheries would improve. A decrease in bare ground would enhance visual resources by providing a more natural setting.

Cumulative Effects

Cumulative effects from Alternative 2- Proposed Action would be similar to those of Alternative 1- No Action.

Alternative 3

Direct and Indirect Effects

Impacts would be similar to Alternative 2, except there would be a greater potential risk for riparian resources to be negatively impacted. Under this alternative, 30 miles of existing fence would be removed. This would increase the potential that authorized livestock use and year-round wild horse use over an expanded area would result in a greater degree of resource impacts and a less natural setting. Riparian areas would be at greater risk for reduced amounts of residual herbaceous vegetation and

increased alteration, which in turn would lead to reduced opportunities for wildlife viewing and recreational fishing. Upland wildlife habitats would be similarly impacted which would result in reduced hunting opportunities and hunter success. Because wild horses would potentially roam further than at present, improved viewing opportunities would result.

Cumulative Effects

The past, present and future foreseeable effects include livestock grazing, impacts from lands actions, range improvement (water and fence) construction and maintenance, road construction, maintenance and use, firewood gathering, sage steppe ecosystem restoration projects, recreation and forest management activities.

The cumulative effects of Alternative 3 would be largely similar to the Proposed Action. However, the removal of approximately 30 miles of fence, would present a greater risk for riparian resources to be negatively impacted. The removal of fences would result in less control of livestock and wild horses, and may lead to impacts to the vegetation associated with springs, seeps, reservoirs, and meadows. This would result in negative effects to bird-watching and other watchable wildlife. Future hunting opportunities and success rates could decline with the additional impacts to riparian and upland habitats. Future sage steppe restoration projects and forest management activities would have the potential to improve habitats, but with more widely roaming wild horses, the impacts to upland vegetation would potentially increase. With the implementation of sage steppe restoration projects, coupled with fence removal, wild horse viewing opportunities would potentially improve in some areas due to additional open spaces and increased distribution of animals over the WHT.

With fence removal and more lands with riparian resources potentially available to wild horses, implementation of Alternative 3 would result in overall negative cumulative effects for the recreation resource.

Alternative 4

Direct and Indirect Effects

Up to 900 wild horses would be available for the public to potentially view within the WHT. This alternative would provide the best opportunity and the highest probability for the public to view wild horses. This number is equivalent to the current number of wild horses within the WHT and would be expected to result in a greater degree of resource impact and a less natural setting, even with the reduction in authorized livestock use to make more forage available for wild horse use. As a result, mule deer numbers would be unlikely to change and hunter success rates would remain low. There would be increased risk that riparian seeps and springs would be negatively impacted due to year-round wild horse use. This would reduce the opportunity for bird-watching and watchable wildlife. This alternative would potentially have the greatest negative effect on recreational fishing due to the higher number of wild horses using reservoirs, creeks and other water sources on a year-round basis.

Cumulative Effects

The past, present and future foreseeable effects include livestock grazing, impacts from lands actions, range improvement (water and fence) construction and maintenance, road construction, maintenance and use, firewood gathering, sage steppe ecosystem restoration projects, recreation and forest management activities.

The current population of wild horses has contributed to increased erosion and siltation into streams and reservoirs resulting in negative impacts to recreational fisheries. Watchable wildlife and hunting opportunities are being negatively affected by encroaching juniper, high wild horse numbers, and erosion of sensitive riparian soils associated with unfenced springs, seeps, reservoirs, and meadows. Past unrestricted OHV activities and off-road driving has created erosion and sediments, as well as negative impacts to riparian resources and upland habitats. Alternative 4 would potentially result in future recreational fishery resources becoming less productive as a result of increased yearlong grazing use, decreased insect populations, and increased sedimentation in streams and reservoirs. Cumulative effects to recreational fisheries would have the greatest negative effect due to unrestricted movement, and the higher number of wild horses using reservoirs, creeks and other water sources on a year-round basis. Alternative 4 would result in the greatest potential risk for riparian resources to be negatively impacted with the removal of 50 miles of fence. The removal of fences would result in less control of grazing animals. This, coupled with the higher number of wild horses using the area on a yearlong basis, would have the greatest potential of all the Alternatives to impact vegetation associated with springs, seeps, reservoirs, and meadows, resulting in the greatest negative impacts to bird-watching and other watchable wildlife opportunities. Hunting opportunities and success rates would likely decline with increased year round use on vegetation in riparian and upland habitats. Future sage steppe restoration projects and forest management activities would have the potential to improve habitats, but with more widely roaming wild horses, the impacts to upland vegetation would potentially increase. . In accordance with the Modoc Motorized Travel Management Plan, OHV use is confined to existing roads. This would lead to improved upland and riparian habitats and enhance opportunities for watchable wildlife and result in less siltation into recreational fisheries. Although, positive impacts are foreseen from restricted OHV activities, the benefits may be negated by the higher wild horse population, using the riparian and upland habitats on a yearlong basis. With the highest AML, and the potential to roam further than at present, Alternative 4 would allow for the greatest opportunity to view wild horses. With the implementation of sage steppe restoration projects, coupled with and fence removal, viewing of wild horses would increase due to additional open spaces, and non-restricted movement of horses throughout the area.

With 50 miles of fence proposed for removal and the highest AML for wild horses, as compared to the other Alternatives, Alternative 4 would provide the best wild horse viewing opportunities, but the greatest negative cumulative effects to the recreation resources overall.

4.7 Socio-Economics

4.7.1 Affected Environment

Social

Table 18 depicts the current and historic populations of California, Modoc County and its main urban center of Alturas. California's population increase is similar to that of the United States as a whole. During this timeframe, Modoc County remained stable with little increase in the population. However, Alturas experienced a loss of 14.6 % of the population.

Table 18: Population Growth, 1990 - 2010

Area	1990	2000	2010	Percent Change (1990-2010)
California	29,760,021	33,871,648	37,253,956	25.0
Modoc	9,678	9,449	9,686	0.1
Alturas	3,190	2,890	2,782	-14.6

Source: U.S. Census Bureau, 2010 and California Department of Finance, Demographic Research Unit

Table 19 depicts the demographic characteristics of Modoc County in comparison to California as a whole. The percentage of women, those under 20 years of age and middle age (20-64 years of age) are similar. However, Modoc County has a larger percentage (19.7) of persons over 65 years of age compared to California (11.4). This is attributed to those of retirement age wanting to move to more rural areas of the state.

Table 19: Demographic Characteristics, Share in Total Population (Percent), 2010

Area	Women	20 to 64 years of age	Under 20 Years of Age	65 Years of Age or Older
California	50.3	60.5	28.1	11.4
Modoc	49.6	56.5	23.8	19.7

Source: U.S. Census Bureau, 2010

Environmental Justice

USDA agencies are to ensure to the greatest extent practicable, minority and low-income populations do not experience disproportionately high and adverse effects from USDA programs and activities.

Table 20 summarizes the percentage of the population made up of ethnic minority groups in Modoc County as well as California and the United States as a whole. Modoc County has a lower minority population than California or the United States, but a higher Alaska Native or American Indian population.

Table 20: Minority Populations, 2010

Item	Modoc County	California	United States
Total Population	9,686	37,253,956	308,745,538
Percent of Total			
White	83.5	57.6	72.4
Black or African American	0.8	6.2	12.6
Alaska native or American Indian	3.8	1.0	0.9
Asian	0.8	13.0	4.8
Native Hawaiian And Other Pacific Islander	0.2	0.4	0.2
Other Race	7.0	17.0	6.2
Two or More Races	3.8	4.9	2.9
Hispanic or Latino ⁶	13.9	37.6	16.3
Total Minorities ⁷	20.9	59.5	36.0

Source: U.S. Census Bureau, 2010

Economics

Government is the largest sector in Modoc County followed by agriculture. Grazing is a foundation of the agriculturally-based economy. A summary of historic socioeconomic conditions can be found in the Sage Steppe Ecosystem Restoration EIS Socioeconomics Specialist Report (2007). Modoc County has one of the highest poverty rates in Northern California.

Table 21: Employment by Sector, EDD

Industry Sector	1990	2000	2010
Agriculture	280	340	320
Goods Producing	130	160	130
Trade, Transportation and Utilities	430	430	400
Educational and Health Services	140	140	150
Leisure and Hospitality	180	160	150
Government	1,060	1,270	1,340
Total Employment	3,400	3,470	3,500
Unemployment	360	280	590
Unemployment Rate (%)	9.7	7.5	14.4

Source: <http://www.labormarketinfo.edd.ca.gov/Content.asp?pageid=166>

⁶ Individuals who identify themselves as Hispanic or Latino might be of any race; the sum of the other percentages under the "Percent of Total Population" column therefore does not equal 100 percent, and the sum of the percentages for each racial and ethnic category does not equal the percentage of "total minorities".

⁷ The total minority population, for the purposes of this analysis, is the total population for the geographic unit analyzed minus the non-Latino/Hispanic white population.

Table 22 reflects the per capita income for residents of Modoc County. This information shows little change in income in the area. The poverty rate in 1999 was 21.5 % and in 2010 the poverty rate was 19.8% for the county. This is the highest in all the northern counties of California and one of the highest statewide. There is evidence of a large income disparity in Modoc County compared to the other 22 counties in this region of California.

Table 22: Per Capita Income; Modoc County

Year	Nominal Per Capita Income	Nominal Per Capita Income (adjusted for inflation, 2004 dollars)
1990	\$15,641	\$21,529
2000	\$20,802	\$21,732
2010	\$20,769	\$21,698

Source: U.S. Census Bureau, 2010 and California Department of Finance, Demographic Research Unit

Livestock Ranching and Grazing on Federal Lands

As noted earlier, agriculture is an important component of the economic base for Modoc County. Cattle ranching and its associated products (hay, pasture, and forage) is the largest segment of agriculture. According to the 2010 Modoc County Agricultural Commissioner's report, livestock sales were 33.3% of the total \$112.1 million in farm cash receipts. Ranchers within the county rely heavily on public lands grazing for six months of the year.

4.7.2 Environmental Impacts

Effects Common to All Alternatives

The economic value associated with grazing to the local economy is derived from the 2007 Socio-economics specialist report for the Sage Steppe Ecosystem Restoration Strategy. This report values a public land AUM at \$95 and one job per \$100,000 in direct receipts. Livestock grazing in the project planning area is currently at full capacity. Therefore, the loss of five public land AUMs (May-September grazing season) would be expected to result in the indirect loss of the entire animal unit (AU), or another 7 AUMs and the associated receipts.

Under all the alternatives, reduced wild horse population size would reduce competition for, and increase the availability of, the plants important to Native American tradition.

Alternative 1- No Action

Direct and Indirect Effects

Once AML is achieved and maintained, more forage would be available for use by the permitted livestock. Competition between wild horses and livestock for the available forage and water would also decrease. As a result, there would be fewer impacts to fences and decreased maintenance costs. This would have a positive effect on individual ranch operations and to the local economy.

Environmental Justice

Under Alternative 1, an increase in the amount of forage available for use by permitted livestock would be expected to have a beneficial effect on environmental justice due to the potential for some additional income or job opportunities for minority or low-income populations.

Alternative 2 - Proposed Action

Direct and Indirect Effects

Under Alternative 2, 1,390 AUMs would be converted from livestock to wild horse forage, if necessary. This would result in an expected reduction of receipts to the local economy of about \$132,050 and the loss of one job. Further loss of 1,946 AUMs and \$184,870 in receipts to the local economy would be expected as ranch operations adjust (decrease) livestock numbers (animal units). The supplies and temporary labor needed to reconstruct 14 miles of fence would result in a one-time contribution to the economy of \$118,720.

Environmental Justice

A one-time beneficial effect on job opportunities for laborers to reconstruct 14 miles of fence would result. Over the long-term, three jobs would be lost due to the loss of a total estimated 3,336 AUMs of livestock forage.

Cumulative Effects

The past, present and future foreseeable effects include livestock grazing, impacts from lands actions, range improvement (water and fence) construction and maintenance, road construction, maintenance and use, firewood gathering, sage steppe ecosystem restoration projects and forest management activities.

The cumulative effect to existing ranch operations and the local economy would be the loss of 3,336 AUMs of livestock forage, \$316,920 in receipts, and three jobs. This loss would not be offset by the \$118,720 one-time contribution to the local economy for reconstruction of 14 miles of fence.

Alternative 3

Direct and Indirect Effects

Implementation of Alternative 3 would result in the conversion of 4,424 AUMs from livestock AUMs to wild horse forage, a reduction of about \$420,280 receipts to the local economy, and the loss of four jobs. Another 6,194 AUMs and receipts of \$588,392 would be lost due to reductions in livestock numbers. The removal of 30 miles of existing fence would result in a loss of \$88,200 of infrastructure and a one-time cost to the MDF of \$79,200 for the temporary labor needed to remove the fence.

Environmental Justice

The creation of temporary jobs to remove 30 miles of existing fences would not offset the loss of 10 jobs.

Cumulative Effects

The past, present and future foreseeable effects include livestock grazing, impacts from lands actions, range improvement (water and fence) construction and maintenance, road construction, maintenance

and use, firewood gathering, sage steppe ecosystem restoration projects and forest management activities.

Under Alternative 3, a total of 10,618 AUMs of livestock forage would be lost. This would result in the loss of more than \$1.0 million in cash receipts to the local economy and 10 jobs. Another \$88,200 loss in infrastructure would result which would not be offset by a one-time investment of \$79,200 in temporary labor needed to remove the fence.

Alternative 4

Direct and Indirect Effects

Under Alternative 4, a total of 11,594 AUMs would be converted from livestock to wild horse forage. This would result in the loss of about \$1,101,430 in receipts to the local economy and 11 jobs. Another 16,231 AUMs, \$1,542,000 in receipts, and 15 jobs would be lost due to reductions in livestock numbers. Removal of 50 miles of existing fence would result in a permanent loss of \$150,712 of infrastructure and a one-time cost to the MDF of \$132,000 for the temporary labor needed to remove the fence.

Environmental Justice

The creation of temporary jobs to remove 50 miles of existing fences would not offset the loss of more than 26 jobs.

Cumulative Effects

The past, present and future foreseeable effects include livestock grazing, impacts from lands actions, range improvement (water and fence) construction and maintenance, road construction, maintenance and use, firewood gathering, sage steppe ecosystem restoration projects and forest management activities.

Implementation of Alternative 4 would result in the loss of a total of approximately 27,825 AUMs due to the conversion from livestock to wild horse forage. More than \$2.6 million in cash receipts and 26 jobs would be lost to the local economy. A total of \$150,712 in infrastructure would be lost. This loss would not be offset by a one-time investment of \$79,200 in temporary labor to remove the fence.

4.8 Watershed (Natural Resources)

4.8.1 Affected Environment

Soils

The MDF uses the 1983 "Soil Survey of Modoc National Forest Area, California" (soil survey) as the basic method of describing the soil resource. The general soils descriptions described below consist of many individual soils and miscellaneous land types. Each map unit contains soils with similar parent material, soil temperature regimes and similar use and management. A map unit typically is made up of one or more soils of major extent and several soils of minor extent. Map units are named for the major soils occurring in the unit. The soils are classified at the family level, or at a higher taxonomic level. The descriptions furnish a broad perspective of the soils in the project area. It provides a basis for comparing the potential of large areas for general kinds of land use. General areas which are capable of timber production or for range can be identified. Likewise, general areas of soils having properties that are distinctly unfavorable for certain land uses can be identified.

Lower Elevation Predominantly Woodland Soils on mainly 0 to 40 Percent Slopes

Lawyer-Elmore families

This soil unit is predominant on nearly level to undulating basalt plateaus, with lesser amounts on mountain uplands. These soils are moderately deep and deep over soft to hard basalt bedrock. Elevation ranges from 4,300 to 6,000 feet, and annual precipitation ranges from 16 to 25 inches. Slopes range from 1 to 60 percent, but are predominately less than 20 percent. The frost-free season is 80 to 110 days. These soils support ponderosa pine and Jeffrey pine forests and may include some incense cedar, white fir, black oak, and western juniper. Understory vegetation may consist of squawcarpet, big sagebrush, rabbit brush, bitterbrush, Greenleaf Manzanita, muleears, and various perennial grasses and sedges.

This unit consists of approximately 55 percent Lawyer soils and 25 percent Elmore soils. The Jacket, Deven, Gwin, Pass Canyon, and Fordice families and rock outcrop make up most of the remaining 20 percent of this unit. The Lawyer soils are moderately deep and deep to basalt bedrock. They are well drained and permeability is moderately slow. They have a thick, brown to reddish brown, stony loam or loam surface over a very cobbly clay loam to extremely cobbly clay loam subsoil.

The Elmore soils are moderately deep and deep to basalt bedrock. They are well drained, and permeability is moderately slow. They have a thick, dark brown to reddish brown loam or gravelly loam or gravelly loam surfaced over a clay loam or gravelly clay loam subsoil.

Lower Elevation Rangeland Soils Mainly on 0 to 40 Percent Slopes

Puls-Indian Creek-Simpson families

This unit occurs primarily on the Modoc Plateau geomorphic province on nearly level to undulating basalt plateaus. A strongly cemented to indurated silica duripan, which ranges in thickness of only a few millimeters up to about two feet, overrides the basalt bedrock in most of this unit. Slopes range from 0 to 10 percent, and elevation ranges from 4,200 to 5,200 feet. Annual precipitation ranges from 10 to 14 inches, and the frost-free season ranges from 80 to 110 days. The Puls, Indian Creek and Simpson family soils are rangeland soils. This unit is about 30 percent Puls, 20 percent Indian Creek, and 15 percent Simpson soils. The remaining 35 percent of the unit is made up primarily of the Packwood, Ditchcamp, Barnard, Cowiche, Wrentham, Bakeoven, Deven, Alicel, and Dishner families and rock outcrop.

The Puls soils are 10 to 20 inches deep to a silica duripan. They are well drained, and have very slow permeability. They have a pinkish gray, very stony clay loam surface soil over clay subsoil. The effective rooting depth is normally less than 10 inches in this soil due to a very hard or extremely hard, very dense clay layer overriding the silica duripan. Roots cannot effectively penetrate this dense clay layer. The Indian Creek soils are 10 to 20 inches deep to a silica duripan. They are well drained and have very slow permeability. They normally have a brown to light brown, cobbly clay loam surface over clay subsoil. The Simpson soils are moderately deep and are well drained. Permeability is slow. These soils are over basalt bedrock. They normally have a brown loam or clay loam surface over a silty clay loam, silty clay, or clay subsoil.

Deven-Bieber-Pass Canyon families

This unit occurs on basalt plateaus throughout the survey area. About half this unit is directly over basalt bedrock, and the other half has a strongly cemented to indurate thin silica duripan, which normally overrides basalt bedrock. Slopes range from 0 to 20 percent, and elevation ranges from 4,300 to 6,000

feet. Annual precipitation ranges from 14 to 20 inches, and the frost-free season ranges from 80 to 110 days. These are rangeland soils. This unit is about 30 percent Deven, 20 percent Bieber, and 20 percent Pass Canyon soils. The remaining 30 percent of this unit is made up primarily of the Barnard, Packwood, Roval, and Puls families and Mesic, Lithic Xerothents and rock outcrop.

The Deven soils are 10 to 20 inches deep, well drained, and over hard basalt bedrock. Permeability is slow. They normally have a thin brown cobbly loam or clay loam surface over a clay or clay loam subsoil. The Bieber soils are 7 to 20 inches deep to a relatively thin silica duripan which normally overlies basalt bedrock. These soils are well drained, and permeability is very slow. They normally have a thin brown very cobbly loam surface over clay subsoil. The Pass Canyon soils are 8 to 20 inches deep over basalt bedrock. They are well-drained, and permeability is moderately slow. They normally have a dark grayish brown, very cobbly loam surface over a clay loam or cobbly clay loam subsoil.

Supan-Los Gatos-Pass Canyon families

This unit occurs primarily on basalt plateaus. Slopes range from 1 to 35 percent but are mainly less than 20 percent. Elevation ranges from 4,300 to 6,000 feet, and annual precipitation ranges from 14 to 18 inches. The frost-free growing season is 80 to 110 days. These soils are rangeland soils. The Supan and Los Gatos soils provide very favorable conditions for increaser species such as western juniper, and some areas of this unit have become quite dense with a western juniper overstory.

This unit is about 30 percent Supan, 30 percent Los Gatos, and 20 percent Pass Canyon soils. The remaining 30 percent of this unit is made up primarily of the Ridd, Stuke, Gwin, and Casuse families and rock outcrop. The Supan soils are moderately deep and deep over basalt bedrock. They are well drained, and permeability is moderately slow. They normally have a thick brown loam surface over a gravelly clay loam, clay loam, or very gravelly clay loam subsoil. The Los Gatos soils are moderately deep over basalt or tuff. They are well drained, and permeability is moderate. They normally have brown gravelly clay

loam subsoil. The Pass Canyon soils are 8 to 20 inches deep over basalt bedrock. They are well-drained, and permeability is moderately slow. They normally have a dark grayish brown, very cobbly loam surface over a clay loam or cobbly clay loam subsoil.

Deven-Keating-Pass Canyon families

This unit occurs on basalt plateaus and on mountain uplands. Slopes range from 1 to 60 percent, and elevation ranges from 4,300 to 6,000 feet. Annual precipitation ranges from 14 to 20 inches, and the frost-free season is 80 to 110 days. These soils are rangeland soils. This unit is about 35 percent Deven, 30 percent Keating, and 15 percent Pass canyon soils. The remaining 20 percent of this map unit is made up primarily of the Hiibner, Bieber, Barnard, Ridd, and Ruckles families.

The Deven soils are 10 to 20 inches deep and are either over soft to hard volcanic tuff or basalt bedrock in this unit. They are well drained, and permeability is slow. They normally have a thin brown cobbly loam or clay loam surface over a clay or clay loam subsoil. The Keating soils are moderately deep over volcanic tuff or basalt bedrock. They are well drained, and permeability is slow. They normally have a thin dark grayish brown, cobbly clay loam surface over a clay loam to clay subsoil. The Pass Canyon soils are 8 to 20 inches deep over basalt bedrock or over hard to soft volcanic tuff in this unit. They are well-drained, and permeability is moderately slow. They normally have a dark grayish brown, very cobbly loam surface over a clay loam or cobbly clay loam subsoil.

Predominantly Nearly Level Alluvial Soils That Are Subject to Flooding

Aikman-Cardon families

This unit occurs on nearly level basalt plateaus in alluvial clay basins and drainages. Slopes are 0 to 2 percent, and elevation ranges from 4,300 to 6,000 feet. Annual precipitation ranges from 12 to 20 inches, and the frost-free season is 80 to 110 days. These soils are subject to spring flooding. These soils are rangeland soils.

This unit consists of about 55 percent Aikman and 15 percent Cardon soils. The remaining 30 percent of this unit is made up primarily of Carlisle, Jackknife, and Barnard families, Aquolls, and Xerofluvents.

The Aikman soils are mainly greater than 40 inches with some pedons 20 to 40 inches deep and are normally over basalt or clayey alluvium. They are moderately well drained, and permeability is very slow. They normally have a dark gray silty clay surface over a silty clay or clay substratum. The Cardon soils are greater than 40 inches deep and are formed from clayey alluvium derived mainly from basalt or andesite. They are somewhat poorly drained, and permeability is very slow. They normally have a very dark gray clay surface over a clay substratum or stratified clay to clay loam substratum.

Mid Elevation Soils on Gently Sloping to Extremely Steep Mountains

Smarts-Demasters-Patio families

This unit is composed of moderately deep and deep soils on mountain uplands. Slopes range from 1 to 90 percent, but are predominately less than 40 percent. Elevation ranges from 5,400 to 7,500 feet, and annual precipitation is mainly 20 to 30 inches. The frost-free growing season is 60 to 90 days. These soils normally support dense stands of white fir, or mixed conifer forest of white fir, ponderosa pine, and incense cedar. Understory vegetation is normally very sparse and may consist of greenleaf Manzanita, snowberry, serviceberry, Ribes spp., currant spp., squawcarpet, and a few perennial grasses and sedges.

This unit is about 35 percent Smarts, 20 percent DeMasters, and 15 percent Patio soils. The remaining 30 percent of this unit is composed primarily of the Lamondi, Mascamp, Anatone, Cavanaugh, Merlin, Merkel, Gleason, and Wapal families and rock outcrop. The Smarts soils are moderately deep and deep and are mainly over basalt. They are well drained, and permeability is moderately slow. They normally have a reddish brown, stony loam surface over a very cobbly loam, very gravelly loam, and extremely gravelly clay loam subsoil. The DeMasters soils are mainly deep over basalt. They are well drained, and permeability is moderately slow. They normally have a thick brown or reddish brown loam or gravelly loam surface over a gravelly clay loam to extremely cobbly clay loam subsoil. The Patio soils are moderately deep and deep and are mainly over basalt, andesite, or obsidian. They are well drained, and permeability is moderate. They normally have a yellowish brown, very gravelly loam surface over an extremely gravelly loam or extremely cobbly loam subsoil.

Miscellaneous Areas with Little or No Soil Present

Water

This unit consists of large bodies of water.

Erosion Hazard

The Erosion Maximum Hazard rating indicates the level of risk of soil loss by erosion and is based on the assumption that most or all of the vegetative surface cover has been removed due to management practices or to wildfire. The risk is low if the expected soil loss is small, moderate if standard and non-intensive and/or expensive measures are needed to control erosion, and high or very high if excessive soil loss is expected without intensive and /or expensive measures to control erosion (Soil Survey of Modoc National Forest Area, California, 1983).

Table 23 indicates the percent of each Erosion Maximum Hazard rating (EHR) for each grazing allotment in the Devil's Garden Plateau Wild Horse Territory

Table 23: EHR for Grazing Allotments in the Devils Garden Plateau WHT

Allotment	Low EHR	Moderate EHR	High EHR	Very High EHR
Mowitz	12.0%	88.0%		
Carr	21.9%	78.1%		
Surveyors Valley	4.6%	95.4%		
Potters	86.8%	13.2%		
Pine Spring	10.7%	89.3%		
West Grizzlie	0.1%	99.9%		
Timbered Mountain	21.7%	78.3%		
Emigrant Spring	3.1%	96.7%	0.2%	
BLM Strip	1.6%	97.7%	0.7%	

Geomorphic History and Geology

The Modoc Plateau geomorphic province comprises the relatively flat and monotonous central portion of the survey area, also known as the Devil's Garden. It is capped by fissure erupted basalts of Late Miocene to Late Pleistocene age (about 25,000 years to 20 million years ago) which resemble but cannot be correlated with the much thicker and older Columbia Plateau basalts. On the average, the basalt capping on the Devil's Garden, or Modoc Plateau, is about 400 feet thick. The maximum thickness known is about 1,000 feet. At the southern margin of the plateau the basalt may be as little as fifteen feet thick. A very thick sequence of pyroclastics and minor intercolated lava flows of gross andesitic composition, which has been correlated with the Cedarville series of the Warner Mountains, under lies the basalt capping of the entire plateau (Soil Survey of Modoc National Forest Area, California, 1983).

Monitoring

During spring 2012, little or no residual vegetation remained in the Emigrant Spring, Pine Springs, Timbered Mountain (Black Rock Pasture) and Carr (Timbered Pasture) allotments due to moderate or heavier over-winter use by wild horses. In Pine Springs, about 7,000 acres of areas burned by wildfire were negatively impacted by heavy utilization, trailing and trampling. The lack of litter and degree of utilization, trampling and trailing in these areas increases the risk for surface or rill erosion to result following a precipitation event.

Vegetation

Existing grazing use by all herbivores (including wild horses) appears to be within the available capacity of the Surveyors Valley Allotment. No wild horses have been present in the Potters Allotment since at least 1986. This would be due to a lack of space for reproducing wild horses. Forage, water and cover are present in Potters in sufficient amounts to potentially support a small number of geldings.

Year-round wild horse use appears to be contributing to unsatisfactory rangeland health conditions in substantial portions of the Emigrant Spring Allotment, Pine Springs Allotment, Timbered Mountain Allotment (Black Rock Pasture) and the Carr Allotment (Timbered Pasture). In these areas, wild horse use appears to be above the available capacity. In addition to the lack of litter in spring 2012 due to over-winter wild horse use, heavy utilization, trampling and trailing in some areas are increasing the potential for surface or rill erosion. Left unchecked, long-term negative impacts to range ecological condition would result.

Medusahead (an invasive annual grass) has become established on approximately 11,000 acres in deeper soils in open areas (areas with little or minor amounts of juniper) and around stock tanks and riparian floodplains in the southern portion of the Emigrant Spring and Pine Springs allotments. Cheatgrass and other annual species are dominant in the 7,632 acres of BLM land within the WHT (Emigrant Spring Allotment).

In Timbered Mountain, the livestock operator has been unable to graze his permitted livestock in the Black Rock area for five out of the past seven years due to wild horse concentration/overpopulation. Year-round use coupled with heavy utilization has led to a loss of key forage plants and reduced plant vigor. At the same time, relatively few wild horses are using other areas of Timbered Mountain and opportunity may exist to develop some additional water developments to encourage use by wild horses in these areas.

Loafing, trailing and trampling by wild horses were evident throughout much of the Timbered Pasture within the Carr Allotment (there was only 490 AUMs of livestock use in 2012). Uplands adjacent to and south of Boles Tank were altered by 72% in June due to trampling by wild horses. Wild horses have also excavated large holes near Boles Tank in search of salt or minerals. Additionally, in the Boles Tank area, year-round wild horse use has impacted plant vigor and species diversity. *Danthonia unispicata* (Onespike oatgrass) is one grass species present that is abundant in portions of upland rangelands near Boles Meadow that do not receive use by wild horses, but is missing entirely from the adjacent Boles Tank area.

Riparian/Wetland Areas

Year-round use by wild horse numbers in excess of the established AML is contributing to the nonfunctional condition of a number of springs and seeps within the WHT (Table 24). These areas exhibit bare soil/trampling in excess of 70%, stubble heights of less than 2 inches remaining by September and October of 2012, denuded vegetation, and the presence of annuals and other undesirable plants.

Table 24: Springs in Nonfunctional Riparian Condition

Area	Spring	Description
Emigrant Springs	<ul style="list-style-type: none"> Emigrant Springs Kelley Springs Complex Southeast Springs (Unnamed – T43N, R13E, S. 9, 10 & 17) Bowers Spring Leonard Spring 	Areas are compacted, vegetation denuded, and invaded by annuals and other undesirable plants.
Pine Springs	Pine Springs, Crowder Mountain Springs and unnamed springs at T46N, R13E, S. 28 & 29	Trampling at Pine Springs was 74% with a 3" residual stubble height on July 3rd.
Black Rock	<ul style="list-style-type: none"> Bottle Springs Complex Boles Spring Un-named Springs at T46N, R10E, S. 22 & 35 	5 spring areas in the Black Rock Pasture have been heavily impacted by wild horses (livestock rest-pasture in 2012). Alteration of these areas exceeds 90%.

4.8.2 Environmental Impacts

Soils

Alternative 1 – No Action

Direct and Indirect Effects

Managing wild horse population size within the established AML would be expected to meet Forest Plan utilization standards and achieve the desired conditions. The AML would be adjusted, as needed, on high impact areas. Soil conditions would improve with the removal of excess wild horses. Existing water developments and fences would be periodically maintained and replaced or reconstructed when they outlive their useful life. This would sustain the existing grazing management practices and result in fewer impacts to soils resources.

Cumulative Effects

The past, present and future foreseeable effects include livestock grazing, impacts from lands actions, range improvement (water and fence) construction and maintenance, road construction, maintenance and use, firewood gathering, sage steppe ecosystem restoration projects and forest management activities.

Over the long-term, the condition of soils would be expected to improve with the management of wild horse population numbers. The maintenance and replacement or reconstruction of fences would allow for greater control of livestock and wild horse movements allowing for greater control of detrimental grazing impacts to soils.

Alternative 2 – Proposed Action

Direct and Indirect Effects

Although wild horse numbers would be reduced over current levels, the AML would increase as compared with Alternative 1 to 206-402 wild horses. Year-round use by this number of wild horses would result in greater negative impacts to soils than under Alternative 1. Achieving and maintaining wild horse population size within the AML would be expected to result in attainment of Forest Plan

utilization standards and the desired conditions. Existing boundary and pasture division fences would be maintained or reconstructed when needed. Riparian pasture fences would also be proposed for reconstruction. The condition of springs, seeps and meadows in the Emigrant Springs-Pine Springs areas would be re-evaluated once AML has been achieved and maintained for two years. If these areas have not substantially improved in condition, additional management actions such as construction of additional riparian pasture fences and development of off-site water would be considered. This would create greater control over horse and cattle impacts to soils.

Cumulative Effects

The past, present and future foreseeable effects include livestock grazing, impacts from lands actions, range improvement (water and fence) construction and maintenance, road construction, maintenance and use, firewood gathering, sage steppe ecosystem restoration projects and forest management activities.

Over the long-term, the condition of soils would be expected to improve. Wild horse numbers would be reduced from the current level which would reduce impacts to soils during the winter when soils are wet and easily impacted. The maintenance and reconstruction of fences would maintain or improve soil conditions due to increased control of cattle and horse movements.

Alternative 3

Direct and Indirect Effects

Under Alternative 3, management of wild horses and their habitat would be the same as described in Alternative 2 (Proposed Action), with the exception that additional management actions would be taken to enhance future wild horse management and assist in slowing population growth. Management actions would be taken to encourage free-roaming behavior, including the removal of approximately 30 miles of existing fence. In comparison to Alternative 2, the removal of 30 miles of existing fence in the Timbered Mountain Allotment would probably result in increased impacts to soils due to reduced control of livestock and wild horse movements.

Water would be developed in areas such as Mowitz or Timbered Mountain that are not currently well watered which would disperse grazers and reduce concentrated impacts to soils in these areas.

Cumulative Effects

The past, present and future foreseeable effects include livestock grazing, impacts from lands actions, range improvement (water and fence) construction and maintenance, road construction, maintenance and use, firewood gathering, sage steppe ecosystem restoration projects and forest management activities.

The removal of 30 miles of existing fence would result in less control of the area being grazed by livestock and wild horses and increased risk of grazing impacts to soils. Over the long-term, this would potentially lead to further adjustments in the AML, permitted livestock use, or other management actions as needed to achieve and maintain soil condition. The development of additional water sources would potentially better disperse wild horses and livestock. Greater dispersal would reduce concentrated impacts to soils.

Alternative 4

Direct and Indirect Effects

Under this alternative, a range of 700-900 wild horses would graze within the WHT year-round. Even with adjustments in permitted livestock grazing use, year-round impacts to soils from wild horses during wet weather would persist and have the potential to deteriorate soil conditions. Further adjustments to the AML for wild horses and to the permitted livestock use, or other management changes would result.

Approximately 50 miles of existing fence would be removed to provide increased opportunity for free-roaming behavior. In the absence of 50 miles of existing fence, there would be less control of the area being grazed by livestock and wild horses and increased grazing impacts to soils would be expected. Existing stock water developments would not be maintained or reconstructed. This would create less dispersal of ungulates which would concentrate the area of impacts on soils.

Cumulative Effects

The past, present and future foreseeable effects include livestock grazing, impacts from lands actions, range improvement (water and fence) construction and maintenance, road construction, maintenance and use, firewood gathering, sage steppe ecosystem restoration projects and forest management activities.

Wild horses would be managed within a range of 700-900 animals. Soil condition would be expected to deteriorate due to increased year-round grazing impacts from horses, particularly when soils are wet during the winter. The removal of 50 miles of existing fence would create less control of livestock and wild horse movements and increase the potential for grazing impacts to soils. Existing water developments would not be maintained or reconstructed. This would create less dispersal of ungulates which would concentrate the area of impacts on soils at remaining water sources.

Vegetation

Effects Common to All Alternatives (1-4)

Implementation of Alternatives 1-4 would be unlikely to improve the condition of range sites presently in unsatisfactory ecological condition. Medusahead and cheatgrass would continue to occupy the sites where presently established. In the absence of specific management actions to reduce juniper density, range sites in unsatisfactory ecological condition due to juniper would not be expected to improve.

Alternative 1 – No Action

Direct and Indirect Effects

Managing wild horse population size within the established AML would be expected to meet Forest Plan utilization standards and achieve the desired conditions. The potential risk for medusahead and cheatgrass to expand to additional range sites would be decreased. Grazing in conformance with Forest Plan utilization standards would be expected to retain adequate amounts of residual vegetation and litter to minimize the potential for surface or rill erosion following precipitation events.

Cumulative Effects

The past, present and future foreseeable effects include livestock grazing, impacts from lands actions, range improvement (water and fence) construction and maintenance, road construction, maintenance and use, firewood gathering, sage steppe ecosystem restoration projects and forest management activities.

Range sites presently occupied by medusahead and cheatgrass would remain in unsatisfactory ecological condition. However, future management actions designed to decrease juniper densities has potential to restore a number of range sites and to increase the diversity, vigor and productivity of native perennial grasses and forbs.

Alternative 2 – Proposed Action

Direct and Indirect Effects

Managing wild horse population size within the established AML, coupled with some adjustments in the authorized livestock grazing use, would be expected to meet Forest Plan utilization standards and achieve the desired conditions. The potential risk for medusahead and cheatgrass to expand to additional range sites would be decreased over the existing situation. Grazing in conformance with Forest Plan utilization standards would be expected to retain adequate amounts of residual vegetation and litter to minimize the potential for surface or rill erosion following precipitation events.

Cumulative Effects

The past, present and future foreseeable effects include livestock grazing, impacts from lands actions, range improvement (water and fence) construction and maintenance, road construction, maintenance and use, firewood gathering, sage steppe ecosystem restoration projects and forest management activities.

Increased bare ground due to reduced species diversity, vigor and production and inadequate residual herbaceous vegetation and litter would increase the risk for surface and rill erosion to result. To minimize the potential risk, intensive monitoring would be continued for at least two years following attainment of AML. The monitoring objective would be to determine if additional adjustments in AML or other management actions would be needed to maintain or improve rangeland health over the long-term.

Alternative 3

Direct and Indirect Effects

Same as Alternative 2, with the exception that the removal of 30 miles of existing fence would increase the potential for Forest Plan utilization standards and desired conditions to not be met. To minimize this potential risk, permitted livestock grazing use may have to be reduced and changes in livestock management practices, such as potentially hiring one or more riders to manage the livestock in an effort to provide periodic deferment or rest of vegetation during the growing season, would be required.

Cumulative Effects

The past, present and future foreseeable effects include livestock grazing, impacts from lands actions, range improvement (water and fence) construction and maintenance, road construction, maintenance

and use, firewood gathering, sage steppe ecosystem restoration projects and forest management activities.

Past experience with the use of riders on horseback to implement deferred or rest-rotation grazing strategies has shown mixed results. In some areas, riders have effectively managed livestock and utilization and other vegetation management objectives have been achieved. In other areas, livestock management has been less successful and utilization and other vegetation objectives have been partly met or not met. If objectives were partly met or not met, additional adjustments to the permitted livestock grazing use, or other management actions may be necessary.

Alternative 4

Direct and Indirect Effects

Under this alternative, year-round and long-term use by 700-900 wild horses, coupled with the removal of 50 miles of existing fence would increase the potential for Forest Plan utilization standards and desired conditions to not be met. To minimize this potential risk, permitted livestock grazing use would be reduced and changes in livestock management practices, such as potentially hiring one or more riders to manage the livestock in an effort to provide periodic deferment or rest of vegetation during the growing season, would be required.

Cumulative Effects

The past, present and future foreseeable effects include livestock grazing, impacts from lands actions, range improvement (water and fence) construction and maintenance, road construction, maintenance and use, firewood gathering, sage steppe ecosystem restoration projects and forest management activities.

The loss in forage, coupled with reduced infrastructure to assist with on-the-ground livestock management, would make it less feasible for livestock operators to manage their livestock in a manner that would provide periodic rest or deferment to vegetation resources. This would lead to a much greater risk that Forest Plan utilization standards and desired conditions would not be met.

Riparian/Wetland Areas

Effects Common to All Alternatives

Under all alternatives, existing pasture fences for Boles Creek and Fletcher Creek would be maintained and these areas would be managed to protect riparian-dependent resources.

Effects Common to Alternatives 1 and 2

Should achieving and maintaining AML for two consecutive years not result in satisfactory improvement of riparian-wetland areas, the areas of concern would be fenced and off-site water would be developed pending additional site-specific environmental analysis. This would result in improved riparian condition over the long-term.

Alternative 1 – No Action

Direct and Indirect Effects

Managing wild horse population size within the established AML would be expected to meet Forest Plan utilization standards. Springs and seeps currently in nonfunctional condition would be expected to improve.

Cumulative Effects

The past, present and future foreseeable effects include livestock grazing, impacts from lands actions, range improvement (water and fence) construction and maintenance, road construction, maintenance and use, firewood gathering, sage steppe ecosystem restoration projects and forest management activities. Of these activities, livestock grazing would have the most potential to add to the cumulative effects of this alternative on riparian habitat.

As livestock is managed in compliance with Forest Plan standards, the effects of this alternative in combination with the other activities on federal and private lands would be an increase in long-term benefits to the watersheds. Over the long-term, the condition of riparian seeps and springs would be expected to improve to properly functioning.

Alternative 2 – Proposed Action

Direct and Indirect Effects

Although wild horse numbers would be reduced over current levels, the AML would increase to 206-402 wild horses. Year-round use by this number of wild horses would result in greater potential negative impacts to riparian seep-spring condition than Alternative 1.

Cumulative Effects

The past, present and future foreseeable effects include livestock grazing, impacts from lands actions, range improvement (water and fence) construction and maintenance, road construction, maintenance and use, firewood gathering, sage steppe ecosystem restoration projects and forest management activities. Of these activities, livestock grazing would have the most potential to add to the cumulative effects of this Alternative.

As in Alternative 1- No Action, the effects of this alternative in combination with the other activities on federal and private lands would be an increase in long-term benefits to the watersheds. Over the long-term, the condition of riparian seeps and springs would be expected to improve to properly functioning; however this improvement could potentially be less than in alternative 1, due to the larger numbers of wild horses.

Alternative 3

Direct and Indirect Effects

Although wild horse numbers would be reduced over current levels, the removal of 30 miles of existing fence in the Timbered Mountain Allotment would result in greater potential negative impacts to riparian seep-spring condition than Alternative 2. Reliance on herding as the primary means to manage livestock would be potentially less effective than the existing fences.

Cumulative Effects

The past, present and future foreseeable effects include livestock grazing, impacts from lands actions, range improvement (water and fence) construction and maintenance, road construction, maintenance and use, firewood gathering, sage steppe ecosystem restoration projects and forest management activities. Of these activities, livestock grazing would have the most potential to add to the cumulative effects of this Alternative. Of these activities, livestock grazing would have the most potential to add to the cumulative effects of this Alternative.

In the absence of 30 miles of existing fence, herbivores would be expected to continue to concentrate their use in riparian seeps and springs currently in nonfunctional condition. Over the long-term, this would lead to further adjustments in AML, permitted livestock use, or other management changes as needed to achieve and maintain properly functioning riparian condition.

Alternative 4

Direct and Indirect Effects

Under this alternative, 700-900 wild horses would graze within the WHT year-round. Even with adjustments in permitted livestock grazing use, the current deteriorated conditions of riparian seeps and springs would be expected to persist. The removal of approximately 50 miles of fencing would result in less control of livestock and wild horses and would potentially increase impacts to riparian areas. Further adjustments in the AML for wild horses or to the authorized livestock use or grazing management changes would potentially result.

Cumulative Effects

The past, present and future foreseeable effects include livestock grazing, impacts from lands actions, range improvement (water and fence) construction and maintenance, road construction, maintenance and use, firewood gathering, sage steppe ecosystem restoration projects and forest management activities. Of these activities, livestock grazing would have the most potential to add to the cumulative effects of this Alternative.

Under this alternative a larger amount of wild horses would occur within the WHT on a year-long basis. Herbivores would be expected to continue to concentrate their use in riparian seeps and springs currently in nonfunctional condition. This nonfunctional condition could potentially be greater when combined with other activities on private and federal lands. Over the long-term, further adjustments to the AML for wild horses or to the permitted livestock grazing use or other grazing management changes would result.

4.9 Wild Horses

4.9.1 Affected Environment

Population Management

Historic Wild Horse Information

Feral horses originating from domestic stock have been in the Devil's Garden since shortly after the first settlement. As early as 1889, organized roundups captured and disposed of many of the poorer class of estray and unbranded horses. In the early to mid-1920s, nearly 1,200 unclaimed or unbranded horses were gathered from the Devil's Garden area and sold. By 1943, it was estimated 300 horses remained on the Devil's Garden District.

In 1946, another 287 horses were removed. Another 70 head were removed in 1951, nearly eliminating the animals in entirety from the Devil's Garden Plateau.

In 1971, the Wild Free-Roaming Horses and Burros Act (PL 92-195) was signed into law. This Act (as amended) provides for the protection, management and control of wild free-roaming horses and burros on the public lands. The Secretaries of Interior for the Bureau of Land Management and Agriculture for the Forest Service were charged with their management. The Act defines wild free-roaming horses and burros as "all unbranded and unclaimed horses and burros on public lands of the United States". The Act directs the Secretaries to protect and manage these horses and burros as integral components of the public lands.

In 1975, the first Devil's Garden Wild Horse Management Plan was approved. This plan called for the management of 300 wild horses. The plan was updated in 1980 and 1982. Each plan and the associated Memorandums of Understanding serve to document the cooperation and working relationship between the Modoc National Forest (MDF) and the BLM. Generally, the BLM has been responsible for operational work of the gathering, holding and disposition of captured excess animals. The MDF has been responsible for planning, environmental analysis, monitoring and financing, and supplying the equipment and manpower necessary to assist in these efforts.

In 1991, the Modoc National Forest Land and Resource Management Plan (Forest Plan) was approved. The Forest Plan established an Appropriate Management Level as a population range of 275-335 animals. A total of 4,400 AUMs was allocated for their use.

Since the Forest Plan was approved, wild horses have been gathered periodically in an attempt to manage population size within the Appropriate Management Level, and in balance with available forage and water, and other uses occurring within the area.

Current Use by Wild Horses

Wild horses occur in each of the different areas throughout the WHT, with the exception of Potters. In some of the areas, horses occur only in certain pastures, or have preferred areas where home ranges have been established. Current wild horse use is summarized by area below.

1. Carr. Animals are found primarily in the Timbered and Pothole pastures. Their preferred area is in the Timbered Pasture, primarily on the east side, adjacent to the Avanzino Ranch (private land). Use by horses in the south east corner and in the area adjacent to Boles Tank is heavy. For the Pothole

Pasture, the livestock management system calls for grazing two out of every four years for riparian management. However, wild horses use this pasture every year. There is minimal use by horses over the balance of this area. Overall, the area appears to have adequate suitable habitat to support a year-round population of wild horses over the long-term. However, existing wild horse numbers do not appear to be in balance with the available water and forage.

2. Emigrant. Wild horse use occurs over the entire area, with the heaviest use made in the northern two-thirds. This area is a preferred wintering area for the animals and extremely heavy use has been made by horses over the winter season. This area has adequate suitable habitat to support a population of wild horses over the long-term. However, existing wild horse numbers are contributing to over utilization of forage and unsatisfactory upland and riparian conditions.
3. Mowitz. During 2012, wild horses were observed in the south end of the allotment, outside the WHT. The portion of Mowitz inside the WHT lacks adequate year-round water. The majority of the water sources dry up by mid-season on most years. As a result, wild horses appear to leave the WHT in search of water. This area, with limited late season water, may not be suitable for sustaining a year-round population of wild horses over the long-term.
4. Pine Springs. Wild horses utilize all of Pine Springs, but do concentrate their use in the north. Pine Springs supports the highest concentration of animals of any area in the WHT. As with the Emigrant area, extremely heavy use by wild horses is made over the winter period. Pine Springs appears to have adequate suitable habitat to sustain a healthy population of wild horses over the long-term. However, current wild horse numbers are leading to unsatisfactory upland and riparian conditions over portions of the area.
5. Potters. Wild horses have not been observed in Potters since at least 1986. The two pastures in the WHT comprise only 4,812 acres. As a result, there may not be the necessary space to support a reproducing herd of wild horses. The area may provide suitable habitat for a small number of geldings.
6. Surveyors Valley. Wild horses concentrate their use adjacent to the Surveyors Valley and Deadhorse Flat Reservoirs. Upland utilization is generally moderate. Surveyors Valley appears to provide adequate suitable habitat to sustain year-round use by the number of wild horses currently occupying the area.
7. Timbered Mountain. Wild horses are poorly distributed in this allotment. Almost all use by wild horses is made on the west side of the Black Rock Pasture. This has led to degraded upland and riparian habitat conditions. Wild horses also utilize the Cow Head Pasture. In Cow Head, available water sources dry up by mid-season on most years. Therefore, it may not be suitable to sustain a year-round population of wild horses over the long-term. Use by wild horses in the Deer Hill Pasture is minimal and no animals were observed in the Timbered Mountain Pasture during 2012. Overall, the Timbered Mountain Allotment appears to have adequate suitable habitat to sustain a healthy herd of reproducing wild horses in the long-term. However, the concentration of nearly 2/3 of the wild horses in the Black Rock Pasture is resulting in deteriorated upland and riparian conditions.

Current Management

Aerial inventory and gather and removal activities have occurred in the WHT since the passage of the 1971 Act. Inventories have been conducted as funding has allowed. Past inventories have been conducted by direct count. In conducting a direct count, a grid pattern is flown over the WHT. Due to

very dense tree cover found in much of the WHT, it has been difficult to obtain a reliable estimate of population numbers. Use of multiple observers who are intimately familiar with the territory, the herd, their habitat and distribution has helped to improve accuracy. During vegetative monitoring, information on observed wild horse populations has also been documented.

Table 25 shows the estimated number of adult wild horses during the past 10 years.

Table 25: Population Estimates

Year	Estimated Number of Adults*
2003	469
2004	531 (Inventory)
2005	474
2006	428
2007	530
2008	656 (Inventory)
2009	806
2010	641 (Inventory)
2011	801
2012	1,124**

**Populations are estimated utilizing a 25% average annual population growth rate. Years in which aerial inventory was conducted are noted.*

*** The 2012 population estimate includes 2012 ground counts conducted on some of the area.*

Helicopter gathering of excess wild horses has been done every year or two up until 2006, in an attempt to achieve the AMLs established in the 1991 Forest Plan. Until 2004, gather operations were conducted by BLM personnel with the use of a contracted helicopter and under the supervision of the MDF. Since that time, a combination of BLM personnel, and contractors procured under the BLM's National Gather Contract have been utilized. Personnel from the MDF have also utilized bait trapping on a very small scale since 2007.

Gather operations on the Devil's Garden Territory are tactically difficult, for both helicopter and bait trap gathers, due to varying densities of tree cover and the number of poor quality roads that make vehicle access especially difficult. Much of the WHT is very rocky. Special care is required to ensure animals are gathered in a safe and humane manner.

Helicopter-assisted gathers are generally limited to summer and early fall (September and October) before the inclement weather makes access impossible. No animals are gathered from March 1 to June 30 to exclude gathering during the peak of the foaling season. Another factor complicating gather operations is that the WHT falls within the X-2 hunting zone, one of California's premier mule deer hunting areas. During some years in the past, gather operations have been suspended during the two-week deer season, so as not to interfere with this recreational pursuit. Although the Forest will try to avoid gather operations during the deer hunting season, if gathers must occur during this time, advance notification to the public will be made through the media and other channels. Advance coordination with the California Department of Fish and Wildlife would also occur.

The warmer temperatures typically experienced during July and August, rocky ground conditions and smaller foals make these summer months less than optimum for gather operations. However, following the LOPs in Appendix 3 would minimize any adverse effects to the animals. In the past, most of the

gather operations have occurred during this period and the animals have arrived to holding facilities in good condition. September and October, after temperatures cool down, and the foals are larger, is the preferred period for helicopter-assisted gather operations on the Devil's Garden. Table 26 shows numbers of animals gathered over the past 10 years.

Table 26: Wild Horse Gather History

Year	Location	No. Gathered	Totals
2003	Pine Springs	21	
	Surveyors	92	
	Timbered Mtn.	103	
	Big Sage	36	
	Triangle	4	2003 Total- 256 head
2004	Emigrant	31	
	Carr (Boles)	71	
	Carr (Pothole)	71	2004 Total- 173 head
2005	Emigrant	197	
	Pine Springs	50	
	Big Sage	16	2005 Total- 263 head
2006	Emigrant	30	
	Big Sage	55	
	Mowitz	74	
	Carr (Boles)	12	2006 Total- 171 head
2007	Carr (Boles)	7	2007 Total- 7 head
2008	Tucker	8	2008 Total- 8 head
2009	Carr (Boles)	20	2009 Total- 20 head
2010-2012	-	-	--
Total			898 Head

Livestock Use as Compared to Wild Horse Use for Allotments within the WHT (2006-2012)

As of January 2013, wild horse population size is estimated at 1,124 animals (about 3.4 times the AML upper limit). Of these, about 855 horses (76%) reside within the WHT, while it is estimated another 269, or 24% of the total population are outside the WHT).

Table 27: January 2013 Estimate of Wild Horse Population Size in Comparison to the Established AML

Area	AML	2010 Inventory (Adults)	Current Estimate ⁸
<i>Within the WHT</i>			
Carr	70	92	144
East Grizzlie	0	2	35*
Emigrant Springs	60	143	223
Mowitz	30	20	31**
Pine Springs	35	167	261
Potters	20	0	0
Surveyors	30	35	55
Timbered Mtn	40	68	106
	285	Subtotal	855 (76%)
Avanzino	0	5	80*
Big Sage	0	53	83
Blue Mountain	0	27	42
Carr – Bird Pasture	0	20	31
Carr – Doublehead Pasture	0	3	5
Carr – West Radar	0	1	2
Howard's Gulch	0	7	11
Triangle	0	0	10*
Tucker	0	0	0
West Grizzlie	0	0	5*
		Subtotal	269 (24%)
		TOTAL ESTIMATED	1,124

An aerial inventory completed in February, 2013, using the direct count method, updated this estimate to 1,260 adult wild horses.

⁸ Population inventory completed in November 2010 estimated a population size of 643 adult wild horses (direct count method). At an average annual population growth rate of 25%, the current wild horse population size is estimated at 994 animals (approximately 3. times the 0 AML upper limit). Based on this information, following foaling during the spring of 2013, wild horse population size will increase to an estimated 1,243 animals (3.7 times the upper limit of the established AML). Another population inventory was completed in February 2013.

* Denotes Ground Observations During Spring-Summer-Fall 2012

* ** No horses observed within WHT portion of the Mowitz area during 2012

Table 28: Results of Aerial Inventory in February 2013 (Direct Count Method)

Inside WHT		Outside WHT	
Carr (Pothole, Pinnacle & Timbered)	149	Avanzino Ranch (Private) & Triangle	59
East Grizzlie	21	Big Sage	86
Emigrant Spring	243	Blue Mountain	31
Mowitz	39	Carr (Bird, Pothole)	40
Pine Springs	376	East Grizzlie	4
Potters	0	Emigrant Springs (Private)	7
Surveyors Valley	32	Pine Springs (Private)	21
Timbered Mountain	144	West Grizzlie	8
TOTAL	1,004	TOTAL	256

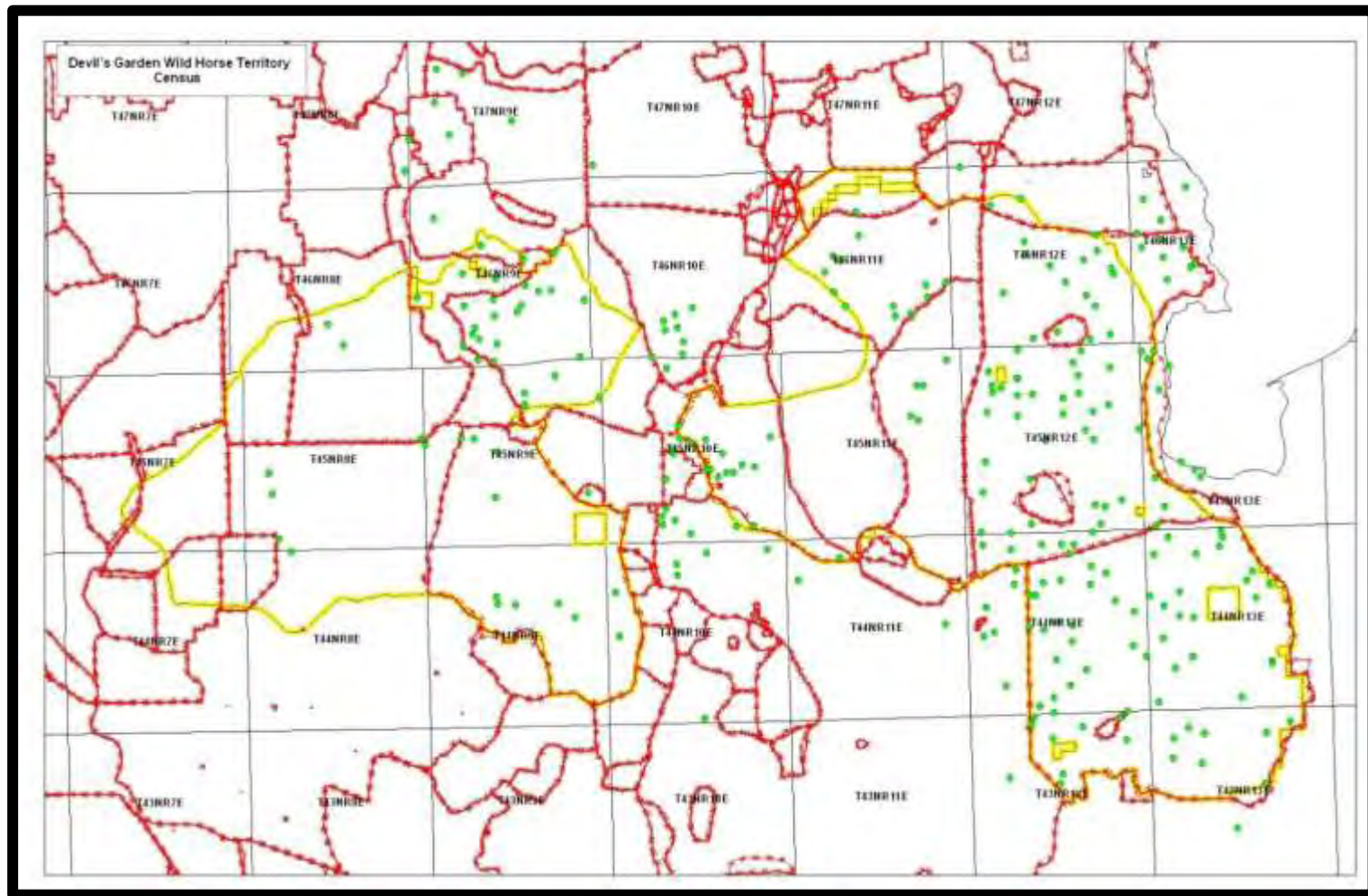


Figure 11: Aerial Inventory (February 2013)

The Green points denote either individual horses or band locations

Term grazing permits for 26,880 Animal Unit Months⁹ (AUMs) of forage consumption by domestic livestock have been issued by the MDF. Another 4,400 AUMs of forage was allocated for use by the Appropriate Management Level (AML) of 275-335 wild horses in the 1991 Forest Plan.

During 2006-2012 actual livestock use averaged about 18,548 AUMs (approximately 69 percent of that permitted). During that same period, actual use by wild horses has exceeded the amount of forage allocated to them in the Forest Plan by 140-369 percent. Since 2002, wild horse population size has exceeded the upper limit of AML.

A comparison of Permitted, Authorized and Actual Livestock Use and wild horse use during 2006-2012 for allotments within the WHT is provided in Table 29. During 2006-2012, actual livestock use ranged from 63-77 percent of that permitted, while actual forage use by wild horses ranged from 140-368 percent of that allocated.

Table 29: Permitted, Actual, and Authorized Livestock (AUMs) as Compared to Use by Wild Horses (2006 - 2012)

Use Category	2006	2007	2008	2009	2010	2011	2012
Livestock Use							
Permitted	26,880	26,880	26,880	26,880	26,880	26,880	26,880
Authorized	23,588	22,518	23,500	21,241	18,743	21,306	22,608
Actual	16,971	20,671	19,607	16,814	18,111	18,405	19,255
Actual vs. Permitted (%)	63%	77%	73%	63%	67%	68%	72%
Wild Horse Use							
Allocated	4,400	4,400	4,400	4,400	4,400	4,400	4,400
Actual	6,163	7,632	9,446	11,606	9,230	11,534	16,186
Actual vs. Allocated (%)	140%	173%	215%	264%	210%	262%	368%

Wild Horse Population Parameters

Animal Characteristics

Wild horses found in the WHT are generally characterized as two distinct herd types: in the West home range, animals display light saddle horse characteristics, and in the East home range, animals tend more toward draft horse type characteristics, and are heavily boned, with larger body size and feathered legs. During past gather activities, animals released back to the range were chosen on the basis of age (older animals for which no adoption demand existed) rather than historic or desired animal characteristics. Excess animals from the Devil's Garden WHT, especially those with draft horse type characteristics, have been highly sought after by potential adopters.

Sex and Age Distribution

Table 30 shows the sex and age distribution of 1,012 animals gathered in the territory. Data is taken from the BLM's Wild Horse and Burro Information System.

⁹ An AUM is 1,000 pounds of air-dried forage needed to support one cow (one animal unit) for one month. A horse utilizes 1.2 AUMs for one month.

Table 30: Sex and Age Distribution

AGE	NO. FEMALES	NO. MALES	TOTAL NO. OF ANIMALS	PERCENTAGE OF ANIMALS IN EACH AGE GROUP
0	130	120	250	25%
1	93	79	172	17%
2	90	63	153	15%
3	58	25	83	8%
4	38	24	62	6%
5	42	17	59	6%
6-8	68	33	101	10%
9-12	32	49	81	8%
12+	22	29	51	5%
Totals / Percentage	573 (57%)	439 (43%)	1,012	100%

As this data is from past gather operations, caution should be use when interpreting the results. However, it appears three primary conclusions can be made.

- First, the data documents a 25%foal crop, which is substantially higher than the 17-20% reported for many herds in Nevada.
- Second, the gathered population contains a disproportionate amount of females. Wild horse herds, over time, generally have a 50:50 ratio of males to females. The Devil's Garden herd has a greater number of females than males (57% female/43% male sex ratio).
- Third, the Devil's Garden WHT appears to have a greater number of animals in the young-age group. Typically, in a wild horse population, normal age distribution is approximately 10-25% in the 0-5 age group, 50-80% in the 6-15 age group, and 10-25% aged 16+ years old. As the data above shows, the young age group (age 0-5 years) comprises about 77 percent of the population. At the same time, the proportion of middle and older aged animals is very low.

Genetic Diversity

Genetic diversity has not been sampled within the WHT. Based on observations of animals gathered and removed from the WHT, no problems have been identified that could be attributed to poor genetic health. It is known that during seasonal and annual migrations, a certain amount of mixing of animals between the animals' home ranges occurs. Future monitoring should include collection of DNA-based genetic material (hair) to establish a baseline genetic diversity for the herds. Samples to detect a change from the baseline would be done at least every 8-10 years in conjunction with regularly scheduled gathers.

Habitat Management

Habitat Components

Habitat for wild horses is composed of four essential components: forage, water, cover and space.

- **Forage.** This component is an essential habitat component for wild horses. Vegetation should be managed in a manner that achieves and maintains a thriving natural ecological balance.
- **Water.** An adequate quantity of available water must be able to sustain the number of animals within the AML on a year-round basis. AML should be adjusted based on water available to wild horses on public lands, unless cooperative agreements can be made with private land owners to allow use of their water sources to support wild horses.
- **Cover and Space.** Adequate terrain and vegetation are necessary to provide wild horses with escape (hiding) cover and shelter from prevailing weather. Wild horses require sufficient space to allow free movement between water and forage within seasonal habitats.

These components must be present within the WHT in sufficient amounts to sustain healthy populations of wild horses and healthy rangelands over the long term. A recurring pattern of wild horse movement outside the WHT to access forage, water, or thermal or hiding cover is an indication an area might not be suitable for supporting a population of wild horses year-round. The suitability of each area for long-term maintenance of wild horses is summarized in Table 31.

Table 31: Habitat Suitability

Area	Habitat Component			
	Forage	Water	Cover	Space
West Portion				
Carr	S*	S	S	S
Surveyors	S	S	S	S
Mowitz	S	U	S	S
Potters	S	S	S	U
East Portion				
Pine Springs	S	S	S	S
Emigrant Spring	S	S	S	S
Timbered Mountain	S	S/U	S	S
East Grizzlie	S	S	S	U

*S (Suitable), U (Unsuitable)

All areas within the WHT appear to have adequate suitable habitat to sustain healthy populations of reproducing wild horses in the long term, except as follows:

- Mowitz appears to be unsuitable for year-round wild horse use at this time as wild horses routinely leave the WHT for late-season water.
- The Cow Head Pasture of the Timbered Mountain Allotment may not be suitable based on limited available water after mid-season on almost all years.

- In Potters, only 4,812 acres (18% of the total area) falls within the WHT. The small size may not provide sufficient space for reproducing wild horses, but could potentially support a small number of geldings.
- Only 712 acres of the East Grizzlie Allotment (2% of the total allotment) is located within the WHT. Although East Grizzlie remains available for use by wild horses, there may not be adequate space for year-round use by a reproducing population of wild horses.
- There appears to be adequate winter range for the current AML, except during years of exceptionally heavy snowfall. This became evident during the winter of 1992-1993, when an estimated 53% of the animals perished due to heavy snow cover and cold temperatures.

Area Specific Habitat Conditions

Emigrant Springs Allotment

- The livestock operator reported there was no residual feed left in the spring of 2012. They also reported that the east side and southwest boundary fences are in poor condition and that the fence around Emigrant Springs has been knocked down by horses and needs work. During spring 2012, horses were concentrated in the top central and northeast portion of the allotment. Later in the year, they concentrated in the southwest corner (over 200 head). A high foal crop and an aggressive stud were observed this year. Cattle were off a week earlier than normal mainly due to loss of water and feed. Trails are powdered dirt going into waterholes.
- Medusa head (an invasive annual grass) is established in deeper soils in open (areas with little or minor amounts of juniper) areas, around stock tanks and riparian floodplains.
- Little or no litter and residual grasses remained in Emigrant Springs this past spring. 99 percent of the 103 sites monitored were grazed at moderate or higher utilization levels. Utilization mapping in the fall of 2011 was compared to mapping conducted in the spring of 2012, and revealed much of the lack of residual forage is directly attributable to use by wild horses.
- Springs and seeps are negatively impacted by over-utilization and trampling damage. Areas are compacted, vegetation denuded, and invaded by annuals and other undesirable plants. Springs of concern include:
 - Emigrant Springs
 - Kelley Springs Complex
 - Southeast Springs (Unnamed – T43N, R13E, S. 9, 10 & 17)
 - Bowers Spring
 - Leonard Spring
- 5 miles of the west boundary fence needs reconstruction. Potential exists for wild horses to move outside the WHT into the Big Sage Allotment.
- The Lauer Reservoir and small spring enclosures in the southeast corner of the allotment are nonfunctional. These areas are being negatively impacted because the enclosure fences are down.

Mowitz Allotment

- During 2012, no wild horses were observed in the Mowitz portion of the WHT. A small number of animals are using the south end of Mowitz, outside the WHT.
- Mowitz appears to be in satisfactory ecological condition, with diverse vegetation species showing high vigor and production.
- All but 5 of the existing stock tanks go dry generally by mid-season each year. Animals are, for the most part, watering at sources outside the WHT.

- With the limited available water, the Mowitz area may not be suitable to support a year-round population of wild horses.

Pine Springs Allotment

- Loafing and trailing is evident throughout the allotment except the southeast corner.
- Light spotty patches of medusa head are evident in the south end of the allotment and are heavy southeast of McGinty Reservoir.
- Open upland flats are often invaded by forbs, annuals and invasives (e.g., cheat grass) and lack native perennial grass species diversity typical for these range sites.
- Little or no litter and residual grasses remained in Pine Springs this spring. 88% of the 51 sites monitored were grazed at moderate or higher utilization levels. Use pattern mapping conducted in the fall of 2011 and again in the spring of 2012, show that much of the lack of residual vegetation is directly attributable to over winter grazing use by wild horses.
- About 11 sections of burned areas throughout the allotment are being impacted by heavy utilization, trailing and trampling.
- Exclosure fences at Crowder Mountain, Dead Horse and Pine Springs (privately owned) are non-functional.
- Pine Springs, Crowder Mountain Springs and un-named springs at T46N, R13E, S. 28 & 29 are heavily impacted by grazing use. Trampling at Pine Springs was 74% with a 3" residual stubble height on July 3rd.

Potters Allotment

- There are currently no wild horses within the Potters Allotment. Past aerial inventory indicates there have been no horses in this area since at least 1986.
- The small size of the area (4,812 acres) may not provide adequate space to sustain a reproducing population of wild horses over the long-term. However, the area may be suitable for a minimal number of geldings.

Timbered Mountain Allotment

- The livestock operator reports that over 100 horses are concentrating their use in the Black Rock Pasture. As a result, the operators haven't been able to use this pasture or their rotation system for five out of the past seven years. 62 horses were using South Mountain Reservoir in 2012 – up until 2011, there were only 12-15 horses in this pasture. It has been taking more work to maintain the north boundary fence due to damage by wild horses. In 2012, total use of this permit was reduced from 900 head to 612 and most of the cattle came off in August due to loss of feed and water.
- Wild horses within this allotment are poorly distributed. Over 100 wild horses reside within the Black Rock Pasture, generally on the far west side.
- Moderate or higher utilization resulted during the fall/winter/spring of 2011-2012 by wild horses resulted as indicated by the lack of litter and residual vegetation this spring.
- 5 spring areas in the Black Rock Pasture are heavily impacted by wild horses (livestock rest-pasture in 2012). Alteration of these areas exceeds 90%. Springs of concern are:
 - Bottle Springs Complex
 - Boles Spring
 - Un-named Springs at T46N, R10E, S. 22 & 35
- About 8 miles of the west boundary fence (between the Black Rock Pasture and Avanzino) needs reconstruction. A 100 yard section has been completely obliterated.

Carr Allotment

- Loafing, trailing and trampling by wild horses are apparent throughout much of the Timbered Pasture within the Carr Allotment.
- Uplands adjacent to and south of Boles Tank were altered by 72% in June due to trampling by wild horses (livestock rest-pasture in 2012).
- Little or no residual vegetation from 2011 remained. This is attributable to wild horse use during fall/winter/spring of 2011-2012.
- Year-round wild horse use has impacted plant vigor and species diversity. For example, *Danthonia unispicata* is one grass species present in ungrazed portions of upland rangelands near Boles Meadow, but is missing entirely from the Boles Tank area within this pasture.
- Wild horses have excavated large holes near Boles Tank in search of salt, or other minerals.

Surveyors Allotment

- Perennial grass plants are pedestalled in the uplands surrounding Surveyors Valley and Dead Horse Reservoirs due to trampling by grazing animals when soils are saturated during the spring.
- Little or no nesting habitat for waterfowl remains within the wetland areas of this allotment. Grazing use averaged 75% (Landscape Appearance Method) in late September 2012.

4.9.2 Environmental Impacts

Effects on Wild Horses Populations and Their Habitat

Population Modeling

Wild Horse population dynamics for the Devil's Garden Plateau WHT were predicted using the WinEquus program, Version 1.40 (2002). The program allows Wild Horse Specialists to predict the outcomes of different wild horse management alternatives. The model was run for a period of 20 years to determine what the potential effects on wild horse population size and growth rates for each of the alternatives being analyzed. See Appendix F for a detailed discussion of assumptions and results.

The population modeling assumptions and criteria used to evaluate the alternatives (as applicable) are:

- Wild horse populations outside the territory were not considered as it is assumed they will be removed.
- Gathering will occur on an annual basis until the population is within the AML range.
- Fertility control and sex ratio skewing will not occur until the population is within the AML range.
- It was assumed that all animals in the 15+ age groups will be turned back to the range. Initial age and sex structure for the population modeling is based on data from 1,012 wild horses gathered from the WHT.
- The percent of the population that can be gathered varies between alternatives, based on gather technique, animal populations, and management action (fertility control, sex ratio skewing) to be performed.
- Initial gather year: 2013
- Simulations were run for 20 years with 100 trials each.
- For all Alternatives, gathers are triggered when populations exceed the upper limit of AML, and gathering occurs until the lower limit is achieved.
- Population modeling was conducted separately for each of the home ranges (east and west).

- The WinEquus population modeling data for population and growth rates for the Devils Garden WHT are displayed in Tables 32, 33 and 34.

Table 32 shows the predicted population size over 20 years. The predicted minimum, median and maximum numbers of animals are shown for each alternative.

Table 33 shows the predicted growth rate of the herd in 20 years for each Alternative, and takes into account fertility control, and the skewing of sex ratios back to the 50:50 ratio that is normal in herds over time.

Table 34 shows, for each Alternative, the predicted total number of animals to be gathered, released and treated with fertility control over the next 20 years.

Table 32: Predicted Population Size in 20 Years - Devils Garden WHT

No Action Alternative			Proposed Action and Alternative 3			Alternative 4		
Median Population Size(No.) ¹⁰								
Min	Med	Max	Min	Med	Max	Min	Med	Max
280	343	409	263	368	500	707	980	1173

Table 33: Predicted Growth Rate in 20 Years - Devils Garden WHT

No Action Alternative	Proposed Action and Alternative 3	Alternative 4
Average Median Growth Rate ⁴		
15.6	12.8	16.3

Table 34: Predicted Number of Horses Gathered (G), Removed (R), and Treated (T) in 20 Years - Devils Garden WHT

No Action Alternative			Proposed Action and Alternative 3			Alternative 4		
Median Number of Horses ⁴								
Gather	Remove	Treat	Gather	Remove	Treat	Gather	Remove	Treat
1241	958	N/A	1238	822	103	3561	2530	534

¹⁰ These numbers are derived from the median values listed on the Summary Data Tables, Pg. C-8 of Appendix C.

Impacts Common to Alternatives 1-4

Impacts from Gather and Removal of Excess Wild Horses

Alternatives 1-4 call for wild horse population control through helicopter gathering, bait/water trapping, or a combination of both techniques. Helicopter assisted gathers would be the primary methods used to gather and remove excess wild horses under the Proposed Action (Alternative 2), No Action (Alternative 1) and Alternative 3. On a limited basis, bait and/or water trapping may also be used. Alternative 4 would also rely on the assistance of a helicopter to gather and remove excess wild horses from outside the WHT; however, bait and/or water trapping would be the primary method used to gather and remove excess wild horses inside the WHT.

Both helicopter and bait or water trapping requires the construction and use of temporary traps and holding facilities constructed of metal panels. As animals concentrate within each trap or holding facility, vegetation would be completely removed and the soil surface totally disturbed. Prior to construction and use, all potential traps sites would be inventoried and relocated if needed to avoid any heritage resources, threatened, endangered and sensitive plants, etc., as necessary. The Forest official has the authority to approve or deny a trap site based on resource concerns.

Helicopter gathering has been utilized on the Devil's Garden WHT since the early 1980s. During this period, gather methods and procedures have been refined throughout the West to minimize the stress and impacts to wild horses. The USFS and Contractor would implement the most current approved Standard Operating Procedures (SOPs) (refer to Appendix C for the SOPs currently in effect). The SOPs have been developed to ensure that a safe and humane gather operation occurs and potential stress and injury to wild horses is minimized.

Based on information from BLM, over 26,000 wild horses have been gathered in California and Nevada since 2004. During this period, mortality has averaged 0.5% to 1.0% which is extremely low when handling wild animals. Another 0.6% of the animals captured were euthanized due to pre-existing conditions and in accordance with BLM policy. During Fiscal Year 2011, rates were much lower with 0.2% death loss resulting from injuries and less than 1.0% combined with animals that had to be euthanized due to acute illness and pre-existing conditions.

A GAO Report, (GAO-99-77) dated October 2008, indicated for 6 of 10 states reporting that BLM experienced a 1.2% death loss to wild horses from accidents during gathers and those euthanized for various reasons. This data shows that the use of helicopters and motorized vehicles has proven to be a safe, humane and effective means for the gather and removal of wild horses from public lands. In order to avoid negative impacts to pregnant mares, the agencies (BLM and USFS) avoid helicopter gathering during the six weeks prior and the six weeks following the peak of foaling (i.e., no helicopter assisted gathers are conducted during March 1 through June 30).

Various impacts to wild horses from gather operations have been observed. Direct impacts include stress from capture, handling, sorting, and transportation. The intensity of these impacts varies by individual animal. Post gather observations show that captured animals acclimate quickly to the holding corral situation, becoming accustomed to water tanks and hay, and human presence.

Injuries resulting from helicopter gathers include nicks to the face, legs or body from tree limbs while being herded by the helicopter. The Devil's Garden WHT has western juniper cover over much of it. Individuals of this tree species characteristically have numerous dead and jagged branches that are located close to the ground, and potentially can result in cuts and puncture types of wounds. During

gathering operations, animals will rarely encounter barbed wire fences that may result in wire cuts. These injuries are not fatal and can be treated at the trap site or temporary holding facility with medicinal spray until a veterinarian examines the animal. On very rare occasions, an animal may break a leg due to stepping into a rodent hole. Due to the rockiness of the Devils Garden WHT, bruises to the hooves can occur. These types of injuries are minimized by conducting gathers in accordance with the current SOPs.

An independent report prepared by four academia-based equine veterinarian or equine specialists, concluded "horses did not exhibit undue stress or show signs of extreme sweating or duress due to the helicopter portion of the gather, maintaining a trot or canter gait only as they entered the wings of the trap. Rather, horses showed more anxiety once they were closed in the pens in close quarters; however, given time to settle, most of the horses engaged in normal behavior...." (Heleski, et al. 2010).

Transport and sorting of captured animals is completed as quickly and safely as possible to reduce the occurrence of fighting, and to move animals to large holding pens so they can settle in with hay and water. During sorting and transport, animals may receive superficial wounds of the rump, face, or legs. Occasionally, an animal may make contact with trap and holding pen panels hard enough to sustain a fatal injury.

Though some members of the public deem helicopter removals inhumane, most documented injuries have occurred once the animals are captured, not during the helicopter gathering operation. Similar injuries would be expected during bait and water trapping as animals would still need to be sorted, aged, transported and otherwise handled.

Indirect impacts are those impacts that occur to individual horses after initial gathering. These may include spontaneous abortions in mares, and increased social displacement and conflict among stallions. It is extremely rare that mares have spontaneous abortions, especially during late summer and fall gathers. Conflicts among stallions may occur when an individual animal is sorted into the stallion pen. There may be a posturing and even a brief physical encounter that generally ends when one animal retreats. The results of such encounters usually consist of bites and kicks that are usually minor in nature. On rare occasions, an aggressive animal may continue to provoke incidents. In such cases, the offending animal is often penned separately.

A small number of foals may be orphaned during gather operations. This may be due to the mare rejecting the foal, the foal and mare becoming separated during sorting, the mare dies or is euthanized during the gather, or other reasons.

Rarely foals are gathered that are already orphans (prior to gathering), due to the mother rejecting it or dying from natural causes. Orphans encountered during gathers are cared for promptly and rarely die or have to be euthanized.

It is anticipated that gathers will occur on the Devil's Garden WHT between August and October with September/October being the preferred period. At that time most foals would be between 4 and 5 months of age, and ready for weaning from their mothers.

In accordance with USFS policy, animals that are severely injured or seriously ill will be immediately destroyed in the most humane manner possible under the supervision of a Forest officer delegated such authority. Humane euthanasia of an animal as an act of mercy is fully documented by the person who destroys the animal.

Impacts to Herd Social Structure

Alternatives 1-4 have the potential to disrupt the social structure of individual bands of wild horses. This is due to the potential for gathering only a portion of a band, turning back individual mares after fertility control treatments, turning back older animals (15+) and other reasons. Helicopter assisted gathers substantially improves the chances of gathering an entire band of wild horses as compared to bait or water trapping (Gianola, personal communication). This is because during bait or water trapping operations, individual animals may hesitate to enter the trap with other band members.

Wild horse bands form complex social structures but this structure is often unstable. Berger (1986) found that although older females showed greater stability relative to younger females, less than 50% of the older females remained with the original band females during his 5 year study of wild horses in the Granite Range of Northern Nevada. Additionally he found that for stallions, tenure averaged only 3.16 (+/- 1.98) years. This data indicates that band social structure is not a static condition and, in fact, can be very dynamic.

For the Proposed Action and Alternative 3, gathers would occur at intervals of four or more years and would be limited to short-term disturbance to the social structure in individual bands.

Annual gathers would be necessary under the No Action Alternative and Alternative 4. These annual gathers have the potential to disrupt the social structure of some individual bands every year. The smaller number of animals gathered each year under these alternatives would result in a minimal effect in the great majority of the individual bands however.

By releasing older animals (ages 15+) under all Alternatives, the males released would likely join bachelor bands while the mares would be assimilated into existing bands.

For the Proposed Action, and Alternative 3, a small number of middle aged male horses (i.e. 5-10 years of age) will be turned out at each gather in an attempt to adjust the number of each sex to the 50:50 ratio normally found in herds over time. It is expected those animals would initially also join bachelor bands with some individuals eventually taking control of their own bands.

Impacts to Wild Horses Removed from the WHT

Alternatives 1-4 involve the gather and removal of excess wild horses from the WHT to varying degrees. Wild horses removed from the WHT would be transported to a short-term holding facility in either goose neck stock trailers or straight deck semi-truck trailers. As per the SOPs, all vehicles used in the transport of wild horses would be inspected prior to use to ensure animals are safely transported. Animals would be separated by age and sex to the extent possible, and transported in separate compartments. Mares and un-weaned foals would be shipped together.

Transporting animals to a short-term facility is limited to a maximum of eight hours, although in almost all cases the actual amount of time in a trailer is much shorter. During transport, potential impacts include stress, slipping and falling, and kicks and bites from other animals. If animals are in extremely poor condition, there is potential for individuals to die during transport, however this is extremely rare.

Upon arrival to the short-term facility, animals are off-loaded by trailer compartment and put into pens with good quality hay and water. Most animals settle down quickly and begin eating hay and drinking water. As animals arrive at the facility, they are inspected by a veterinarian and corral crew, and those with injuries are treated. Any animals with a chronic or incurable disease, or those with serious physical defects (such tooth loss or excessive wear, club foot, or other deformities) would be humanely

euthanized using methods acceptable to the American Veterinary Medical Association (AVMA). Those with injuries or that are in a very thin condition are put into "sick" pens and cared for separately.

After recently captured animals become acclimated to the facility, they are prepared for adoption, sale, or long-term holding. The preparation includes vaccinations, boosters, freeze marking, castration of males and deworming. Injuries or death resulting from preparation activities are rare but can potentially occur.

At short-term facilities, a minimum of 700 square feet is provided per animal. Mortality at these facilities averages approximately 5% (BLM, 2011), including animals euthanized for pre-existing conditions and extremely poor condition.

Forest Service policy allows placement of excess animals with qualified individuals, Government agencies, or other entities, as long as there is a written agreement. Individuals are allowed to adopt no more than four animals per year, unless the applicant is found capable of caring for more than four animals. Individuals adopting animals are subject to terms relating to humane treatment and care.

Most animals not immediately adopted may be sent to long-term holding pastures located in the Midwest. Impacts to horses from being adopted or sent to long-term holding (LTH) are similar to those already described. However, animals sent to long-term holding can be transported a maximum of 24 hours. If it is anticipated transportation times will be greater than this limitation, then horses will be off-loaded at an intermediate destination for a minimum of 8 hours rest. During this time they are provided with fresh, clean water and good quality hay at a rate of 2 lbs./100 lbs. of body weight. Intermediate holding facilities shall be deemed safe for the holding of wild horses.

Long-term pastures have been designed to provide excess animals with humane care in a pasture situation off of public lands. The pastures are large enough to allow horses a free-roaming behavior without hazards, and with adequate forage, water and shelter. LTH pastures are highly productive grasslands compared to the relatively arid environment the horses are from. Mares and sterilized geldings are generally segregated into separate pastures. All long-term holding pastures are supervised by BLM project inspectors, who conduct periodic counts and monitor animal and forage conditions.

Impacts Common to Alternatives 2-4

Impacts from Non-Significant Forest Plan Amendments

The three action alternatives (Alternatives 2-4) include non-significant amendments to the Modoc National Forest Land and Resource Management Plan (1991). Each amendment and related analysis of the impacts is described below:

Delete Standard 5 (LRMP, 4-19) which states: "Manage the wild free-roaming horse herds to achieve a Forest population between 275 and 335 (on the average, 305) animals." Replace Standard 5 (LRMP, 4-19) as follows: "5. (S) Revise the herd management plan for the Devils Garden Plateau WHT approximately every ten to twenty years. Evaluate the appropriate management level (AML) for wild horses as part of the herd management plan analysis and decision process."

This amendment would remove the established AML from the Forest Plan. The WHT plan, including AML, would be evaluated on a 10-20 year basis, unless resource monitoring shows a revision may be necessary before that time. AMLs would continue to be validated or adjusted based on an in-depth evaluation of monitoring data. This amendment would have no impacts to the wild horse population or their habitat and would facilitate the adjustment of AMLs based on monitoring data. Future changes to

the WHT Plan, including adjustment of AML, would not require amendments to the Forest Plan. All alternatives are consistent with the objectives of this standard.

Delete Guideline 5A (LRMP, 4-19) which states: "Every ten years revise the herd management plan for each wild horse territory, including forage allocation for horses within the carrying capacity of the territory. Cooperate with the Bureau of Land Management in capture and placement of the animals. Replace Guideline 5A (LRMP, 4-19) as follows: "A. (G) When review of resource monitoring and population inventory data indicates the appropriate management level (AML) for wild horses may no longer be appropriate, complete an in-depth analysis of resource monitoring data. If indicated, adjust the AML either up or down in order to maintain a thriving natural ecological balance and multiple-use relationship within the WHT. Express the AML as a population range with a lower and upper limit within which wild horses can be managed for the long-term. Establish the AML upper limit as the maximum number which results in a thriving natural ecological balance and avoids a deterioration of the range and the AML lower limit at a number that allows the population to grow (at the annual population growth rate) to the upper limit over a 4-5 year period without any interim gathers to remove excess wild horses. The AML will specify the number of adult wild horses to be managed within the population (excludes current year's foals)."

This amendment clarifies that revisions to the Territory Plan (including AML) will be conducted whenever resource conditions (based on monitoring) indicate a change is necessary. Expressing AML as a range with an upper and lower limit is current Forest Service policy, and allows for animal populations to grow, undisturbed a period of 4-5 years without interim gathers. This amendment would have positive effects on the population of wild horses by minimizing the frequency of gathers and potential disturbance to social structure of the animals. AML adjustments based on monitoring insure wild horses are managed in a thriving natural ecological balance. The alternatives being considered are consistent with the objectives of this guideline.

Delete Guideline 5B (LRMP, 4-19) which states: "Monitor the impacts of wild horses on rangelands in allotments where horses are present. Determine if wild horse numbers should be adjusted on high impact areas." Replace Guideline 5B (LRMP, 4-19) with the following: "Monitor the impacts of wild horses on range ecological condition. Monitoring data may include studies of grazing utilization, range ecological condition and trend, actual use, and climate (weather) data. Population inventory, use patterns, animal distribution, and progress toward attainment of other site-specific and landscape-level objectives may also be considered. Three to five years of data is preferred."

The replacement of Guideline 5B with the amendment clarifies the types and period of data collection necessary to determine what effects wild horses are having on the ecological conditions within the WHT. This amendment would have no impacts to the wild horse population or their habitat. The alternatives being considered are consistent with the objectives of this guideline.

Add Guideline 5C (LRMP, 4-19) as follows: "Cooperate with the Bureau of Land Management to capture and remove excess wild horses when analysis of grazing utilization and distribution, trend in range ecological condition, actual use, climate (weather) data, current population inventory, wild horses located outside the WHT in areas not designated for their long-term maintenance and other factors such as the results of land health assessments demonstrate removal is needed to restore or maintain the range in a thriving natural ecological balance with other uses and the productive capacity of their habitat."

Guideline 5C clarifies the relationship between BLM and the Modoc National Forest, and criteria for determining how animals will be determined excess and removal necessary. This amendment would have no effect on wild horse populations or their habitat. The alternatives are consistent with the Forest Plan goals and objectives associated with wild horse management.

Establish a boundary for the WHT based on the long-term needs of the Devils Garden wild horse herd and within the herd's known territorial limits (1971 WFRHBA) rather than for administrative convenience. This boundary will provide for future management of two distinct home ranges: West and East.

This corrects the WHT boundary to reflect the territorial limits that existed at the time the 1971 WFRHBA became law. As this corrects a boundary established for administrative convenience, this amendment has no effect on wild horses or their habitat and is consistent with Forest Plan goals and objectives associated with wild horse management.

Impacts from Fertility Control (Population Suppression)

For the Proposed Action and Alternative 3, fertility control would be implemented once population size is within the AML range. Alternative 4 also employs the use of fertility control to reduce the population growth rate. Fertility control would be conducted in accordance with the SOPs described in Appendix E.

Porcine Zona Pellucida (PZP)

Fertility control would consist of the administration of the 22-month formulation of Porcine Zona Pellucida (PZP). This agent is administered as a liquid primer injection and a second injection of three time-release pellets (1-, 3- and 12-month pellets) to booster the vaccine over a 12-month period of time. Maximum effectiveness is not achieved unless mares are treated during the 3-4 month window prior to foaling (i.e., November – February). Additionally, fertility control is most effective when 50-90% of all breeding-age mares from a population are treated.

Applying fertility control would slow the rate of reproduction for mares released back to the WHT. The intent is to prolong the period of time between gathers and maintain animal populations within the AML range(s).

Under each alternative, with the exception of No Action, each released mare would receive a single dose of the 22-month PZP contraceptive vaccine. When administered, PZP (antigen) causes the mare's immune system to produce antibodies that bind to the mare's own eggs, effectively blocking sperm binding and fertilization (Zoo Montana, 2000). PZP is relatively inexpensive, is safe for mares and the environment, and can be easily administered in the field. The PZP contraceptive also appears to be completely reversible. The administration of the vaccine is limited to those specifically trained to handle, mix and deliver the product.

For the Devil's Garden WHT, access and inclement weather make the gather of animals (and administration of PZP) impossible at the optimum period on almost all years. Due to difficulties in gathering in the WHT, it would not be feasible to treat the percentage of mares necessary for maximum effectiveness. This holds especially true for Alternative 4 where gathering would be limited to bait/water operations and only a very small portion of the herd could be expected to be gathered.

Administering the vaccine in summer or early fall, the following efficacy would be expected:

- Year 1- 0%
- Year 2- 84%
- Year 2- 64%
- Year 3- 50%

PZP administered to pregnant mares has no effect on the fetus and the mare will carry and give birth to a foal as normal (Kirkpatrick, 1995). The vaccine has also been shown to have no apparent effects on the health of the offspring, or behavior of treated mares (Turner, 1997).

Mares receiving the vaccine would experience slightly increased stress levels from the additional handling necessary while being inoculated and freeze-marked. Injection site injury is rare, but if it does occur, the mare would quickly recover once released back to the WHT.

GonaCon™

GonaCon™ is another fertility control vaccine that received EPA approval for use on wild horses and burros (February 13, 2013). The vaccine works by simulating the production of antibodies that bind to the gonadotropin-releasing hormone (GnRH) in the animal's body. GnRH signals the production of sex hormones (e.g., estrogen, progesterone and testosterone). By binding to GnRH, the antibodies reduce GnRH's ability to stimulate the release of these sex hormones. All sexual activity is decreased, and animals remain in a non-reproductive state as long as a sufficient level of antibody activity is present. The product can be delivered by hand injection, jab stick, or darting.

From a study completed at the Nevada State Penitentiary, Carson City, NV, by Killian, et al (2006) it was reported that the efficacy of GonaCon™ was 94% for the first breeding season, 60% during the second breeding season and 53% during the third year. These data show that the efficacy of GonaCon™ is higher than published research regarding PZP. Another difference found is that while PZP does not inhibit breeding behavior, GonaCon™ decreases breeding activity.

The use of GonaCon™ as a fertility control method for wild horses may be considered in the future for the Devils Garden WHT. The effects of utilizing this vaccine would be analyzed in a supplemental environmental analysis prior to its use.

Alternative 1 – No Action

Direct and Indirect Effects of Population Management

Herd Size and Growth Rate

Under the No Action Alternative, the population of wild horses within the WHT would be managed as a range of 275-335 adult wild horses. Based on the results of population modeling, it is expected that animal numbers would range between 280 and 409 animals (with a median of 343 head) over the next 20 years. This median population figure is very close to the AML upper limit.

Population modeling predicts that over the long-term, the median annual population growth rate would average 15.6 % over the next 20 years. This compares to 12.8% for the Proposed Action and Alternative 3 and 16.3% for Alternative 4.

Herd Sex Ratio and Age Distribution

Under the No Action Alternative, the current estimated sex ratio (43% males/57% females) would continue. The current age structure (with an estimated 77% of the population falling within the 0-5 year old age class) would be expected to remain the same. The number of animals aged over 15 years old would increase as animals of this age would be released back to the range under all the alternatives.

Genetic Diversity

A minimum population size of 50 effective breeding animals (i.e., a population size of about 150-200 animals) is currently recommended to maintain an acceptable level of genetic diversity within reproducing WH&B populations (Cothran, 2009). The current AML of 275-335 adult animals in the herd would be expected to retain a sufficient number of individuals in each home range and provide for adequate movement between the areas to maintain a healthy and genetically diverse population of wild horses over the long-term.

Body Condition

In early spring, wild horses would be expected to be in the poorest body condition of the year. Body condition would improve as forage grasses begin to grow and provide adequate supplies of nutritious forage. Pregnant mares should ideally be in at least a Henneke class 5 when their foals are born to be able to withstand the extra demands of milk production. Managing wild horses at an AML of 275-335 would insure that adequate forage and water is available to maintain the body condition of most animals in the population at a Henneke Scale 3(thin) to 6 (moderately fleshy) condition, depending on the season. However, on a year with low forage production, followed by a winter with particularly high snowfall and cold temperatures (i.e. winter of 1992-1993), some animals likely go into winter in poor condition and some winter die-off may occur.

Gathers (Methods, Frequency, Projected Gather and Removal Numbers)

Under the No Action alternative, helicopter assisted gathers would be the primary means of population control. A minimal amount of bait or water trapping would also occur for small numbers of animals in areas of heavy tree cover and where access is good. In order to achieve a population size within the AML range, annual gathers to remove 300 excess wild horses would be needed during the first two years following TMP approval. Approximately 200 animals would need to be gathered and removed during the third year. In addition, another 336 wild horses are currently residing in areas outside the WHT, including private lands. In accordance with law, regulations and policy, these animals would receive first priority for removal.

Impacts from gather and removal operations are described in the ***Impacts from Gather and Removal of Excess Wild Horses (Impacts Common to Alternatives 1-4)*** above. Because the AML range is very narrow (275-335 wild horses) in this alternative, annual gathers would be necessary to maintain population size within this range. Based on population modeling, a median number of 1,241 excess animals (an average of 62 per year) would need to be gathered over the next 20 years. Of these, approximately 958 (an average of 50head per year) would need to be removed from the WHT.

Fertility Control

Under the No Action Alternative, fertility treatments are not proposed.

Emigration of Wild Horses outside the WHT

At the current AML, little or no emigration of wild horses outside the WHT is expected. This conclusion is based on observations by USFS employees and livestock permittees in the planning area, who have observed accelerated emigration of animals outside the WHT as herd size has increased over the last 20 years. Once AML is achieved and maintained, competition for the available forage, water, cover and space would be reduced and wild horses would be less likely to move outside the WHT in search of these habitat components.

Direct and Indirect Effects of Habitat Management

Water Availability

There would be adequate water supplies over most of the WHT to support an AML of 275-335 wild horses. Exceptions include the Mowitz Allotment and the Cowhead Pasture of the Timbered Mountain Allotment where most of the available water sources (ephemeral lakes and stock tanks) dry up in the late season.

Forage Availability/Vegetation

The No Action Alternative calls for achieving and maintaining wild horse population size an AML range 275-335 wild horses. This number would be fewer than review of all current available information and data indicates could be supported within the WHT. In January 2013, an in-depth analysis and evaluation¹¹ of population inventory, resource monitoring and other data and information was completed. Based on evaluation results, there is adequate forage to support a population range of 206 to 402 wild horses year-round. The AML upper limit is considered to be the optimum number of wild horses the available water and forage resources can support, while at the same time meeting land health objectives and providing for other multiple uses.

Implementation of the No Action Alternative would be expected to result in reduced forage utilization levels, reduced stream bank and spring disturbance, and improved ecological conditions for both upland and riparian habitats.

Space and Cover

Adequate space and cover would be available to support a healthy, self-sustaining population of 275-335 wild horses. Once AML is achieved and maintained, competition for these resources would be substantially reduced. Wild horses would be able to water in a timely manner without interference and competition from multiple bands at a water source. During periods of drought when water sources are limited, confrontation and conflict between individual bands would decrease.

Habitat Management (Free Roaming Behavior)

A population size of 275-335 wild horses coupled with the relatively large size of allotments and pastures within the WHT would allow animals to roam freely throughout much of the WHT. Although fences exist throughout the WHT, most have been in place for many years. To encourage free-roaming behavior, the MDF requires all gates within the WHT to remain open during periods when livestock are off NFS lands.

¹¹ Refer to "Devil's Garden Plateau Wild Horse Territory, Evaluation of Monitoring Data for the Purpose of Determining an Appropriate Management Level" (Modoc National Forest, January, 2013).

Cumulative Effects

The past, present and future foreseeable effects include livestock grazing, impacts from lands actions, range improvement (water and fence) construction and maintenance, road construction, maintenance and use, firewood gathering, sage steppe ecosystem restoration projects and forest management activities.

Maintaining the population of wild horses over the next 20 years at or near AML would result in improved vegetation conditions (i.e., forage quality and quantity). A reduced number of animals utilizing forage plants during the critical spring and early summer growth period (April-June) would result in improved vegetation density, cover, vigor, seed production and seedling establishment. Ecological condition for upland and riparian habitats would improve from current conditions. Maintaining AMLs over a sustained period would allow for the collection of scientific data to evaluate whether any further adjustments in AML are necessary. Benefits from reduced wild horse populations would include fewer animals competing for available forage and water, especially in years of drought when both forage and water is limited. With improved upland and riparian habitats, the rate of invasion for non-native annual species such as medusahead and cheatgrass would be reduced.

Past, current and future actions within the WHT include the construction of range improvements, timber harvest, juniper reduction, wildlife habitat improvement (i.e. under burns), wildfires and livestock grazing. Managing horses at the AML would decrease grazing use of burned or treated areas and facilitate meeting vegetation objectives. It is expected that there would be increased forage supplies in the long-term for wild horses, wildlife and livestock. The continued construction and maintenance of water improvements would result in a positive benefit to wild horses as there would be additional water sources to support existing populations.

The annual gathers necessary to maintain populations at AML under this Alternative would result in yearly disturbance to animal populations. Cumulative impacts to wild horses would include potential impacts to social structure after years of gathering annually. Additionally, with annual gathering operations, animals may become wary of traps and less intimidated by helicopter so sequential annual gathering would likely become more difficult into the future.

Proposed Action (Alternative 2) and Alternative 3

Direct and Indirect Effects of Population Management

Herd Size and Growth Rate

Under the Proposed Action and Alternative 3, the population of wild horses within the WHT would be managed at 206-402 adult wild horses as recommended in the report entitled *"Devil's Garden Plateau Wild Horse Territory, Evaluation of Monitoring Data for the Purpose of Determining an Appropriate Management Level (Modoc National Forest, January, 2013)*. In order to achieve populations within the range, it is expected approximately the same level of gathering as indicated in the No Action Alternative above would initially be necessary. Again, wild horses that have established home ranges outside the established WHT would receive priority for gathering. Those animals found outside the WHT will be removed and not relocated back into the WHT. Experience in the BLM Carson City District reveals that in almost all cases, released animals attempt returning to their established home ranges (Axtell, Gianola, personal communication). Animals can be potentially injured or die trying to return to their home range if obstructions such as major roads and fences exist between their release site and home ranges.

After AML is achieved, other population controls, including fertility control and managing sex distribution to attain a 50:50 sex ratio would be implemented. This would be accomplished during subsequent gathers by gathering more than the number determined to be excess, and selecting more males than females for release back to the WHT. Those females released would be treated with the 22-month formulation of PZP.

Based on the results of population modeling, it is expected that animal numbers would range between 263 and 500 animals (with a median of 368 head) over the next 20 years. The median population figure would be within the AML range. It is anticipated that gathers to maintain populations within AML would be necessary every 4+ years.

Population modeling predicts that over the long term, the median annual population growth rate would be expected to average 12.8 % over the next 20 years. This compares to 15.6% for the No Action Alternative and 16.3% for Alternative 4. It is currently estimated that the growth rate is close to 25%.

Herd Sex Ratio and Age Distribution

Under the Proposed Action and Alternative 3, it is proposed to remove only 70% of the males at each gather (i.e. release 30%). 80% of the females would be removed. Over time, this would result in the sex ratio for the herd approaching a more normal 50:50 male/female ratio found in wild horse herds over time. The majority of those released would be in the 6-14 year old age group, along with all horses gathered that are 15 and over (Releasing all horses 15+ years of age is common to all alternatives). This would result in a more typical age distribution structure of 10-25% in the 0-5 age group, 50-80% in the 6-15 year old age group and 10-25% in the 16+ year old age group. Sex and age structure will be monitored during subsequent removals to measure progress in meeting this objective.

If fertility control alone is unsuccessful in reducing herd growth rates by 5%, the population will be skewed to slightly favor males, not to exceed a 60/40 male to female ratio to reduce growth rates further. This would likely result in an increase in the size and number of bachelor bands, increased competition for mares, and a decrease in the size of bands inhabiting the WHT.

Genetic Diversity

For the Proposed Action, impacts to genetic diversity would be similar to those described in the No Action Alternative. Under Alternative 3, the removal of pasture fences in the Timbered Mountain Allotment would result in beneficial impacts to the herd with regard to genetic diversity. Without the barriers of fencing, it would be expected that the potential for inter-mixing of animals would be increased.

During the initial gather, baseline genetic diversity will be determined by collecting hair samples for analysis. Additional samples would be collected at least every other gather cycle (6-10 years), or more often if testing indicates diversity is less than desired. If genetic diversity concerns are found, corrective actions such as introducing mares from similar habitats into the population could be implemented.

Body Condition

Impacts to body condition of individual horses for the Proposed Action and Alternative 3 would be expected to be the same as in the No Action Alternative.

Gathers (Methods, Frequency, Projected Gather and Removal Numbers)

Under the Proposed Action and Alternative 3, helicopter gathering would be the primary means of population control. A minimal amount of bait /water trapping could also occur for small numbers, in areas of heavy tree cover and where access is good. Similar to the No Action Alternative, in order to achieve a population within the AML range, it is estimated annual gathers of 300 horses would be necessary during the initial two years, with approximately 200 animals gathered in the third year. In addition, it is estimated another 336 wild horses are currently residing in areas outside the WHT, including private lands. In accordance with law, regulations and policy, these animals would receive first priority for removal.

Impacts from gathering are described in the ***Impacts from Gather and Removal of Excess Wild Horses (Impacts Common to Alternatives 1-4)*** above. Because the proposed AML has a broader range (206-402) as compared to the No Action Alternative and Alternative 4, it is expected that gathering would be required only every 4+ years to maintain populations within AML. From population modeling, a median number of 1,238 wild horses would have to be gathered and 822 animals removed over 20 years. As gathers would occur about every four years, 5 gathers would be required over the next 20 years to maintain population size within AML. An average of about 248 wild horses would be gathered and 164 animals removed during each gather operation.

Fertility Control

Impacts resulting from implementing fertility control within the WHT are described in the ***Impacts from Fertility Control (Impacts Common to Alternatives 2-4)*** above. For the Proposed Action and Alternative 3, the 22-month formulation of PZP would be administered to all mares ages 1 year and older that are released back to the WHT at each gather. Population modeling indicates a median number of 103 wild horses would be treated over the next 20 years (an average of about 21 mares per gather). Under Alternative 4, a total of 534 mares (an average of 27 annually) would be treated with fertility control over 20 years. An expected gather of at least every 4 years for the Proposed Action and Alternative 3, would result in some of the mares receiving repeated treatment.

Emigration of Wild Horses Outside the WHT

Expected impacts with implementation of the Proposed Action or Alternative 3 would be the same as described for the No Action Alternative. The proposed AML of 206-402 wild horses would be expected to provide adequate forage, water, cover and space habitat and to minimize the potential for animals to migrate outside the WHT.

Direct and Indirect Effects of Habitat Management

Water Availability

Impacts resulting from water availability would be similar to the No Action Alternative.

Forage Availability/Vegetation

The Proposed Action and Alternative 3 would establish an AML range of 206-402 adult wild horses¹² as recommended in the January 2013 evaluation report. This report evaluated all current available data

¹² Refer to "Devil's Garden Plateau Wild Horse Territory, Evaluation of Monitoring Data for the Purpose of Determining an Appropriate Management Level" (Modoc National Forest, January, 2013).

and information and determined the optimum number of wild horses that can be supported in a thriving natural ecological balance with the land's productive capacity and other multiple-uses.

Management of wild horse population size at the recommended level, would ensure adequate forage and water supplies are available to support a healthy, self-sustaining herd of wild horses year-round. Management of wild horse numbers within an AML range of 206-402 animals would ensure forage utilization limits are met (not exceeded as they are at the present time) and result in substantial progress toward the desired conditions. At this population management level, there would also be adequate winter range for the horses in all but the harshest of winters.

It is expected ecological condition of both upland and riparian habitats would improve over the long-term. There would be fewer animals using forage during the critical spring growth period (April 1- May 15) and increased vigor and production of valuable native perennial forage species would be expected. This would increase available forage for wild horses, livestock and wildlife.

Space and Cover

Impacts resulting from the Proposed Action and Alternative 3 would be similar to those described in the No Action Alternative. At an AML of 206 to 402 wild horses, there would be adequate space and access to preferred areas of cover to minimize conflicts between individual bands and minimize egress outside the WHT.

Cumulative Effects

Cumulative effects for the Proposed Action and Alternative 3 would be similar to the No Action Alternative except those from gathering on an annual basis. Gathering only every 4+ years would only minimally impact the herd social structure.

Alternative 2- Proposed Action

Direct and Indirect Effects of Habitat Management (in addition to those described above)

Habitat Management (Free-Roaming Behavior)

The Proposed Action does not propose fence removal. However, it is proposed to enhance free roaming behavior by widening gates in animal concentration areas, where feasible. As with the No Action Alternative and Alternative 3, gates will remain open during those periods livestock grazing is not occurring.

Alternative 3

Direct and Indirect Effects of Population Management (in addition to those described above)

Space and Cover

For Alternative 3, the pasture fence removal would likely be slightly beneficial to the wild horses, as compared to the No Action or Proposed Action Alternatives. Individual animals and bands would have better access to the eastern portion of the Timbered Mountain area. However, based on current use patterns, use of the eastern portion of this area would likely remain minimal.

Geldings

Under Alternative 3, small numbers of gelded animals would be placed in areas within the WHT with the necessary habitat components, but where no or few animals presently exist. Such placement of gelded animals would be done only after it is determined that Forest Plan objectives are being achieved in the area.

The impact on individual gelded animals would be slightly beneficial as they would continue to reside in their natural habitat. It would be expected that the geldings would remain in the area they are placed. Without the stress of competing for mares and confrontations with band stallions, gelded animals would remain in relatively good condition with greater longevity than their un-gelded counter parts. It is expected that gelded animals would remain in a relatively small area, so over utilization in localized areas may occur. Monitoring would be necessary to document and verify herd response to this practice and to adjust the release of animals as necessary.

Direct and Indirect Effects of Habitat Management (in addition to those described above)

Habitat Management (Free-Roaming Behavior)

Alternative 3 proposes the removal of pasture fences within the Timbered Mountain Allotment portion of the WHT. This would be expected to result in some increase in movement of animals throughout the Timbered Mountain Area. However, the west side of the Black Rock Pasture appears to be a preferred habitat, so movement to the east portion of the Allotment would likely be minimal.

Cumulative Effects

The past, present and future foreseeable effects include livestock grazing, impacts from lands actions, range improvement (water and fence) construction and maintenance, road construction, maintenance and use, firewood gathering, sage steppe ecosystem restoration projects and forest management activities.

Under Alternative 3, the removal of 30 miles of fence would increase the difficulty involved in maintaining the existing livestock grazing rotation system. A grazing rotation system could be maintained to some degree utilizing range riders. However, the constant presence of humans on horseback moving livestock has potential to disrupt wild horse use of the area and could potentially limit free-roaming behavior or disturb the herd's social structure.

Alternative 4

Direct and Indirect Effects of Population Management

Herd Size and Growth Rate

Under Alternative 4, animal populations would be maintained at an AML of 700-900 wild horses within the WHT. It is estimated it would be necessary to remove about 270 animals during the initial year (2013) to achieve the mid-point of AML (about 800 head). As in the other alternatives, those wild horses that have established home ranges outside the WHT would receive first priority for removal.

Under this alternative, AML could be achieved the first year of gathering and fertility control would begin the second year. All gathering would take place through bait/water trapping.

For Alternative 4, population modeling predicts that animal numbers will range between 707 and 1173 animals (with a median of 980 head) over the next 20 years. The median population figure would be about 9% over the AML upper limit. Due to the small range between the lower and upper AML limit, and the method of gathering (i.e. water/bait trapping) it is anticipated that gathers to maintain populations near AML would be necessary on an annual basis.

Population modeling predicts that over the long term, the median annual population growth rate would be expected to be approximately 16.3% (median) over the next 20 years. This compares to 15.6% for the No Action Alternative and 12.8% for the Proposed Action and Alternative 3. It is currently estimated that the growth rate is close to 25%.

Herd Sex Ratio and Age Distribution

Under Alternative 4, it is proposed to remove 100% of the males and 70% of the mares gathered in the 0-14 year age class. This would require gathering over the number necessary to achieve AML and provide fertility control treatment to mares for turnout back into the WHT. In addition, as in all alternatives, all animals over 15 years of age (both sexes) would be turned back on the range. All females 1 year and older that are released would be treated given fertility control. As more females than males will be released, it is expected that this alternative would skew sex ratios to favor females even further than it is currently the case.

Genetic Diversity

It is expected that Alternative 4 would provide for the most genetic diversity within the WHT as the upper limit of AML is about 2.7 times higher than in the No Action Alternative and 2.2 times higher than in the Proposed Action or Alternative 3. This alternative would allow for maximum interchange of genetic material between individual horses as animals, in general, would be expected to be in much closer proximity and the exchange between bands maximized. The removal of fences would enhance the potential for the most possible mixing of individual bands and individuals.

Body Condition

Although Alternative 4 allows for a substantially greater number of wild horses in the WHT, there would be adequate forage quantities to support them on most years as livestock grazing would be proportionately reduced. The overall effect on the body condition of individual horses would be the same as the No Action, Proposed Action and Alternative 3 on most years. However, there is potential that body condition could be impacted on those years with extreme weather conditions. Examples would be those years when forage supplies are impacted by drought, or there are heavy snows and colder than normal temperatures during the winter period. In those years, body condition of many animals could fall into the poorer condition classes (Henneke 2 or lower), and die offs could be expected.

Gathers (Methods, Frequency, Projected Gather and Removal Numbers)

Gathers and removals within the WHT would be conducted by bait or water trapping only. There would be no helicopter assisted gathers except any needed to remove wild horses residing outside the WHT in Alternative 4. At the current time there are few locations that have both animal concentrations and good access necessary for gathering horses so it would be difficult to gather enough animals to maintain AML and turn back mares treated with fertility control. Gathers would be required on an annual basis and for extended periods of time.

Bait and water trapping would result in reduced injuries as compared to helicopter gathering. As discussed above the majority of injuries occur after animals are confined to holding pens.

Population modeling predicts that over 20 years, a total of 3,561 animals would be gathered and 2,430 excess animals would be removed from the WHT. Remaining animals would be returned to the WHT following application of fertility control. Animals ages 15 years and older would also be returned to the WHT.

Fertility Control

Impacts to individual animals from fertility control would be the same as described in the **Impacts Common to Alternatives 2-4 (Fertility Control)** above. Under Alternative 4, a substantially greater number of animals would be gathered than needed to achieve AML every year. This would be done to ensure enough mares are captured to treat and release at least 30% of the captured mares with PZP-22. Population modeling estimates about 534 mares would be treated with fertility control and released over 20 years (an average of 27 mares per year). Because the primary capture method would be bait or water trapping and a limited number of capture sites are available with adequate road access, the actual number of mares which would be captured and treated would likely be much less. In addition, many of the mares would be expected to be recaptured during subsequent gathers and retreated. Alternatively, mares that have been treated may become more difficult to trap. Past experience in the WHT has shown animals that have been previously trapped are less likely to be trapped during subsequent gathers.

Emigration Outside the WHT

Under Alternative 4, an AML range of 700-900 wild horses would be established. This number is comparable to the number of animals currently residing inside the WHT. At present, more than 250 animals (24 percent) have migrated out of the WHT and this pattern would be expected to continue with implementation of Alternative 4. This alternative would also increase the likelihood that wild horses would leave the WHT during periods of inclement weather. As an example, during January 2013 following moderate snowfall and during an extended period of well below normal temperatures, MDF personnel received several complaints about wild horses entering private subdivisions located well outside the WHT. In the past, when wild horse population size was at or near AML, it was rare for animals to move into these private subdivisions.

Direct and Indirect Effects of Habitat Management

Water Availability

Under Alternative 4, a greater number of animals would be utilizing available water sources on a year-long basis. As this alternative calls for the decreased livestock use, there would be adequate water supplies to support the increased number of wild horses on most years.

In the late season or during drought years, stock tanks and ephemeral lakes generally have reduced or non-existent available water. This would result in increased competition for water at the relatively few remaining water sources and springs scattered throughout the WHT. The number of bands in close proximity to live water would increase and the potential for conflicts between bands would also increase.

Forage Availability

Under Alternative 4, livestock use would be reduced to accommodate the increased forage demands of the higher wild horse population. There would be adequate forage available to support wild horses

during most seasons and on most years. However, during drought years with low forage production, it would be expected that utilization standards would likely be exceeded as is currently the case.

Utilization data indicates that there is not adequate residual forage to carry the current number of wild horses through the winter period during those years when forage production is low. On such years, large areas of heavy and greater utilization would be expected to continue.

With an increased number of wild horses using the range on a year-round basis, forage species will receive more utilization during the critical spring growth period (April 1-May 15). Considering the upper limit of AML for all Alternatives, this would amount to an additional 896 AUMs as compared to the Proposed Action and Alternative 3, and an additional 1,017 AUMs as compared to the No Action Alternative. Additionally, a larger number of animals will be using the area when soil conditions are saturated, increasing trampling and soil compaction. Over time, the vigor and production of forage species would likely decline with increased use during the critical spring growth period.

Space and Cover

Based on the current number animals that have established home ranges outside the WHT, it appears there may not be adequate space for the current population of animals. The removal of fences from the area would facilitate animal movements throughout the East Home Range, however would not increase the area animals can currently occupy. Maintaining the population at the current level would likely result in continued egress out of the WHT as animals seek habitats that provide adequate cover and space.

Habitat Management (Free Roaming Behavior)

Alternative 4 proposes the removal of a much greater amount of fence as compared to Alternative 3. Fence removal over the WHT would result in positive effects as horses could more easily access preferred habitat areas. The most beneficial impact would be the removal of potential impediments to the seasonal migrations of the animals.

Cumulative Effects

The past, present and future foreseeable effects include livestock grazing, impacts from lands actions, range improvement (water and fence) construction and maintenance, road construction, maintenance and use, firewood gathering, sage steppe ecosystem restoration projects and forest management activities.

The proportionate reduction of livestock called for in this alternative is expected to lessen the cumulative impacts that may result from the increased AML. However, the increase in wild horse numbers, as compared to the other Alternatives, would result in a large increase in year-round grazing use over the WHT.

A cumulative effect of increased wild horse use horses year-round is the additional grazing pressure that would occur during the critical spring growth period (April 1-May 15). Over time (even with reduced livestock use) this would be expected to negatively impact ecological conditions on areas preferred by wild horses.

With decreased livestock use, there would be less private investment in the maintenance of range improvements. This would result in a negative cumulative impact over time, as range improvements

such as water developments fall into disrepair. Over time, less water would be available to support year-round wild horse use.

The annual bait or water trapping necessary to maintain wild horse population size within a range of 700-900 wild horses would result in reducing the effectiveness of this method of trapping over time. As a result it would become increasingly difficult to maintain population size within the AML over the long-term.

4.10 Wildlife and Fisheries Resources

The following is summarized from the various Devils Garden WHT project reports that considered project effects on wildlife and fisheries resources. The reports include the biological evaluation/biological assessment (BEBA), the biological assessment (BA) that analyzed effects to federally listed species that were identified in the BEBA, the Management Indicator Species (MIS) report, and migratory bird analysis. These reports are located in the project file.

This section first describes the habitat and various wildlife species that are found in the WHT and nearby areas. The consequences section is divided by classification; effects to federally listed species are described by alternative, followed by Forest Service sensitive species, Management Indicator Species, and finally effects to Migratory Birds.

The analysis for wildlife and fisheries resources is done by considering the possible effects of the alternatives on the individual species. Where a species may be affected, the direct, indirect and cumulative effects are considered by alternative. The past, present, and future foreseeable (cumulative) effects include livestock grazing, impacts from lands actions, range improvement (water source and fence) construction and maintenance, road construction, maintenance and use, firewood gathering, sage steppe ecosystem restoration projects, and forest management activities.

4.10.1 Affected Environment

The Devil's Garden Plateau WHT lies within the Great Basin conservation region sage-steppe ecosystem dominated by juniper, juniper/sagebrush and sagebrush. California Wildlife Habitat Relationship (CWHR) vegetation data, derived from CalVeg data (source: Forest Service Remote Sensing Lab), are used to identify the habitats within the WHT shown in Table 35. The data was obtained from the US Forest Service Remote Sensing Lab GIS vegetation layers. There are approximately 232,521 acres of federal lands managed land within the WHT. The WHT encompasses portions of eight grazing allotments (Carr, East Grizzlie, Emigrant Springs, Mowitz, Pine Springs, Potters, Surveyors Valley and Timbered Mountain. The Range Specialist Report prepared for the Devil's Garden Plateau WHT Management Plan describes current conditions within the WHT.

Table 35: Habitat Types within the Devils Garden WHT

Habitat Type (Abbreviation)	Acres of Habitat
Annual Grass and Forbs (AGS)	12,129
Barren (BAR)	193
Bitterbrush (BBR) and Shrub (MCP)	9,016
Eastside Pine (EPN)	10,710
Juniper (JUN)	70,023
Lacustrine (LAC)	1,983
Low Sage (LSG) and Sagebrush (SGB)	109,630
Perennial Grassland (PGS)	18,296
Wet Meadow (WTM) and Fresh Emergent Wetland (FEW)	541
Total	232,521

In addition, there are approximately 10.7 miles of perennial streams within the WHT (8.7 miles of Boles Creek and approximately 2 miles of Mowitz Creek).

Threatened, Endangered and Proposed Wildlife Species

A list (dated January 11, 2013) of endangered, threatened, candidate and proposed species was obtained from the USDI, Fish and Wildlife Service's Klamath Falls Office website on February 1, 2013. There are four T&E animal (terrestrial and aquatic species included on the list. Two additional species were included in the analysis: the gray wolf (not listed for Modoc County, but the gray wolf designated OR7 has recently visited Northern California and is protected by the Endangered Species Act) and the wolverine (Proposed for listing as "Threatened" on February 4, 2013 by the US Fish and Wildlife Service (Federal Register, 2013)). TE&P species that may occur in Modoc County but are not likely to occur in, or may occur incidentally, but do not have sufficient suitable habitat to support a breeding population in or near the area covered in the Devil's garden Plateau WHT Plan area are also identified in Table 36, but they were not be considered further in the analysis.

Table 35: Federally Listed and Currently Proposed Animal Species that could occur in Modoc County, California and Their Potential for Occurrence in the WHT and Consideration in the Biological Assessment

SPECIES	SPECIES STATUS	SPECIES OCCURRENCE IN THE PROJECT AREA AND CONSIDERATION IN THE BA
Modoc sucker <i>Catostomus microps</i>	Endangered	Not Considered. This species requires small partially shaded streams having large muddy- bottomed pools; it prefers streams with still-water pools and mud substrate. They are known to occur in Modoc County in the Ash Creek subsystem of the Upper Pit River, but they do not occur in Devil's Garden Plateau WHT Management Plan area.
Lost River sucker <i>Deltistes luxatus</i>	Endangered	Considered. This is a lake dwelling species that spawns in tributary streams. Its current distribution includes Clear Lake Reservoir and its tributary streams, which include Boles Creek located in the Devil's Garden Plateau WHT Management Plan area.

SPECIES	SPECIES STATUS	SPECIES OCCURRENCE IN THE PROJECT AREA AND CONSIDERATION IN THE BA
Shortnose sucker <i>Chasmistes brevirostris</i>	Endangered	Considered. This is a lake dwelling species that spawns in tributary streams. Its current distribution includes Clear Lake Reservoir and its tributary streams, which include Boles Creek located in the Devil's Garden Plateau WHT Management Plan area.
Northern spotted owl <i>Strix occidentalis caurina</i>	Threatened	Not Considered. This species generally requires dense mixed conifer old growth forest habitat with a complex structure and high canopy closure. This habitat type does not occur in or near the Devils' Garden Plateau WHT Management Plan area and spotted owls are not known to occur in this part of Modoc County.
Gray Wolf <i>(Canus lupus)</i>	Endangered	Not Considered. This species is a habitat generalist that requires a relatively large range that supports an adequate population of prey species (ungulates) and is relatively isolated from human activity. The gray wolf may occur incidentally in the proposed WHT Management Plan area, but the area is not likely to support a breeding population and proposed management actions in the Plan would not likely affect this species.
Wolverine (<i>Gulo gulo luscus</i>)	Proposed	Not Considered. Occurs primarily in boreal and tundra ecosystems. In Northern California, preferred habitat includes Douglas fir/tan oak forests. A wolverine recently photographed during surveys on the Tahoe NF was found in habitats dominated by Jeffery pine/red fir, Sierra mixed conifer or Sierra lodgepole pine.

Two federally listed species, the Lost River sucker (*Deltistes luxatus*), and shortnose sucker (*Chasmistes brevirostris*) could be potentially affected by proposed actions within the Devil's Garden Plateau WHT Management Plan. The effects on the species listed in the table above are discussed in the biological assessment (BA) prepared for this project. The BA is provided to the US Fish and Wildlife Service (FWS) as part of the consultation process.

Sensitive Wildlife Species

There are 22 terrestrial and aquatic wildlife species listed as sensitive by Regional Forester, Region 5 for the Modoc National Forest, three of which are candidates for listing under the Endangered Species Act. Sensitive wildlife species that do not occur or do not have suitable habitat in or near the project area, or species that would not be impacted by proposed activities within the project area, were not considered in depth in the Biological Evaluation (BE). For a complete list of sensitive species refer to the Devil's Garden Plateau WHT Management Plan Biological Evaluation/Biological Assessment (BE/BA).

There are five sensitive species that could be affected by management actions proposed in the Devil's Garden Plateau WHT Management Plan: the northern goshawk, Swainson's hawk, greater sandhill crane, greater sage grouse, bald eagle and pallid bat.

Management Indicator Species (MIS)

Management Indicator Species (MIS) whose habitat would be either directly or indirectly affected by the Devil's Garden Plateau WHT Plan, identified as Category 3 in Table 36 and 37, were selected as MIS at the project-level MIS analysis for the Devil's Garden Plateau WHT Management Plan. Category 3 species

include: aquatic macroinvertebrates, greater sage-grouse *Centrocercus urophasianus*, and Pacific tree frog *Pseudacris regilla*.

Table 36: Selection of MIS for Project Level Habitat Analysis for the Proposed Devils Garden WHT

Habitat or Ecosystem Component	CWHR Type(s) defining the habitat or ecosystem component ¹	Sierra Nevada Forests Management Indicator Species <i>Scientific Name</i>	Category for Project Analysis ²
Riverine & Lacustrine	lacustrine (LAC) and riverine (RIV)	aquatic macroinvertebrates	3
Shrubland (west-slope chaparral types)	montane chaparral (MCP), mixed chaparral (MCH), chamise-redshank chaparral	fox sparrow <i>Passerella iliaca</i>	2
Sagebrush	Sagebrush (SGB)	greater sage-grouse <i>Centrocercus urophasianus</i>	3
Oak-associated Hardwood & Hardwood/conifer	montane hardwood (MHW), montane hardwood-conifer (MHC)	mule deer <i>Odocoileus hemionus</i>	1
Riparian	montane riparian (MRI), valley foothill riparian (VRI)	yellow warbler <i>Dendroica petechia</i>	1
Wet Meadow	Wet meadow (WTM), freshwater emergent wetland (FEW)	Pacific tree (Chorus) frog <i>Pseudacris regilla</i>	3
Early Seral Coniferous Forest	ponderosa pine (PPN), Sierran mixed conifer (SMC), white fir (WFR), red fir (RFR), eastside pine (EPN), tree sizes 1, 2, and 3, all canopy closures	Mountain quail <i>Oreortyx pictus</i>	3
Mid Seral Coniferous Forest	ponderosa pine (PPN), Sierran mixed conifer (SMC), white fir (WFR), red fir (RFR), eastside pine (EPN), tree size 4, all canopy closures	Mountain quail <i>Oreortyx pictus</i>	3
Late Seral Open Canopy Coniferous Forest	ponderosa pine (PPN), Sierran mixed conifer (SMC), white fir (WFR), red fir (RFR), eastside pine (EPN), tree size 5, canopy closures S and P	Sooty (blue) grouse <i>Dendragapus obscurus</i>	2
Late Seral Closed Canopy Coniferous Forest	ponderosa pine (PPN), Sierran mixed conifer (SMC), white fir (WFR), red fir (RFR), tree size 5 (canopy closures M and D), and tree size 6.	California spotted owl <i>Strix occidentalis occidentalis</i>	1
		American marten <i>Martes americana</i>	
		northern flying squirrel <i>Glaucomys sabrinus</i>	
Snags in Green Forest	Medium and large snags in green forest	hairy woodpecker <i>Picoides villosus</i>	2
Snags in Burned Forest	Medium and large snags in burned forest (stand-replacing fire)	black-backed woodpecker <i>Picoides arcticus</i>	2

¹ All CWHR size classes and canopy closures are included unless otherwise specified; **dbh** = diameter at breast height; **Canopy Closure classifications:** S=Sparse Cover (10-24% canopy closure); P= Open cover (25-39% canopy

closure); M= Moderate cover (40-59% canopy closure); D= Dense cover (60-100% canopy closure); **Tree size classes:** 1 (Seedling)(<1" dbh); 2 (Sapling)(1"-5.9" dbh); 3 (Pole)(6"-10.9" dbh); 4 (Small tree)(11"-23.9" dbh); 5 (Medium/Large tree)(≥24" dbh); 6 (Multi-layered Tree) [In PPN and SMC] (Mayer and Laudenslayer 1988).

² **Category 1:** MIS whose habitat is not in or adjacent to the project area and would not be affected by the project.

Category 2: MIS whose habitat is in or adjacent to project area, but would not be either directly or indirectly affected by the project.

Category 3: MIS whose habitat would be either directly or indirectly affected by the project.

Migratory Birds

The Devil's Garden Plateau WHT Management Plan area lies within the Fish and Wildlife Service's Great Basin Bird Conservation Region 9 (BCR 9). For a complete list of Birds of Conservation Concern (BCC) for BCR 9 refer to the Migratory Landbird Conservation Report for the Devil's Garden Plateau WHT Management Plan.

Of the 28 land birds of concern listed by BCC 2008 for BCR 9 (Great Basin), 19 species could occur in or have at least some preferred habitat characteristics in or near the Devil's Garden Plateau WHT, and suitable habitat characteristics preferred by 7 species (greater sage grouse, ferruginous hawk, golden eagle, loggerhead shrike, sage thrasher, Brewer's sparrow and sage sparrow) could be impacted by proposed actions in the Devil's Garden Plateau WHT Management Plan.

4.10.2 Environmental Impacts

Stipulations Applicable to Alternatives 1, 2 and 3

Alternatives 1, 2 and 3 include the use of helicopters to assist in gathering operations.

Standard policy excludes helicopter assisted gathers between February 29 and July 1. In order to protect goshawk, Swainson's hawk, greater sandhill crane, and bald eagle nesting activity, the following will also apply to helicopter gathers occurring within the WHT.

- If helicopter assisted gathers occur between February 15 and February 29 or July 1 and September 15, all PACs that may be disturbed by operations during the gather would be monitored/surveyed prior to such activity to determine whether goshawks are actively nesting in the PAC that year. Active nest sites would be appropriately protected within a buffered area.
- Currently Swainson's hawks are not known to nest in the vicinity of the Devil's Garden WHT; however if nesting occurs in the future, known active nest sites would be buffered and protected from potentially disturbing helicopter assisted gathers occurring between July 1 and August 15.
- If helicopter assisted gathers occur between January 1 and February 29 or July 1 and August 30, all bald eagle nest sites that may be disturbed by operations during the gather would be monitored/surveyed prior to such activity to determine whether known nest sites are active that year. Active nest sites would be appropriately protected within a buffered area.

Threatened, Endangered and Proposed Wildlife Species

Lost River and Shortnose Sucker

Alternative 1 – No Action

Direct and Indirect Effects

Under the No Action Alternative there would be no direct alteration, modification or manipulation of any habitat types within the WHT. Direct effects may occur within some habitats during gathering operations, however direct impacts resulting from proposed management actions would not extend into perennial stream habitat. Therefore, there would be no direct effects to the Lost River or shortnose sucker or their habitat as a result of the implementation of Alternative 2.

Management actions under the No Action Alternative would reduce the number of horses occupying the WHT and adjacent lands (currently estimated at 1,124 horses) to a range of 275-335 horses. This action would decrease stream bank alteration and grazing pressure on vegetation within perennial creek watersheds (Boles and Mowitz Creeks), and within ephemeral stream drainages, and ephemeral lake beds, which over time would improve water quality, reduce sedimentation and increase water surface shade. Therefore, indirect effects of the No Action Alternative would reduce current impacts to Lost River and shortnose sucker habitat within the proposed Plan area.

Cumulative Effects

There would be no adverse impacts to perennial stream habitat under the No Action Alternative. Implementation of management actions described in the No Action Alternative would reduce current impacts to habitats that results from the horse population in conjunction with other livestock use within the Devil's Garden WHT and surrounding area. This impact reduction would result in improved perennial stream habitat conditions. Management actions under the No Action Alternative would, overtime, result in improved habitat conditions within Lost River and shortnose sucker habitat in the Devil's Garden WHT, therefore this alternative would not contribute cumulatively to adverse impacts of past, present or reasonably foreseeable future management actions; the proposed WHT Management Plan would result in beneficial effects to these species.

Alternative 2 – Proposed Action

Direct and Indirect Effects

Alternative 2 would result in the same direct effect as Alternative 1 as the distinctions between the two alternatives are management based and would have no effect on habitat. There may be some long-term benefits realized in this alternative due to a slower increase in herd (horse) populations as described in the grazing report.

Cumulative Effects

The cumulative effects would be the same as those described in Alternative 1.

Alternative 3

Direct and Indirect Effects

Alternative 3 would result in the same direct effect as Alternative 1 as the distinctions between the two alternatives are management based and would have no effect on habitat. There may be some long-term

benefits realized in this alternative due to a slower increase in herd (horse) populations as described in the grazing report. Reductions in fencing may encourage more dispersed use by livestock including horses.

Cumulative Effects

The cumulative effects would be the same as those described in Alternative 1. With the reduction of fences here may be a slight increase in herding activity to maintain cattle in their permitted areas but that would not have a measurable cumulative effect on habitat.

Alternative 4

Direct and Indirect Effects

Alternative 4 does not prescribe any direct actions to habitat for the Lost River or Shortnose sucker but does retain higher horse numbers. Forage objectives would be met by changes in permitted livestock as necessary. This alternative would like result in slower improvements to habitat including sedimentation and shade recovery.

Cumulative Effects

The cumulative effects would be the same as those described in Alternative 1. With the reduction of fences here may be a slight increase in herding activity to maintain cattle in their permitted areas but that would not have a measurable cumulative effect on habitat.

Determination

The BE/BA concluded that none of the alternatives would effect to the Modoc sucker, Northern spotted owl, Gray Wolf, and Wolverine and may affect the Lost River and Shortnose suckers. The BA (which analyzed only the proposed action) concluded that the alternatives would benefit the Lost River Sucker and Shortnose Sucker and that the proposed action would not affect critical habitat.

Sensitive Wildlife Species

Northern Goshawk

The northern goshawk is a non-migratory accipiter that is found in a variety of habitat types but is typically associated with forest environments. Although foraging habitat can vary nest stands are usually found in denser forest or hardwood stands with an open understory. Goshawks are opportunistic hunters and have a wide variety of prey including squirrels, birds, and rabbits.

There are two northern goshawk protected activity centers (PAC) within the WHT and an additional eleven within the allotments that overlap the WHT. The PACs which by direction contain the known nest sites are found in the denser eastside pine stands.

Alternative 1 – No Action

Direct and Indirect Effects

There would be no measurable direct or indirect effect to habitat. Livestock, including horses, generally avoid habitat goshawk would select for nesting due to a lack of forage. These areas also tend to have a great deal of litter on the ground inhibiting movement.

The greatest potential risk would be during the gathering of horses. Goshawks are particularly susceptible to disturbance prior to the young hatching. Activities near the nest could lead to nest abandonment. However direction requires a limited operating period within ¼ mile of PACs for activities prior to mid-September unless surveys have been completed. Gathering in foraging areas would be unlikely to affect the goshawk as they have a large foraging area and can easily avoid these activities.

As there are no habitat altering activities, the alternative poses no risk to prey. Reducing the number of horses is likely to contribute to improvements in prey habitat (rabbit/hare, squirrels, and ground nesting birds). The actions would not affect the bulk of common goshawk prey such as woodpeckers as the actions would not affect their habitat. Over time, given a reduction in the number of horses, prey habitat (particularly ground dwelling prey such as squirrels and rabbits) may improve as grass and forb cover becomes denser providing more cover and forage sources.

Cumulative Effects

Because there are no measurable direct or indirect effects there are no predictable cumulative effects. There could be a cumulative effect to certain prey species through habitat improvement gained by implementing Alternative 1 in conjunction with other habitat improvement projects such as the sage steppe habitat improvement projects undertaken for the greater sage grouse.

Cumulative disturbance has the potential to occur from actions associated with permitted grazing (herding cattle), activities associated with habitat restoration, range improvement (water and fence) construction and maintenance, road construction, maintenance and use, and firewood gathering. The potential disturbance to nest sites during implementation of Alternative 1 is limited due to the required surveys and limited operating periods (LOP) during nesting.

Alternative 2 – Proposed Action

Direct and Indirect Effects

The differences between Alternative 2 and Alternative 1 are predominantly management actions that would not affect goshawk habitat therefore the direct and indirect effects would be the same.

Cumulative Effects

The differences between Alternative 2 and Alternative 1 are predominantly management actions that would not affect goshawk habitat therefore the cumulative effects would be the same.

Alternative 3

Direct and Indirect Effects

The differences between Alternative 3 and alternatives 1 and 2 are predominantly management actions that would not affect goshawk habitat therefore the direct and indirect effects would be the same. The reduction in the amount of fencing may provide added safety by reducing the potential for goshawks inadvertently hitting a fence while foraging.

Cumulative Effects

The differences between Alternative 3 and alternatives 1 and 2 are predominantly management actions that would not affect goshawk habitat therefore the cumulative effects would be the same.

Alternative 4

Direct and Indirect Effects

Alternative 4 differs from the other three alternatives primarily due to the higher horse populations that would be allowed. This would be unlikely to affect goshawk persistence or pose a risk to individuals but it is likely (based on the grazing report) that horse populations would increase faster under this alternative which may necessitate gathering horses more often. This would increase the risk of disturbance however adherence to the limited operating periods combined with surveys prior to gathering would alleviate that risk.

Prey habitat may not improve as fast under this alternative due to the greater number of horses. However since goshawks have a wide range of prey, declines (or prey numbers at current levels) should not affect the ability for goshawks to persist.

Cumulative Effects

While Alternative 4 does differ from the other alternatives the cumulative effects remain the same.

Swainson's Hawk

Swainson's hawks migrate to South America during the winter, returning to North America in late winter or early spring. Although the WHT is located within their defined historic range there are no breeding records within the WHT (http://www.prbo.org/calpif/htmldocs/species/riparian/swainsons_hawk.htm). Swainson's hawks feed on a variety of prey, primarily small rodents during the breeding season, but are partial to insects, particularly grasshoppers after breeding has completed (Woodbridge 1998).

Alternative 1 – No Action

Direct and Indirect Effects

As Swainson's hawks are not known to occur within the project area, the only known potential effect is to habitat. The hawk utilizes a wide range of habitat and structures throughout its range. Foraging habitat may be a limiting factor in which case this alternative would promote better habitat characteristics for prey. Continued management actions under the No Action Alternative would reduce the number of horses occupying the WHT and adjacent lands (currently estimated at 1,124 horses) to a range of 275-335 horses. This action (reducing the horse population) would reduce grazing pressure on understory perennial native grasses and forbs within habitats that support preferred Swainson's hawk prey species.

Cumulative Effects

Although Swainson's hawks have not been detected in the project area, a number of activities would combine to provide a cumulative effect to their habitat, which could influence future occupation and nesting opportunities. Actions that improve foraging habitat may help reestablish Swainson's hawk in areas previously thought to support breeding populations. Reductions of livestock numbers (horses) in conjunction with managing for forage retention would be likely to lead to improvements in habitat conditions. Other unrelated actions within the project area include habitat improvement projects designed to promote sage grouse habitat.

Alternative 2 – Proposed Action

Direct and Indirect Effects

The effects to habitat would be very comparable to Alternative 1. The relatively minor difference in the number of horses would have little effect on anticipated changes to habitat.

Cumulative Effects

Cumulative effects would be the same as described in Alternative 1.

Alternative 3

Direct and Indirect Effects

The effects to habitat would be very comparable to Alternative 1. The relatively minor difference in the number of horses would have little effect on anticipated changes to habitat.

Cumulative Effects

Cumulative effects would be the same as described in Alternative 1.

Alternative 4

Direct and Indirect Effects

The effects to habitat would be very comparable to Alternative 1. The relatively minor difference in the number of horses would have little effect on anticipated changes to habitat.

Cumulative Effects

Cumulative effects would be the same as described in Alternative 1.

Greater Sage Grouse

The project area likely supported a healthy population of sage grouse historically. Historic lek sites (areas where males strut during their courtship rituals) occur throughout the WHT. Today sage grouse are found only within the West WHT and primarily within the Carr and Potters Allotment. Within the Carr Allotment they are associated with the low sage (LSG) habitat type whereas in the Potters Allotment telemetry data places them in the bitterbrush habitats.

In addition to being a Forest Service Sensitive species, the greater sage grouse is currently a candidate for federal listing (listing currently precluded due to higher priorities). A decision on the status of the sage grouse is expected by 2015.

Alternative 1 – No Action

Direct and Indirect Effects

The horse monitoring as discussed in the grazing section indicates that horses occupy a relatively small area within the allotment where sage grouse occur and the aerial inventory completed in 2013 shows little overlap between horses and grouse use areas. Through reductions in horse numbers, this alternative is likely to further reduce the presence of horses within grouse use areas. The reduction in horses would support habitat improvements through reducing grazing pressure on perennial grasses

and forbs that provide forage. Shrub structure (vertical and horizontal diversity) would be expected to improve over time (less foot traffic) providing hiding cover.

The reduction of horse numbers would reduce the rate at which invasive plant species, such as medusahead, would establish. Invasive plants such as medusahead, cheat grass, and others provide little forage value and are very effective at preventing native grasses and forbs from establishing.

Gathering activities could affect grouse but limits on the time of year that gatherings can be completed would provide protection to nest sites.

Cumulative Effects

Grouse habitat improvement, as part of the Sage Grouse Initiative enacted by federal agencies and private concerns, has been ongoing within and adjacent (north of) to the Carr allotment. This alternative would support those improvements. Permitted livestock also contribute to reductions in forage and adversely affect sage structure. Current use is under permitted use and forage conditions would drive use patterns in the future which would be expected to benefit grouse, through improvements to forage conditions.

Alternative 2 – Proposed Action

Direct and Indirect Effects

Alternative 2 would have similar effects as Alternative 1 however, as horse populations would be expected to increase at a slower rate and therefore gatherings would be needed less often. Fewer gatherings would also result in less impact associated with gatherings such as helicopters, riders, and equipment in areas supporting grouse.

Cumulative Effects

As described above, the alternative is likely to have less impact on grouse habitat and would better support efforts to rehabilitate grouse habitat, supporting the Sage Grouse Initiative. Other cumulative effects would be similar to those described for Alternative 1.

Alternative 3

Direct and Indirect Effects

Alternative 3 is similar to Alternative 2 with regard to wildlife effects except that the alternative includes a reduction in fences. Fences present a risk to sage grouse as they tend to be low fliers and can hit fences during flight. Declines in populations elsewhere have been attributed, in part, to the increase in fences within sage habitat. This alternative would substantially diminish that risk through the removal of fences in suitable habitat. Fence removal would occur in the Timbered Mountain allotment. Although there is suitable habitat, sage grouse are largely absent from the allotment (or anywhere in the east half of the WHT) based on recent telemetry work.

Cumulative Effects

The reduction of fences may require more activity by permittees to maintain cattle within the allotments and as a means to meet forage utilization standards. The impact would not be expected to affect sage grouse as they do not currently occupy lands where fences would be removed.

Alternative 4

Direct and Indirect Effects

The benefits to sage grouse found in alternatives 1, 2, and 3 were supported through reductions in the numbers of horses. Although horses would be removed from areas outside the WHT, this alternative would essentially retain existing levels of horse use. Meeting forage conditions would depend on adjustment to permitted livestock. With greater number of horses, the potential for horses to leave the WHT into other areas would increase, potentially affecting habitat conditions or at least slowing the rate of recovery of sage grouse habitat.

Cumulative Effects

The cumulative effects would be similar to the other alternatives although this alternative risks not supporting habitat improvement to the extent the other alternatives would accomplish due to the higher number of horses within the WHT.

Bald Eagle

Bald eagles are found throughout North America and generally are migratory, moving south out of Canada and the continental US. The number of eagles within the project area increases during the winter as migrant pass through or reside locally. Most, however, leave, heading north in late winter. There are 2 active eagle territories (three nest sites) within the WHT and an additional nine territories in adjacent to the WHT.

Bald eagles consume a wide variety of foods primarily fish but also ducks and carrion (such as deer). They will occasionally take a rabbit or moderate sized animals but prefer easy food if available.

The bald eagle is a recovery success story, formerly having been placed on the endangered species list it was removed in 2007 and is monitored annually through a number of census activities. The bald eagle is currently a Forest Service Sensitive species for the Modoc National Forest.

Alternative 1 – No Action

Direct and Indirect Effects

The project is unlikely to have a measurable impact on bald eagles. Nest surveys prior to gathering activities would restrict the potential for disturbance while young are incubated and prior to fledging. Nesting surveys and census are often accomplished by helicopter with no measurable adverse effects therefore aerial surveys should not affect eagles. The recent surveys for wild horses indicate they are generally not near the nest sites within the WHT.

Immediate removal of horses is not likely to translate to improvement for bald eagles. The reduction in horse numbers is expected to improve habitat conditions which may eventually improve conditions for primary prey (fish and waterfowl) and therefore improvement in prey numbers would occur gradually.

Cumulative Effects

There are few measurable cumulative effects. Livestock use in combination with gathering activities may provide some level of disturbance but it is unlikely that the two would combine to affect nesting success.

Alternative 2 – Proposed Action

Direct and Indirect Effects

The direct and indirect effects are similar to those describe for Alternative 1.

Cumulative Effects

The cumulative effects are similar to those describe for Alternative 1.

Alternative 3

Direct and Indirect Effects

The direct and indirect effects are similar to those describe for Alternative 1.

Cumulative Effects

The cumulative effects are similar to those describe for Alternative 1.

Alternative 4

Direct and Indirect Effects

The direct and indirect effects are similar to those describe for Alternative 1.

Cumulative Effects

The cumulative effects are similar to those describe for Alternative 1.

Pallid Bat

The pallid bat occurs throughout California except for the high Sierra Nevada from Shasta to Kern cos., and the northwestern corner of California but is most common in lower elevations (below 4,500 feet). A wide variety of habitats can support pallid bats, including grasslands, shrublands, woodlands, and forests from sea level up through mixed conifer forests. The species is most common in open, dry habitats with rocky areas for roosting.

Alternative 1 – No Action

Direct and Indirect Effects

Pallid bats feed close to or on the ground and therefore require openings in the vegetation. Roost habitat (larger pine with flaking bark, rock outcrops, and the hollowed branches of hardwoods) may be the most limiting habitat feature within the project area. This alternative does not propose any activities that would directly or indirectly affect habitat including roost habitat although eventually sage may occupy more of the landscape.

Reducing the number of horses would be expected to improve wetland areas that support a diversity of insects where pallid bats are often recorded in other areas.

Cumulative Effects

Because there are no measurable direct or indirect effects, no cumulative effects can be determined.

Alternative 2 – Proposed Action

Direct and Indirect Effects

The direct and indirect effects would be the same as Alternative 1.

Cumulative Effects

The cumulative effects would be the same as Alternative 1.

Alternative 3

Direct and Indirect Effects

The direct and indirect effects would be the same as Alternative 1.

Cumulative Effects

The cumulative effects would be the same as Alternative 1.

Alternative 4

Direct and Indirect Effects

Although this alternative allows considerably more horses, other actions would be employed (reductions in permitted livestock, changes in fencing patterns) that would result in similar effects as those described in Alternative 1.

Cumulative Effects

The cumulative effects would be the same as Alternative 1.

Greater Sandhill Crane

During the spring and summer, cranes spend their summers in and near wet meadows and freshwater wetlands in northeastern California. The courtship period begins in April and the peak of the breeding season occurs from May to July. The peak of the breeding season is from May through July, and nesting is usually completed by late August. The nests, which are often piles of sticks and grass, are built on the ground. They are only built in areas with surrounding water or undisturbed habitat. Most nests are found on small islands where the birds will be well-protected from predators. Both sexes take part in the entire process, from nest building until the young become completely independent. The pair may even return to the same breeding ground each year, and some pairs even use the same nest multiple years in a row. During the breeding season, these birds may protect a territory as small as 3 acres and as large as 400 acres. The average breeding territory is between 40 and 60 acres.

Sandhill cranes are rarely found in areas with trees. Instead they prefer the open habitat that allows them to see their prey easily. These cranes are omnivorous, meaning they eat both plant material and animals. Their diet includes a wide variety of foods, including cereal crops, grasses, seeds, grains, roots, worms, insects, mice, snakes, frogs, and even small birds and bird eggs. Sandhill cranes are active during the day and spend their evenings roosting in large flocks. When migrating, these large birds will fly day and night, stopping very seldom.

There are 15 recorded sites where sandhill cranes have been noted, three of which are within the WHT. All but one of the sites is within wetlands (including wet meadow and lacustrine complexes), open sage, or perennial grasslands. One site is an open (less than 40% canopy) juniper eastside pine stand.

Alternative 1 – No Action

Direct and Indirect Effects

There is a low risk of affecting greater sandhill cranes and that risk would occur during gathering operations, particularly those areas outside the WHT. Only 3 of the sites are within the WHT therefore once the horses are substantially removed from areas outside the WHT, risk to cranes would be diminished. Two of the three sites are located in allotments where there is a relatively low number of horses relative to the size of the allotment.

The gathering may result in disturbance but gathering would most likely happen outside the nesting season when young are able to avoid disturbance or, if done in the winter, cranes would not likely be in the WHT or larger analysis area.

A reduction in the total number of livestock and wild horses would benefit cranes by retaining higher levels of the cover needed for protection from predators and as a source of forage (both for plant as well as animal prey). Appendix A of the biological evaluation displays the current conditions within various meadow and grassland complexes. A reduction of livestock would help ameliorate these conditions through reduced grazing pressure which would allow vegetative cover to increase over time. This would have an added benefit of promoting prey species such as small rodents and snakes that are important food sources, particularly during breeding.

The reduction of wild horse numbers would help control the spread of undesirable plants such as medusahead and cheat grass which is currently concentrated in the eastern half of the East WHT, outside the habitat utilized by the crane. These grasses are unpalatable to most animals and, if affecting crane habitat, could contribute to reduce prey.

Cumulative Effects

Cumulative effects to the crane are primarily associated with livestock (cattle) grazing in addition to the horses. Deer use may affect forage through trampling (in addition to livestock) but this would be unlikely to provide a measurable contribution as deer forage on shrubs rather than grasses and are likely to only rarely occupy crane habitat. Habitat improvement activities associated with sage grouse may help reduce the spread of noxious weeds (medusahead and cheat grass) but grouse habitat and crane habitat typically do not overlap.

Alternative 2 – Proposed Action

Direct and Indirect Effects

The effects under this alternative are very similar to Alternative 1 (No Action) except that the slowed rate of increase of wild horse populations (through adjusting sex ratios and using birth control) would be expected to result in fewer gathers needed and less disturbance to cranes. The comparison of alternatives indicates that under Alternative 1, captures (gather activities) would be required annually whereas under Alternative 2, once herd size is reduced to desired levels, captures would be needed only every three to four years, reducing the potential for disturbance to nest sites.

Cumulative Effects

The Cumulative Effects in Alternative 2 would be the same as Alternative 1 although the reduction in herd numbers for a longer period of time may reduce the overall cumulative impacts.

Alternative 3

Direct and Indirect Effects

Alternative 3 is similar to both Alternative 2 except for, in addition to including actions that slow herd growth (in comparison to Alternative 1), thirty miles of fence removal is included as a method to encourage more dispersion in use. This would be augmented by the development of additional watering sites. These additional management strategies are unlikely to have a measurable effect on greater sandhill cranes.

Cumulative Effects

The cumulative effects would be similar to those in Alternative 2.

Alternative 4

Direct and Indirect Effects

This alternative incorporates many of the same actions considered under alternatives 2 and 3 (including the fence removal in Alternative 3 and fertility control in both alternatives 2 and 3) but would retain essentially the same number of horses as exists today. Habitat conditions would be unlikely to change and the potential for horses to move outside the WHT (increasing the risk to habitat) would likely be greater due to the pressure on the forage conditions within the WHT. While the risk to greater sandhill cranes remains low under this alternative, the alternative would likely lead to the least or at least slowest improvement to habitat conditions. This could have an effect on reproductive effort and success.

Cumulative Effects

The alternative proposes to meet forage utilization standards by reducing grazing pressure through adjusting stocking rates of all livestock. In doing so, existing stock watering sites would not be maintained. This could lead to increased pressure by livestock in areas where water is available, areas frequented by cranes.

Determinations for Sensitive Species

The analysis concluded that the Devils Garden Plateau Wild Horse Territory Management Plan would have no effect on the following sensitive species: Great Gray Owl, California Spotted Owl, Swainson's Hawk, Townsend's Big-Eared Bat, California Wolverine, American Marten, Sierra Nevada Red Fox, Northern Leopard Frog, Oregon Spotted Frog, Western Pond Turtle, California Floater, Topaz Juga Snail, Goose Lake Tui Chub, Goose Lake Lamprey, Warner Valley Redband Trout, Goose Lake Redband Trout.

The analysis also determined that the following sensitive species may be affected but the project would not result in a loss of viability or lead to a trend towards federal listing for: Northern Goshawk, Greater Sage Grouse, Greater Sandhill Crane, Bald Eagle, and Pallid Bat.

Management Indicator Species (MIS)

The management indicator species report considers the changes to habitat and compares that to trends within the Sierra Nevada bioregion. Each habitat type is represented by a terrestrial or aquatic species whose populations are monitored within the bioregion. The MIS analysis determined that the proposed actions could affect habitat for four MIS; aquatic macroinvertebrates, greater sage grouse, the Pacific tree frog, and mountain quail.

The analysis considered changes in the amount and quality of the habitat for each of these species and made a determination as to whether the individual project alternatives would cause changes in trends for habitat and MIS populations.

The area of consideration for the MIS analysis is the Devils Garden WHT, East and West.

Direct and Indirect Effects

The MIS analysis concluded that none of the four alternatives would change the amount of habitat within the project area for any of the habitats considered which included river and lacustrine (aquatic macroinvertebrates), sagebrush (greater sage grouse), wet meadow (Pacific tree frog), and early and mid seral coniferous forest (mountain quail) habitats. Although there would be no change in the amount of habitat, Alternatives 1, 2, and 3 would be likely to lead to improving conditions for each of the habitat (healthier perennial grasses and native forbs which help slow the rate of spread of invasive plant species). Alternative 4 may lead to improvement in habitat conditions but improvements, if any, would be at a much slower pace due to higher livestock numbers.

Many of the lacustrine habitats have shown moderate to severe habitat damaged due to the number of livestock and wild horses currently within the WHT. The majority of lacustrine habitat is on the east section of the WHT in areas where horse use is high. Reducing numbers would move the areas towards habitat improvement and less sedimentation through increases in vegetation which can act as a sediment filter. Alternatives 1, 2, and 3 would lead to improved habitat conditions due to the expected drop in livestock (horses and cattle) numbers associated with management of the WHT. Alternative 4 may lead to improved conditions but improvements, if any, would be slower to develop due to the number of wild horses remaining higher than the other alternatives.

Habitat for greater sage grouse is defined by the amount of sage habitat but also by secondary habitat characteristics of vertical and horizontal structure along with an understory of native grasses and forbs. Range analysis has shown that these characteristics have been reduced. Perennial bunch grasses have become pedicels, increasing the potential rate of establishment by invasive species which are of little to no forage value for grouse. A reduction of wild horses would help improve conditions by reducing trampling impacts (to both sage brush and the understory) and also reduce the potential for invasive species such as medusahead which already have invaded the eastern portion of the WHT. Alternatives 1, 2, and 3 would lead to improved habitat conditions. Alternative 4 may lead to improved conditions but improvements, if any, would be slower to develop due to the number of wild horses remaining higher than the other alternatives.

Wet meadows comprise only a minor portion of the WHT and are found primarily in the Surveyors Valley and Timbered Mtn. allotments. They are often associated with lacustrine habitat and there are similar concerns such as trampling which affects vegetation and habitat structure. None of the alternatives would alter the amount of habitat but alternatives 1, 2, and 3 would offer greater potential for habitat restoration due to the reduction of livestock numbers.

Although the WHT has a substantial amount of early and mid seral coniferous forest (11,430 acres) MIS habitat is comprised solely of eastside pine. The habitat appears to be in relatively good condition, is primarily open and the habitat is in areas that have not been substantially affected by invasive species. Alternatives 1, 2, and 3 would all lead to improved conditions due to less pressure on the understory which provide forage (particularly grass seeds). Alternative 4 may lead to improved conditions but maintaining higher numbers of wild horses would result in a greater potential for invasive species and greater pressure on native grass and forb populations.

Cumulative Effects

There are few cumulative effects associated with MIS habitat as there is no direct or indirect effect to the amount of MIS habitat (effects would only be to habitat quality). The habitat restoration projects associated with sage grouse habitat may result in slight increases in the amount of habitat but changes would primarily involve improvements in existing habitat which would be a cumulative improvement of habitat quality.

Determinations

MIS determinations are based on changes in the amount of habitat as a result of the project and compared against the amount of habitat at the bioregional (Sierra Nevada) scale. The comparison is then used to estimate the impact to MIS populations. In this project there are no changes in the amount of MIS habitat therefore the project would have no effect on habitat or population trends within the Sierra Nevada bioregion.

Migratory Birds

Proposed management actions would not directly alter, change or manipulate any habitat types. However, direct impacts within some habitats could occur during helicopter assisted gathers. Helicopter assisted gathers (alternatives 2 and 3) would not occur during the prime migratory landbird breeding season (February 29 and July 1), and activities during helicopter assisted gathers are not expected to appreciably alter ecosystem components within any habitat type. Therefore, the Devil's Garden Plateau WHT Management Plan would not adversely impact migratory landbirds or their associated habitats.

Under the Proposed Action Alternative, the wild horse population would be reduced from an estimated current population of 1,124 to an Appropriate Management Level (AML) of between 206 and 402. This reduction would lessen current impacts caused by the relatively large horse population in and around the Devil's Garden WHT. In turn, this impact reduction on the landscape would result in improved habitat conditions within perennial stream watersheds, other riparian habitat, grassland and sagebrush habitats within the WHT. All alternatives would provide for improvements in habitat critical to migratory birds through reductions in grazing pressure, therefore, the Devil's Garden Plateau WHT Management Plan would have a beneficial impact on migratory landbirds and their associated habitats.

4.11 Climatic Changes

Overview

A growing body of scientific evidence and long-term climate modeling indicate that climate change is occurring at a global scale. There is however debate about the extent of the change and in particular the cause. Some believe that changes in climate are directly influenced by human activities, such as the addition of greenhouse gases to the atmosphere from burning fossil fuels. Others believe that changes are the result of normal vagaries of weather and are not a result of human activity. This analysis is not

intended to support or refute any of the various positions on climate change. Its purpose is to fulfill the NEPA requirement to provide the public and the decision maker with relevant information about the environmental effects of a proposed action and alternatives.

This analysis focuses on aspects of climate change that are pertinent to the proposed action and alternatives. It recognizes the limits of our scientific ability to accurately predict climate change effects, and does not devote effort to analyzing wholly speculative effects. It follows CEQ regulations at 40 CFR 1502.22 regarding acquisition and disclosure of information that is relevant to reasonably foreseeable impacts and is essential to a reasoned choice among alternatives.

This analysis will consider one type of climate change effect, that being the effect of climate change on the proposed action and alternatives. A second type of climate change effect, the effect of the proposed action and alternatives on climate change, will not be analyzed. This second type primarily involves the production of greenhouse gases (GHG) and carbon sequestration. These aspects of climate change are best considered on a global scale and at that scale the activities and vegetation types (primarily grasses and shrubs) associated with wild horse management have a negligible effect.

Current Climate and Climate-related Trends

Much of the following information was obtained from the February 2013 public review draft of the Upper Pit River Integrated Regional Water Management Plan (IRWMP) (NCWA 2013 in draft). This document contains a climate vulnerability assessment section that provides the most focused look at climate and predicted trends within the project area. The analysis relies on scientific data and local and regional weather records and trends. The eastern portion of the Wild Horse Territory (WHT) is within the Upper Pit River watershed and climate conditions within the watershed are representative of the entire WHT.

The project area is considered to be in the Northeast climate region of the Sierra Cascade Climate Province. The current climate is characterized by hot, dry summers and cold winters. The project area is within a semi-arid region characterized by low-elevation valleys. Current trends based on local climate data are:

- An average rise in temperature over the last century, but overall not to the extent experienced in other higher-elevation regions within the same weather province.
- Changes in the amounts of precipitation are not definitive but there is a significant shift in the form in which precipitation arrives, i.e. more rain and less snowfall.
- An overall shift in runoff timing and quantity from the spring into the winter period (early snow melt and increased rainfall).
- In contrast to other areas in California, this area has generally not experienced greater storm intensities.

Overall this climate region is about 1.7 degrees F warmer on average than 100 years ago, and is losing its ability to count on slow-releasing spring snowmelt.

The Upper Pit River IRWMP convened a Climate Variability Working Group to conduct climate simulations. The Group acknowledged that climate modeling introduces a level of uncertainty and cautioned that simulated and modeled data should be treated cautiously. Models with different levels of GHG emissions were used. Simulated projections showed that average summer temperatures are expected to rise by as much as 5 degrees F by 2040 and as much as 10 degrees F by 2099 under the high

GHG scenario. Under the lower GHG emission scenario temperature increases are projected to rise by about half the high GHG scenario. A corollary rise in precipitation is not projected.

Potential Effects of Climate Change on the Alternatives

This effects section is organized by the climate change aspects pertinent to this project and by the resource areas that have sensitivity to climate change to a degree that permits a meaningful discussion.

Direct and Indirect Effects

Ecosystem resiliency

Management of public lands includes a focus on restoring and maintaining structure, function, and integrity of ecosystems to improve their resilience to climate change (Rieman and Isaak , 2010). The purpose and need for this project is to ensure the wild horse herd is managed to maintain a self-sustaining population of healthy animals in a thriving natural ecological balance with other uses and the productive capacity of their habitat. All alternatives to a degree meet this purpose and need and as such would improve the WHT's resiliency to climate change. Effects of the alternatives on ecosystem resiliency would be generally the same with the exception of Alternative 4. Due to low forage production during drought conditions and increased use during the critical spring growth period Alternative 4 would have slightly less of an improvement in terms of resiliency to climate change.

Rangeland vegetation – Livestock production, including grazing by wild horses, can alter vegetation in ways that can exacerbate the effects of climate change on the vegetation resource (Beschta et al 2012). Currently three of the livestock allotments within the WHT have over utilization of forage and unsatisfactory upland and riparian conditions associated with existing wild horse numbers. Alternatives 1, 2 and 3 would maintain wild horse populations at a lower AML as compared to Alternative 4 and would result in improved vegetation conditions and improved upland and riparian habitats. Improving these conditions would lessen the effects of climate change on the vegetation resource. Alternative 4 however would likely result in large areas of heavy use and greater utilization during drought years, as well as a decline in vigor and production of forage species associated with increased use during the critical spring growth period. As a result Alternative 4 would be the most susceptible of the alternatives to the effects of climate change.

Invasive species – Future regional climate is likely to favor certain invasive species and existing invasive species act as stressors on native species (NCWA 2013 in draft). These factors could result in decreased species variability and degraded habitat. As discussed in the noxious weed section of this document the western home range of the WHT is in fairly good ecological condition in terms of noxious weeds. However the eastern home range has been invaded by annual grasses and Scotch thistle and hoary cress and is in a degraded condition. Alternatives 1, 2 and 3 through management of the wild horse herd to a lower AML as compared to Alternative 4 would slow the spread of some noxious weeds and promote stronger, more resilient native plant communities that would reduce the impacts of future climate change. Among these three alternatives, Alternatives 2 and 3 would have a slightly larger reduction in climate change impacts due less frequent gathers and the associated decrease in potential vectors to spread noxious weeds. Alternative 4 would have the greatest potential for climate change impacts to favor noxious weeds as the higher number of horses year-round would create more effective vectors for the spread of noxious weeds and would alter the most habitat that would be susceptible to future invasions of noxious weeds.

Cumulative Effects

The past, present and future foreseeable effects include livestock grazing, impacts from lands actions, range improvement (water and fence) construction and maintenance, road construction, maintenance and use, firewood gathering, sage steppe ecosystem restoration projects and forest management activities.

Global climate change has been described as the ultimate cumulative effect, overlapping in space and time with countless other human actions across the entire earth in the past, present, and the foreseeable future. Its extent is worldwide and it affects different geographical regions differently. On a global scale, the Devil's Garden WHT Management project is likely to have a negligible, if any, cumulative effect on climate change.

4.12 Other Effects

Clean Air Act

The Proposed Action and Alternatives do not involve actions that would have effects on air quality.

Clean Water Act

There would no effects to water quality from implementation of any of the Alternatives considered in this environmental assessment. Compliance with Forest Plan utilization and stream bank alteration standards would insure there is no degradation to water quality.

Prime Farm, Range, and Forest Lands

There are no Prime Farm, Range or Forest Lands located within the analysis area for this environmental assessment.

Energy Requirements

The Proposed Action or Alternatives do not involve energy related issues, therefore, there would be no effect.

Human Environment

The Proposed Action and Alternatives have no effect on the human environment.

Wetlands and Floodplains

Wetlands and riparian area management is subject to Forest Plan standards and guidelines. Compliance with these standards would insure all Alternatives being considered result in improved riparian and wetland habitat conditions.

Forest Plan Consistency

All Alternatives being considered in this environmental assessment are consistent with the Modoc National Forest Land and Resource Management Plan (1991), as amended. The effects of proposed

Forest Plan amendments, as proposed in Alternatives 2-4, have been analyzed in this environmental assessment, and were found to be non-significant.

Irreversible and Irretrievable Commitment of Resources

There would be no irreversible or irretrievable commitments resulting from any of the Alternatives considered in this environmental assessment.

Consultation with USFWS

The Klamath Falls, Oregon Office of the US Fish and Wildlife Service was consulted during the preparation of this environmental assessment. Biological Assessments and Biological Evaluations for Threatened/ Endangered/Sensitive plants and animals have been prepared to assess impacts of the Proposed Action on these species.

Consultation with SHPO

The California State Historic Preservation Office was consulted during preparation of this environmental assessment.

Tribal Consultation

The Pit River Tribe has been consulted with regarding the Proposed Action and Alternative. Tribal consultation is on-going.

5.0 AGENCIES AND PERSONS CONSULTED

The Forest Service consulted with the following individuals, Federal, State and local agencies, and Tribes during the development of this environmental assessment:

5.1 Interdisciplinary Team (IDT) Members

- ☐ IDT Leader(s): Rob Jeffers and Susan Stokke
- ☐ Writer/Editor(s): Susan Stokke and Rob Jeffers
- ☐ Wild Horses: Rob Jeffers
- ☐ Range: Susan Stokke
- ☐ Wildlife: Terry Nelson, Mark Williams
- ☐ Recreation: Claude Singleton
- ☐ Archaeology: Gerry Gates
- ☐ Botany: Forest Gauna
- ☐ Hydrology: Chris Stewart
- ☐ Soils: Sue Goheen
- ☐ Socio-Economics: Missy Merrill-Davies and Sean R. Curtis
- ☐ Climatic Change: Tim Davis
- ☐ GIS: Roger Farschon

5.2 Federal, State and Local Agencies

Bureau of Land Management
California Department of Fish and Wildlife
Modoc County
United States Fish and Wildlife Service

5.3 Tribes

Pit River Tribe

5.4 Others:

Carla Bowers
Modoc County Cattlemen and Cattlewomen

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7.0 APPENDICES

- ☐ Appendix A: Summary of Comments in Response to the MDF's July 27, 2011 Scoping Notice
- ☐ Appendix B: Summary of Comments in Response to the MDF's December 14, 2012 Scoping Notice
- ☐ Appendix C: Summary of Comments Received During Public Scoping And How the MDF Used These Comments to Prepare the Environmental Assessment
- ☐ Appendix D: Standard Operating Procedures for Wild Horse Gathers
- ☐ Appendix E: Standard Operating Procedures for Wild Horse Population-level Fertility Control Treatments
- ☐ Appendix F: Devil's Garden Plateau Wild Horse Territory Population Modeling Assumptions and Procedures

Appendix A: Summary of Comments in Response to the MDF's July 27, 2011 Scoping Notice

On July 27, 2011, the MDF issued a scoping notice concerning our proposal to update the Devil's Garden Plateau Wild Horse Territory Plan. In response to the scoping notice, written comments from 18 individuals, groups, local and/or state government or other agencies and email comments from 2,382 individuals were received (Appendix A).

Index of Scoping Comments Received

Table 37: Index of Scoping Comments Received

No.	Commenter	Dated	Received
1.	Bill Phillips	8/1/11	8/2/11
2.	Don Alexander	Undated	8/15/11
3.	The Wildlife Society	Undated	8/22/11
4.	Modoc County Board of Supervisors	8/23/11	8/25/11
5.	Emily Pompei	8/26/11	8/26/11 (email)
6.	American Wild Horse Protection Campaign	8/30/11	8/30/11
7.	BLM Alturas Field Office	8/30/11	8/30/11
8.	Sherry Oster	8/29/11	8/29/11
9.	Carla Bowers	8/29/11	8/30/11 and 9/25/12
10.	Modoc Cattlewomen	8/30/11	8/30/11
11.	Modoc County Cattlemen's Assn.	8/29/11	8/30/11
12.	Lee Chesterfield	8/24/11	8/26/11
13.	Judith Fader	8/29/11	8/29/11
14.	Craig Downer	8/28/11	8/30/11
15.	Janet Bindas	8/30/11	9/1/11
16.	Janet Lynch	8/28/11	8/29/11
17.	K. Gregg	8/28/11	8/30/11
18.	Modoc County Farm Bureau	8/30/11	8/30/11
19.	Email Comments - Heather Jakusz, et al	8/31/11	8/31/12

Scoping Comment Analysis

1. If releasing animals to enhance genetic variability, release mares, not studs (1).
2. All male animals should be castrated, do not release studs back to the range (2).
3. Large herbivores (both native and non-native) disturb landscapes by trampling soils and vegetation, selectively grazing palatable plants, and altering distribution of nutrients in the ecosystem (3).
4. The presence of horses can affect distribution of native species and the use of the habitat (3).
5. Primary emphasis should be placed on the habitat needs of native plants and animals when developing horse management plans (3).
6. Surveys and removals should be conducted in a timely manner to minimize impacts on natural resources that can result from the overpopulation of wild horses (3).
7. The horse management plan should not be based solely on fertility control given the uncertainty, logistical difficulty, and expense (3).
8. Manage populations at the Acceptable Population Level using statistically valid sampling methodology (3).

9. The continuing increase in (wild horse) numbers is impacting wildlife habitat, water quality, livestock grazing and may threaten the vast investment of time and resources being made to enhance Sage Grouse habitat (4)(11).
10. A lower range of AML should be set and gathering aggressively continued until it is achieved (4) (18).
11. The AML range should be lowered to provide for an increased interval between gathers (18).
12. Bands of horses outside the designated Territory should be given first priority for gathering (4).
13. An aggressive effort to achieve AML should be undertaken before secondary goals (horse characteristics, sex ratios, genetic diversity and fertility control) are considered (4)(11) (18).
14. The use of helicopters should be the primary gathering tool, complemented with the use of bait trapping (4)(10)(11)(18).
15. Wild horses should be given priority over private livestock by reducing forage allocations to livestock and increasing AML to the current population level of wild horses (5)(6)(8)(9)(13)(16)(19).
16. Animal populations should be managed through the uses of PZP to drastically reduce or eliminate the need for removals (5)(6)(8)(9)(13)(16)(17)(19).
17. Animal populations should not be reduced to low range of AML if fertility control is used (5)(6).
18. Natural population controls should be encouraged-avoid programs that destroy predators (5)(6)(9)(13)(14)(15)(16)(17).
19. Natural sex ratios should be maintained and should never go beyond 50:50, males to females (5)(6)(9)(13)(14)(15)(16)(17)(19).
20. Permanent sterilization (spaying, gelding) should be prohibited (5)(6)(8)(13)(16)(17)(19).
21. Herds should be managed for genetic diversity and strength and not for a particular animal characteristic (5)(6)(9)(13)(16)(17)(19).
22. A program of range restoration, water enhancements should be undertaken to maximize habitat for wild horses and encourage utilization of entire range (5)(6)(9)(13)(16)(17)(19).
23. Removals should be incremental (not more than 50 per year) to allow for natural mortality and protect from population crashes (5)(6)(13)(16)(17)(19).
24. Utilize least intrusive gather methods than helicopters, including horsemanship, water and bait trapping (5)(6)(8)(9)(12)(13)(16)(17) (19).
25. Capture and remove horses in intact social groups in order to minimize trauma and stress (5)(6)(8)(9)(13)(16)(17)(19).
26. Horses found outside the Territory should be relocated back inside the Territory instead of removing them (6).
27. EA should include an economic analysis for gather plan including all costs associated with capture operation itself, costs for short and long-term holding, and adoption preparation for all animals removed (5)(6)(8)(13)(16)(17)(19).
28. EA should include a full accounting of all resource allocations, including full disclosure of AUM and water allocations. Scientific justification supporting AML of 275-335 should be provided (5)(6)(8)(9)(13)(16)(17)(19).
29. EA should include a full listing of predator killing activities in and around Territory (5)(6)(8)(9)(13)(16)(17)(19).
30. Management plan should adhere to recommendations by HSUS (cameras mounted on gather helicopter and at trap and holding corrals) (6).
31. Prohibit gather of animals during temperature extremes, both hot and cold (6).
32. In order to maintain transparency, management plan should allow for observers to watch the gathering of animals every day (6)(15).
33. Management plan must thoroughly analyze the behavioral and social impacts associated with sex ratio skewing (6)(9).
34. Plan must contain an analysis of specific range data that supports the claim that horses, and not livestock are overpopulating the range and/or causing resource damage (6)(12).
35. Outline all water sources in the Territory, including how fencing in and around the Territory and engineering of wells and springs for livestock has impacted water availability for wild horses and other wildlife species (6).
36. All genetic analysis must be included in analysis and potential impact of AML and associated future removals (6).
37. Analysis should include listing of all grazing allotments and corresponding livestock numbers and AUMs, and water allocations (6)(12)(14)(15)(16).

38. The management plan must disclose those areas where horses have been excluded and identify where horses were previously allowed (6).
39. Annual reductions or increases in livestock use must be disclosed (6).
40. Analysis must provide a clear delineation of livestock vs. wild horse AUMs.
41. Management plan must provide a full listing of all range improvements made in the Territory over the past 5 years (6).
42. Management plan must disclose the length and location of all fencing in Territory (6).
43. Management plan must include detailed information on herd monitoring – LIST (6).
44. Management plan must include analysis of impacts on wild horses from removal, transport and short and long-term holding –LIST (6).
45. Management plan must include full accounting of costs of removing and maintaining animals from Territory – LIST (6).
46. Management plan must address specifics of fertility control-LIST (6).
47. Management plan must include specifics associated with skewing sex ratios to 50:50 (6).
48. Manage wild horse populations to ensure there are more horses than elk inhabiting the area (9).
49. Ensure that the analysis of thriving natural ecological balance includes all multiple uses of forage and water in the territory and that livestock are not considered part of the TNEB on public lands (9).
50. Analyze other multiple uses of Territory lands, current and future, that may present conflicts with wild horses and require mitigation, such as mining, geothermal, oil and gas, wind, etc. (9).
51. Wild horses in the Territory should be managed as a cultural resource as per the WH&B Act, not just as a natural resource (9) (18).
52. Animals should not be brought in from the outside as animals currently in the territory are perfectly adapted to the area (9).
53. The amount of horses in the area is above levels set in prior plans and have made it difficult for many producers to graze in an economic and environmentally feasible way (10)(11).
54. Wild horses are causing major impacts to waterholes, riparian areas and forage in the Territory (11).
55. Natural selection, not artificial selection should determine the characteristics of the herd (11).
56. Minimum herd size of 150-200 is too low for genetically viable population (14)(16).
57. Herd should be managed by “Reserve Design” method, that is ceasing eradication of predators, employing natural barriers to limit population expansion, and allowing density factors to limit wild horse populations (14).
58. Many of the fences in the territory should be removed as livestock numbers are reduced (14).
59. Instead of removing animals from outside the Territory, cooperative agreements should be developed to allow animals to stay in those areas (14).
60. Please support the management of a large herd in the Territory and an increase in their AMLs of 500-750 low to high (9).
61. Manage wild horses in their family bands as a protected wildlife species, not as livestock (9).

Appendix B: Summary of Comments in Response to the MDF's December 14, 2012 Scoping Notice

On December 14, 2012, the MDF issued a scoping notice concerning our proposal to update the Devils Garden Plateau Wild Horse Territory Plan. In response to the scoping notice, written comments from 37 individuals, groups, local and/or state government or other agencies and email comments from approximately 8600 individuals were received.

Index of Scoping Comments Received

Table 38: Index of Scoping Comments Received

No.	Commenter	Dated	Received
1.	Craig Downer (email)	12/17/12	12/17/12
2.	R. Scarborough (email)	12/31/12	12/31/12
3.	Individual Members of the Pit River Tribe (personal communication).	1/7/13	1/7/13
4.	Western Watersheds Project	1/4/2013	1/4/2013
5.	Bill Phillips	12/15/12	1/8/13
6.	Lucky Ackley (email)	1/9/13	1/9/13
7.	Tanya Williams (email)	1/14/13	1/14/13
8.	Elizabeth Ohalloran, et al (email)	1/13/13	1/14/13
9.	P Bowen, et al (email)	1/14/13	1/14/13
10.	Paul and Marilyn Davis (email)	1/10/13	1/14/13
11.	Modoc County Cattlemen's Association	undated	1/14/13
12.	Conservation Congress	1/11/13	1/14/13
13.	Stephanie Zill (email)	1/13/13	1/14/13
14.	Modoc Cattlewomen	1/11/13	1/14/13
15.	China Altman (email)	1/12/13	1/14/13
16.	Elisa Adler (email)	1/11/13	1/14/13
17.	Bonnie Kohleriter (email)	1/14/13	1/14/13
18.	Carla Bowers	1/14/13	1/14/13
19.	Robert A. Byrne Co.	1/11/13	1/14/13
20.	Public Lands Council of National Cattlemen's Beef Association	1/11/13	1/14/13
21.	Eileen Hennessy (email)	1/14/13	1/14/13
22.	California Cattlemen's Association	1/14/13	1/14/13
23.	Jess Dancer	1/11/13	1/14/13
24.	Helen Valborg	1/9/13	1/14/13
25.	Joe and Rhonda Hemphill	Undated	1/14/13
26.	Modoc County Board of Supervisors	1/8/13	1/14/13
27.	Carey Ranches	11/5/12	11/5/12
28.	Kathleen Fowler, Jack Futterman, PhD (email)	1/14/13	1/14/13
29.	Sherry Oster (email)	1/14/13	1/14/13
30.	The Cloud Foundation	1/14/13	1/14/13

No.	Commenter	Dated	Received
31.	Kathy Gregg	1/14/13	1/14/13
32.	Deniz Bolbol, American WH Preservation Campaign (email)	1/14/13	1/14/13
33.	Marybeth Devlin (email)	1/14/13	1/14/13
34.	Fish and Wildlife Service, Klamath Falls Fish and Wildlife Office	1/16/13	1/22/13
35.	Curt Talbot	1/31/13	2/1/13
36.	Tom and Nancy Krauel (email) (email)	1/31/13	1/31/13
37.	Fish and Wildlife Service, Klamath Basin National Wildlife Refuge Complex, Tulelake, CA	1/7/13	1/16/13

Scoping Comment Analysis

1. I am opposed to excluding the Avanzino and Triangle private ranch lands that the herds have been occupying (1)(7)(13)(18)(29)(30)(32).
2. Utilize Section 6 of the WFRHBA to set up Cooperative Agreements with ranchers to allow the horses to continue to use these contiguous private areas (1).
3. I object to the very low AML range of 275-335 wild horses and the low forage allocation of 4,400 AUMs (1).
4. I have noted the extensive fencing that is preventing the animal's natural rest-rotation (1)(18)(28).
5. You should employ the principles of Reserve Design to promote the animal's natural self-stabilization here (1)(29).
6. You must differentiate between wild horses, cattle, sheep and big game species (1)(21)(28).
7. The heavy use of PZP proposed will negatively affect the herd's social structure and the well-being of individual horses (1).
8. These pictures say what most people other than ranchers feel about these horses – leave them be. If nothing else, relocate them to the Sheldon National Wildlife Refuge (2).
9. The horses are horrible on the plants used for cultural and historical medicinal purposes and are very disruptive to sacred sites in addition to other sites on both private and federally managed lands (3).
10. Lauer Reservoir has been hit very hard with 300+ wild horses counted on tribal lands in September 2012. This has a negative economic impact on the grazing allotments and leases – couldn't lease the uplands this year because horses kept cattle away from the water holes (3).
11. Hard to keep up fences due to horse impacts – have added 57 man days trying to repair and maintain fences between tribal and federally managed lands (3).
12. There has been a decrease in the natural wildlife especially deer and antelope – no antelope were seen at Lauer Reservoir this year. In the past, there were 100's of antelope as it is a migratory route. Stock ponds have been "poisoned" by horses and antelope and deer are going elsewhere as they are not going to compete with feral horses (3).
13. In developing the TMP, the USFS needs to take a realistic look at the wild horse population within the WHGT, consider the compatibility of other activities such as livestock grazing in the WHT, and evaluate the effectiveness of past management, and must take a hard look at all the proposed impacts including the cumulative impacts of livestock grazing (4).
14. The USFS needs to determine if both livestock and wild horse numbers need to be reduced to maintain the ecological health of the landscape and to move the WHT to a more natural ecological balance (4).
15. The USFS should solicit the input of independent ecologists to determine an AML of horses and livestock in the WHT. The AML should be based on science and take into account the problems wild horses experience given the extensive livestock fencing and other developments that impair their natural movement (4).
16. In addition to the alternatives the USFS has proposed, the forest should analyze a Remove or Reduce Livestock alternative. This alternative should remove allotment boundary fences that impair wild horse movement within the WHT as well as all artificial waters. The peripheral fences around the WHT and any enclosure fences that protect sensitive resource should remain in place and be strengthened where needed. No predator control should be allowed except where human life is at risk (4)(18)(30)(31)(32).

17. The NEPA document should explain the basis for AML determination; provide details of livestock numbers and forage allocations; provide maps showing wild horse movements and identifying high horse use area important to wild horses; provide maps and information about numbers of artificial waters and livestock pasture fences; emphasize the habitat needs of native wildlife and the direct, indirect, and cumulative effects of livestock and wild horses; assess predator levels; assess impacts of livestock and wild horses on cultural resources and propose appropriate mitigation; document impacts to riparian areas and aquatic resources in the project area and propose appropriate mitigation; and consider the impacts of climate change (4).
18. Page 13 (2011 Scoping Comment Analysis). If I made this comment, I withdraw it (5).
19. Determine how you are going to determine the minimum acceptable level of genetic diversity (5).
20. The age structure will change with each gather depending on the ages of the horses removed. Suggest removing only young horses for adoption to reduce the number of horses going to long-term holding (5).
21. When bringing a herd to the AML lower limit, select those horses that are free of visible genetic defects and with the best conformation for retention in the breeding herd; eliminate horses from the herd that have extremely dilute colors; to the extent possible, leave older horses on the range and remove younger horses for adoption (this means entire bands will not be removed from the breeding herd and will maintain the greatest degree of genetic diversity) (5).
22. As needed, add selected horses from outside the herd to the herd to maintain diversity (5).
23. The most important question is what are reasonable, sustainable numbers? I believe 275-335 animals is a reasonable and sustainable number inside the horse area (6).
24. I feel the Modoc should use Alternative 3 to handle the removal of over 800 horses from the area (6).
25. I feel the question of what to do with the captured animals is the hardest question to answer and a large financial burden that falls on all taxpayers (6).
26. Damage is being done to our forest resources by wild horse overpopulation and the time for action is now before the damage is too great to repair. We have made great strides in rebuilding historical sage grouse habitat only to see it in jeopardy of being destroyed by wild horse overpopulation (6).
27. There is potential for an economic loss to the county and state unless action is taken now (6).
28. Sex ratios should never exceed 50:50 male to female. Altering sex ratio to 60:40 would have detrimental impacts to individual horses and bands (8)(21)(28)(30)(31)(32)(33).
29. Oppose the construction of new fencing in the WHT, except for limited fencing where it will restore or protect impaired riparian conditions. Fencing interferes with the migration patterns of wild horses and other wildlife. Fencing should be removed as much as possible to allow access to the entire WHT (8)(21)(28).
30. I support the maintenance and construction of water sources, especially in underutilized areas of WHT (Such as Mowitz, Potters and Timbered Mountain) to improve wild horse distribution and prevent overgrazing (8)(9)(12)(18)(28)(30)(31)(33).
31. 1991 Forest Plan should be amended to reduce forage allocations for livestock and increase the AML for wild horses to accommodate the majority of the current estimated population (8)(9)(21)(31).
32. I support the use of PZP fertility control (1 and 2 year applications) to suppress population growth (8)(9)(21)(30).
33. The current horse population should be accommodated through a temporary reduction in livestock grazing until population is reduced over time through the use of PZP (8)(9).
34. While I oppose the removals of horses from the WHT, the plan should mandate that removals should be incremental (i.e. not more than 50 per year) to allow for natural mortality to impact herd numbers and protect from population crashes such as the 1992 winter when 50% of the herd died due to severe weather conditions (8)(9)(21)(32).
35. The Territory Plan should include an objective that encourages natural population controls, such as predation, and the protection of native carnivores as a means to suppress population growth and re-establish a healthy ecosystem (8)(9)(21)(29)(30)(31)(32).
36. The plan should include a prohibition on permanent sterilization (i.e. spaying, gelding, etc.) measures as a means to suppress population growth, since those measures interfere with the horses' wild free-roaming behaviors, which are protected by federal law (8)(9)(21)(28)(32).
37. The plan should prioritize the use of bait and/or water trapping as a less intrusive alternative to traumatic helicopter for any removals that do occur (8)(9) (21)(30)(32)(33).

38. Any removals that do occur should be restricted to specific areas where environmental deterioration is clear and only in cases where wild horse use is proven to be a major contributing factor to the deterioration (8)(9)(21).
39. Should helicopters be used for roundups, the Plan should incorporate the elements outlined in the American Wild Horse Preservation Campaign's Standard Operating Procedures (SOP) for humane treatment of horses during helicopter roundups. Current SOPs are highly inadequate and inhumane (8)(9).
40. The large number of wild horses is having a negative effect on the Devils Garden Research Natural Area (RNA). The horses have created trails throughout the RNA three to five inches deep. These trails can be seen from satellite imagery (10).
41. Throughout the Devils Garden RNA, the horses are using old growth juniper as thermal cover, and have removed all vegetation under the juniper (10).
42. Wildlife friendly fencing should be considered around the Devils Garden RNA to exclude both cattle and horses from this natural ecosystem set aside for study in 1935 (10).
43. The idea of family structure within feral horses is a fallacy. (11)(14).
44. Another fallacy which should be debunked is the belief of a self-regulating population within horses. The only self-regulating feature within mammals is nutrient allocation: 1) Maintenance; 2) Growth; 3) Lactation; and 4) Last is reproduction. Consequently, animals which do not reproduce have literally started eating themselves out of house and home. (11)(14).
45. There is little research to substantiate or disprove the theory that use of helicopters is inhumane (11).
46. Issues with genetic diversity, when lowering populations of feral horses, are touted rhetoric of many feral horse advocates. However, according to a BLM Instruction Memorandum from 2009, there are only 5 of the 199 Herd Management areas showing signs of inbreeding (11)(14).
47. The USFS should not get sidetracked by using this as a test herd for population control experiments and chemical sterilants. The use of SpayVac has not met the regulatory approval process, efficacy is not yet established, there is no population modeling data, nor has even the captive studies been completed (11)(14).
48. I believe gelding is an inefficient use of taxpayer money and may cause disruption in social dominance, as geldings tend to be less aggressive (11)(14).
49. If permanent sterilization is an option, then mares should be spayed (11)(14).
50. It is the duty of the USFS to follow the "Wild Horse and Burro Act" and re-establish APPROPRIATE Management levels in this area. The current management or lack thereof, has devastated resources, affected the economy, and enabled the invasion of noxious weeds on the forest. The animals have expanded beyond the Wild Horse Territory and begun causing damage on private property as well as those allotments outside the territory (11)(14).
51. Using the USFS own calculations in the Sage Steppe EIS for every AUM lost there is a direct loss to the economy of \$100. With the area multiplier of 1.5 this results in another \$50 in induced losses. (11)(14).
52. The Proposed Action states it will guide the management of wild horses over the next 15-20 years. NEPA is stale after 5 years and any decision should be reevaluated after 5 years (12).
53. The Forest proposes to go back to a 1975 boundary rather than follow its own Forest Plan. The 1975 boundary including two areas separated by a smaller area- in other words an arbitrary boundary a horse would not understand (12)(21).
54. The Forest provides no legitimate rationale for returning to the 1975 boundary, other than to appease livestock growers (12).
55. We note the management of wild horses and the rangeland resources they depend on for their habitat as defined in the 1991 Modoc Forest Plan. We note the 10 items on pages 4 & 5 also refer to cows, yet this direction is ignored for cows while the Forest desires to enforce it for wild horses (12).
56. We are also opposed to the three Forest Plan amendments and don't believe they are insignificant (12).
57. We remain opposed to the gathering of horses by helicopter. This is dangerous, horses are injured, and bands are arbitrarily broken up. The FS could hire some real cowboys to select specific horses for roundup keeping in mind age, sex and band units (12)(28).
58. We remain opposed to birth control, which remains fully untested in regard to side effects (12).
59. The Territory has been designated for wild horses and should not be used for any private enterprise including any grazing by privately owned livestock (13).

60. You should do everything in your capacity to extend and improve management and protection of the wild horse herd at Devil's Garden, including defending the space they need to be a viable and healthy herd, ending the unconscionable helicopter roundups, better managing the springs they need for water- and on-going public education to help us see that wild horses belong on public lands (16).
61. For insured diversity and continued viability, more than 150 breeding animals appear to be required to have potentially healthy horses in each the East and West WH Territories (17)(21)(24)(28)(31).
62. AMLs need to be clearly stated with slightly increased AML ranges to meet the health needs of the horses. The mechanism for changing AMLs in the future should also be clearly stated (17).
63. Attention needs to be paid to the migratory patterns of the wild horses as well as their water and forage needs. (17).
64. The EA should include a preferred alternative that allocates at least 51% of the forage available for utilization to the DG WH compared with what is allocated to livestock & other wildlife. Hopefully the 51% available forage allocation will support a large herd of WH with an AML range of 400-750 animals (18).
65. The EA should include a fully analyzed tourism component for wildlife viewing and photographing WH in their natural habitat in the DG (18)(21)(24)(33).
66. Gelded animals proposed in Alternative 3 are absolutely unacceptable. The few remaining USFS WHTs must maintain healthy, reproducing WH herds (18)(32)(33).
67. Proposed plans to manage the resource and wild horses should not contain requirements which have a high expectation of failure i.e. managing by sex ratios when you cannot collect horses to determine sex, taking hair samples to establish baseline genetic diversity when the law was amended in 1971 and 2013 levels do not have a high probability of reflecting the genetic diversity of the population in 1971 (19)(22).
68. The analysis of the wild horse plan cannot be analyzed without achieving the currently authorized AML to determine if is correct or faulty (19).
69. Any action plan chosen should include the expedient removal of all horses in excess of the current AML (20)(22).
70. The agency must disclose all costs associated with the capture, transportation, holding, preparation and adoption costs as compared to on the range (21)(29)(30)(31)(33).
71. As the USFS is well aware, the wild horse population and territory has expanded greatly beyond initial and legal limits that were established on the Modoc National Forest with the passage of the Wild Horse Territory Boundary Act (22).
72. Proposed amendments to the 1991 Forest Plan are a concern. We believe that the population within the territory should be immediately managed to the 275-335 size that was committed to in the Forest Plan and wild horses outside the boundaries of the territory should be appropriately removed (22)(37).
73. Should the USFS wish to engage in a "complete and in-depth analysis of population inventory, resource monitoring..." and other such pursuits, as suggestion in Guideline 5A, CCA would suggest that this be done only after the wild horse population has been returned to the appropriate size (22).
74. Wild horses become very territorial and herd cattle away from water holes (23).
75. In the fall of 2011 we left lots of feed (on the Emigrant Allotment), and utilization showed the horses had consumed most of the feed that winter (23).
76. We have had to do a lot of extra work and cost and changes in how we run our cattle due to endanger(ed) or threaten(ed) species. Should be the same for wild horses (25).
77. The Forest should stay focused on those management tools that have proven successful over the years and have withstood legal challenges in the past. This is not the time or the project to inject experimental management options or to anticipate what conclusions the ongoing National Academy of Science stud might produce. When new and proven management options become available, the Territory Plan can be modified to include them (26).
78. The Forest should avoid having the BLM make a separate decision for the Strip Allotment (26).
79. The Territory Plan should stay away from experimental fertility control methods. Products like Spayvac and Gonacon are currently being researched and not appropriate for consideration as management options. Spaying is effective, however there is not yet a safe and efficient means of implementation. Additional population control methods can be added to the plan when appropriate (26).
80. The County strongly encourages the inclusion of the Standard Operating Procedures in the Proposed Actions (26).

81. I request an alternative that increases the Appropriate Management Level for Wild Horses to accommodate the current estimated population (29).
82. During gathers, there must be strict protocols for keeping family bands intact and maintaining integrity of social bands (29).
83. Genetic testing for the entire herd should be done before any management decisions are made (30)(33).
84. Aged horses should remain on the range and allowed to die a natural death on their home range (30).
85. It is recommended to implement a plan that raises the wild horse proper population parameter to 2,500 for the Devil's Garden Herd. No horses should be gathered, given contraception, and no sex ratios skewed (33).
86. The use of helicopters for capture and monitoring, fence removal and/or reconstruction, and increasing access to water may have the potential to affect listed and candidate species (34).
87. Measures that minimize these potential effects are encouraged. Examples may include, but are not limited to the use of seasonal restrictions during sensitive life cycle stages, limiting the use of heavy equipment in or near important aquatic habitats, and careful consideration of sites selected for water access (34).
88. Wild horses are, in fact, "feral animals" and could be categorized as an "invasive species" and I support a plan to remove the horses entirely from the public land (35).
89. The growing oversized herds of horses competing for habitat have affected our deer and antelope population as well as all the other animals that compete for their use (35).
90. Controlled grazing provides jobs, beef (food), and constant attention to public land condition. Feral horses provide little or nothing to benefit the economy (35).
91. While deer hunting on the Devil's Garden this last fall I was horrified to discover the massive number of horses and associated damage that they are doing to our environment in this area (36).
92. The least traumatic and hence the most humane way to remove horses would be by hiring a few sharp shooters. Another option would be to simply issue permits for hunters to harvest the horses (36).
93. The positive benefits from juniper removal/restoration work that is being implemented (for sage grouse) would be diminished if wild horse populations are not controlled (37).
94. Wild horses surrounding and within MA 66-Clear Lake territory should be gathered first so as to manage their population closely to improve conditions for sage grouse in the area (37).
95. Best management practices should be considered during horse gathers so as not to damage sagebrush habitat in the MA 66-Clear Lake Areas (37).

Appendix C: Summary of Comments Received During Public Scoping and How the MDF Used These Comments to Prepare the Environmental Assessment

Table 39: Comments in Response to the MDF's July 27, 2011 Scoping Notice

Commenter(s)	Comment	Issue
(1)	If releasing animals to enhance genetic variability, release mares, not studs.	Incorporated in Issue 1.
(2)	All male animals should be castrated, do not release studs back to the range.	Incorporated in Issue 1.
(3)	Large herbivores (both native and non-native) disturb landscapes by trampling soils and vegetation, selectively grazing palatable plants, and altering distribution of nutrients in the ecosystem.	Incorporated in Issue 2.
(3)	The presence of horses can affect distribution of native species and the use of the habitat.	Incorporated in Issue 3.
(3)	Primary emphasis should be placed on the habitat needs of native plants and animals when developing horse management plans.	Incorporated in Issue 3.
(3)	Surveys and removals should be conducted in a timely manner to minimize impacts on natural resources that can result from the overpopulation of wild horses.	Incorporated in Issue 1.
(3)	The horse management plan should not be based solely on fertility control given the uncertainty, logistical difficulty, and expense.	Incorporated in Issue 1.
(3)	Manage populations at the Acceptable Population Level using statistically valid sampling methodology.	Incorporated in Issue 1.
(4)(11)	The continuing increase in (wild horse) numbers is impacting wildlife habitat, water quality, livestock grazing and may threaten the vast investment of time and resources being made to enhance Sage Grouse habitat.	Incorporated in Issues 2 and 3.
(4)(18)	A lower range of AML should be set and gathering aggressively continued until it is achieved.	Incorporated in Issue 1.
(18)	The AML range should be lowered to provide for an increased interval between gathers.	Incorporated in Issue 1.
(4)	Bands of horses outside the designated Territory should be given first priority for gathering.	Incorporated in Issue 1.
(4)(11) (18)	An aggressive effort to achieve AML should be undertaken before secondary goals (horse characteristics, sex ratios, genetic diversity and fertility control) are considered.	Incorporated in Issue 1.
(4)(10)(11) (18)	The use of helicopters should be the primary gathering tool, complemented with the use of bait trapping.	Incorporated in Issue 1.
(5)(6)(8)(9) (13)(16)	Wild horses should be given priority over private livestock by reducing forage allocations to livestock and increasing AML to the current population level of wild horses.	This issue has already decided by law, regulation, Forest Plan or other higher level decision.

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Commenter(s)	Comment	Issue
(5)(6)(8)(9) (13)(16)(17) (19)	Animal populations should be managed through the uses of PZP to drastically reduce or eliminate the need for removals.	Incorporated in Issue 1.
(5)(6)	Animal populations should not be reduced to low range of AML if fertility control is used.	Incorporated in Issue 1.
(5)(6)(9)(13) (14)(15)(16)(17) (19)	Natural population controls should be encouraged-avoid programs that destroy predators.	This issue is outside the scope of the Proposed Action.
(5)(6)(9)(13) (14)(15)(16) (17)(19)	Natural sex ratios should be maintained and should never go beyond 50:50, males to females.	Incorporated in Issue 1.
(5)(6)(8)(13) (16)(17)(19)	Permanent sterilization (spaying, gelding) should be prohibited.	Incorporated in Issue 1.
(5)(6)(9)(13) (16)(17)(19)	Herds should be managed for genetic diversity and strength and not for a particular animal characteristic.	Incorporated in Issue 1.
(5)(6)(9)(13) (16)(17)(19)	A program of range restoration, water enhancements should be undertaken to maximize habitat for wild horses and encourage utilization of entire range.	This issue has already decided by law, regulation, Forest Plan or other higher level decision. In addition, water is not a limiting factor for wild horses within the Devil's Garden WHT.
5)(6)(13)(16) (17)(19)	Removals should be incremental (not more than 50 per year) to allow for natural mortality and protect from population crashes.	This issue is conjectural and not supported by scientific or factual evidence.
(5)(6)(8)(9) (12)(13)(16) (17)(19)	Utilize least intrusive gather methods than helicopters, including horsemanship, water and bait trapping).	Incorporated in Issue 1.
(5)(6)(8)(9) (13)(16)(17)(19)	Capture and remove horses in intact social groups in order to minimize trauma and stress.	This issue is conjectural and not supported by scientific or factual evidence.
(6)	Horses found outside the Territory should be relocated back inside the Territory instead of removing them.	Incorporated in Issue 1.
(5)(6)(8)(13) (16)(17)(19)	EA should include an economic analysis for gather plan including all costs associated with capture operation itself, costs for short and long-term holding, and adoption preparation for all animals removed.	Incorporated in Issue 1.
(5)(6)(8)(9) (13)(16)(17)(19)	EA should include a full accounting of all resource allocations, including full disclosure of AUM and water allocations. Scientific justification supporting AML of 275-335 should be provided.	This issue has already decided by law, regulation, Forest Plan or other higher level decision. However, in accordance with Forest Plan direction an evaluation of resource monitoring and population inventory data has been completed to determine if the existing AML is still valid or should be adjusted.
(5)(6)(8)(9) (13)(16)(17)(19)	EA should include a full listing of predator killing activities in and around Territory.	This issue is outside the scope of the proposed

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Commenter(s)	Comment	Issue
		action.
(6)	Management plan should adhere to recommendations by HSUS (cameras mounted on gather helicopter and at trap and holding corrals).	This issue is outside the scope of the proposed action.
(6)	Prohibit gather of animals during temperature extremes, both hot and cold.	Incorporated in Issue 1.
(6)(15)	In order to maintain transparency, management plan should allow for observers to watch the gathering of animals every day.	This issue is outside the scope of the proposed action.
(6)(9)	Management plan must thoroughly analyze the behavioral and social impacts associated with sex ratio skewing.	Incorporated in Issue 1.
(6)(12)	Plan must contain an analysis of specific range data that supports the claim that horses and not livestock are overpopulating the range and/or causing resource damage.	Incorporated in Issue 1.
(6)	Outline all water sources in the Territory, including how fencing in and around the Territory and engineering of wells and springs for livestock has impacted water availability for wild horses and other wildlife species.	This issue has already decided by law, regulation, Forest Plan or other higher level decision. In addition, water is not a limiting factor for wild horses within the Devil's Garden WHT.
(6)	All genetic analysis must be included in analysis and potential impact of AML and associated future removals.	Incorporated in Issue 1.
(6)(12)(14) (15)(16)	Analysis should include listing of all grazing allotments and corresponding livestock numbers and AUMs, and water allocations.	This issue has already decided by law, regulation, Forest Plan or other higher level decision. In addition, water is not a limiting factor for wild horses within the Devil's Garden WHT.
(6)	The management plan must disclose those areas where horses have been excluded and identify where horses were previously allowed.	This issue has already decided by law, regulation, Forest Plan or other higher level decision.
(6)	Annual reductions or increases in livestock use must be disclosed.	Incorporated in Issue 5.
(6)	Analysis must provide a clear delineation of livestock vs. wild horse AUMs.	Incorporated in Issue 5.
(6)	Management plan must provide a full listing of all range improvements made in the Territory over the past 5 years.	This issue is outside the scope of the proposed action.
(6)	Management plan must disclose the length and location of all fencing in Territory.	This issue is outside the scope of the proposed action.
(6)	Management plan must include detailed information on herd monitoring – LIST.	Incorporated in Issue 1.
(6)	Management plan must include analysis of impacts on wild horses from removal, transport and short and long-term holding –LIST.	Incorporated in Issue 1.
(6)	Management plan must include full accounting of costs of removing and maintaining animals from Territory – LIST.	This issue has already decided by law, regulation, Forest Plan or other higher level decision.

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Commenter(s)	Comment	Issue
(6)	Management plan must address specifics of fertility control-LIST.	Incorporated in Issue 1.
(6)	Management plan must include specifics associated with skewing sex ratios to 50:50.	Incorporated in Issue 1.
(9)	Manage wild horse populations to ensure there are more horses than elk inhabiting the area.	This issue is outside the scope of the proposed action.
(9)	Ensure that the analysis of thriving natural ecological balance includes all multiple uses of forage and water in the territory and that livestock are not considered part of the TNEB on public lands.	This issue has already decided by law, regulation, Forest Plan or other higher level decision.
(9)	Analyze other multiple uses of Territory lands, current and future, that may present conflicts with wild horses and require mitigation, such as mining, geothermal, oil and gas, wind, etc.	Incorporated in Issue 5.
(9) (18)	Wild horses in the Territory should be managed as a cultural resource as per the WH&B Act, not just as a natural resource.	This issue has already decided by law, regulation, Forest Plan or other higher level decision.
(9)	Animals should not be brought in from the outside as animals currently in the territory are perfectly adapted to the area.	This issue is conjectural and not supported by scientific or factual evidence.
(10)(11)	The amount of horses in the area is above levels set in prior plans and has made it difficult for many producers to graze in an economic and environmentally feasible way.	Incorporated in Issue 5.
(11)	Wild horses are causing major impacts to waterholes, riparian areas and forage in the Territory.	Incorporated in Issue 2.
(11)	Natural selection, not artificial selection should determine the characteristics of the herd.	Incorporated in Issue 1.
(14)(16)	Minimum herd size of 150-200 is too low for genetically viable population.	This issue is conjectural and not supported by scientific or factual evidence.
(14)	Herd should be managed by "Reserve Design" method (ceasing eradication of predators, employing natural barriers to limit population expansion, and allowing density factors to limit wild horse populations).	This issue is conjectural and not supported by scientific or factual evidence.
(14)	Many of the fences in the territory should be removed as livestock numbers are reduced.	Incorporated in Issue 1.
(14)	Instead of removing animals from outside the Territory, cooperative agreements should be developed to allow animals to stay in those areas.	This issue has already decided by law, regulation, Forest Plan or other higher level decision.
(9)	Please support the management of a large herd in the Territory and an increase in their AMLs of 500-750 low to high.	Incorporated in Issue 1.
(9)	Manage wild horses in their family bands as a protected wildlife species, not as livestock.	Incorporated in Issue 1.

Table 40: Summary of Comments in Response to the MDF's December 14, 2012 Scoping Notice

Commenter(s)	Comment	Issue
(1)(29)(30)(32)	Utilize Section 6 of the WFRHBA to set up Cooperative Agreements with ranchers to allow the horses to continue to use these contiguous private areas the herds have already been occupying.	This issue has already been decided by law (1971 WFRHBA).
(1)	I object to the very low AML range of 275-335 wild horses and the low forage allocation of 4,400 AUMs.	Incorporated into Issue 1.
(1)(28)	I have noted the extensive fencing that is preventing the animal's natural rest-rotation.	Incorporated into Issue 1.
(1)(29)	You should employ the principles of Reserve Design to promote the animal's natural self-stabilization here.	This issue is conjectural and not supported by scientific or factual evidence.
(1)(21)(28)	You must differentiate between wild horses, cattle, sheep and big game species.	Incorporated into Issue 1.
(1)	The heavy use of PZP proposed will negatively affect the herd's social structure and the well-being of individual horses.	Incorporated into Issue 1.
(2)	These pictures say what most people other than ranchers feel about these horses – leave them be. If nothing else, relocate them to the Sheldon National Wildlife Refuge.	This issue has already been decided by law, regulation, Forest Plan or other higher level decision.
3)	The horses are horrible on the plants used for cultural and historical medicinal purposes and are very disruptive to sacred sites in addition to other sites on both private and federally managed lands.	Incorporated into Issue 4.
(3)	Lauer Reservoir has been hit very hard with 300+ wild horses counted on tribal lands in September 2012. This has a negative economic impact on the grazing allotments and leases – couldn't lease the uplands this year because horses kept cattle away from the water holes.	Incorporated into Issue 5.
(3)	Hard to keep up fences due to horse impacts – have added 57 man days trying to repair and maintain fences between tribal and federally managed lands.	Incorporated into Issue 5
(3)	There has been a decrease in the natural wildlife especially deer and antelope – no antelope were seen at Lauer Reservoir this year. In the past, there were 100's of antelope as it is a migratory route. Stockpounds have been "poisoned" by horses and antelope and deer are going elsewhere as they are not going to compete with feral horses.	Incorporated into Issue 3.
(4)	In developing the TMP, the USFS needs to take a realistic look at the wild horse population within the WHGT, consider the compatibility of other activities such as livestock grazing in the WHT, and evaluate the effectiveness of past management, and must take a hard look at all the proposed impacts including the cumulative impacts of livestock grazing.	Incorporated into Issue 1.
(4)	The USFS needs to determine if both livestock and wild horse numbers need to be reduced to maintain the ecological health of the landscape and to move the WHT to a more natural ecological balance.	Incorporated into Issue 1.
(4)	The USFS should solicit the input of independent ecologists to determine an AML of horses and livestock in the WHT. The AML	Incorporated into Issue 1.

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Commenter(s)	Comment	Issue
	should be based on science and take into account the problems wild horses experience given the extensive livestock fencing and other developments that impair their natural movement.	
(4)(30)(31)(32)	In addition to the alternatives the USFS has proposed, the forest should analyze a Remove or Reduce Livestock alternative. This alternative should remove allotment boundary fences that impair wild horse movement within the WHT as well as all artificial waters. The peripheral fences around the WHT and any enclosure fences that protect sensitive resource should remain in place and be strengthened where needed. No predator control should be allowed except where human life is at risk.	Incorporated into Issue 5.
(4)	The NEPA document should explain the basis for AML determination; provide details of livestock numbers and forage allocations; provide maps showing wild horse movements and identifying high horse use area important to wild horses; provide maps and information about numbers of artificial waters and livestock pasture fences; emphasize the habitat needs of native wildlife and the direct, indirect, and cumulative effects of livestock and wild horses; assess predator levels; assess impacts of livestock and wild horses on cultural resources and propose appropriate mitigation; document impacts to riparian areas and aquatic resources in the project area and propose appropriate mitigation; and consider the impacts of climate change.	Incorporated into Issue 1.
(5)	Page 13 (2011 Scoping Comment Analysis). If I made this comment, I withdraw it.	Incorporated into Issue 1.
(5)	Determine how you are going to determine the minimum acceptable level of genetic diversity.	Incorporated into Issue 1.
(5)	The age structure will change with each gather depending on the ages of the horses removed. Suggest removing only young horses for adoption to reduce the number of horses going to long-term holding.	Incorporated into Issue 1.
(5)	When bringing a herd to the AML lower limit, select those horses that are free of visible genetic defects and with the best conformation for retention in the breeding herd; eliminate horses from the herd that have extremely dilute colors; to the extent possible, leave older horses on the range and remove younger horses for adoption (this means entire bands will not be removed from the breeding herd and will maintain the greatest degree of genetic diversity).	Incorporated into Issue 1.
(5)	As needed, add selected horses from outside the herd to the herd to maintain diversity.	Incorporated into Issue 1.
(6)	The most important question is what are reasonable, sustainable numbers? I believe 275-335 animals is a reasonable and sustainable number inside the horse area.	Incorporated into Issue 1.
(6)	I feel the Modoc should use Alternative 3 to handle the removal of over 800 horses from the area.	Incorporated into Issue 1.
(6)	I feel the question of what to do with the captured animals is the hardest question to answer and a large financial burden that falls on all taxpayers.	This Issue is outside the scope of the Proposed Action.
(6)	There is potential for an economic loss to the county and state	Incorporated into Issue 5.

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Commenter(s)	Comment	Issue
	unless action is taken now.	
(8)(21)(28)(30) (31)(32)(33)	Sex ratios should never exceed 50:50 male to female. Altering sex ratio to 60:40 would have detrimental impacts to individual horses and bands.	Incorporated into Issue 1.
(8)(21)(28)	Oppose the construction of new fencing in the WHT, except for limited fencing where it will restore or protect impaired riparian conditions. Fencing interferes with the migration patterns of wild horses and other wildlife. Fencing should be removed as much as possible to allow access to the entire WHT.	Incorporated into Issue 1.
(8)(9)(12)(28)(30) (31)(33).	I support the maintenance and construction of water sources, especially in underutilized areas of WHT (Such as Mowitz, Potters and Timbered Mountain) to improve wild horse distribution and prevent overgrazing.	Incorporated into Issue 1.
(8)(9)(21)(31)	1991 Forest Plan should be amended to reduce forage allocations for livestock and increase the AML for wild horses to accommodate the majority of the current estimated population.	This issue is already decided by law, regulation, Forest Plan, or other higher level decision.
(8)(9)(21)(30)	I support the use of PZP fertility control (1 and 2 year applications) to suppress population growth.	Incorporated into Issue 1.
(8)(9)	The current horse population should be accommodated through a temporary reduction in livestock grazing until population is reduced over time through the use of PZP.	Incorporated into Issue 1.
(8)(9)(21)(32)	While I oppose the removals of horses from the WHT, the plan should mandate that removals should be incremental (i.e. not more than 50 per year) to allow for natural mortality to impact herd numbers and protect from population crashes such as the 1992 winter when 50% of the herd died due to severe weather conditions.	Incorporated into Issue 1.
(8)(9)(21)(29)(30) (31)(32)	The Territory Plan should include an objective that encourages natural population controls, such as predation, and the protection of native carnivores as a means to suppress population growth and re-establish a healthy ecosystem.	This issue is outside the scope of the Proposed Action.
(8)(9)(21)(28)(32)	The plan should include a prohibition on permanent sterilization (i.e. spaying, gelding, etc.) measures as a means to suppress population growth, since those measures interfere with the horses' wild free-roaming behaviors, which are protected by federal law.	Incorporated into Issue 1.
(8)(9) (21)(30)(32)(33)	The plan should prioritize the use of bait and/or water trapping as a less intrusive alternative to traumatic helicopter for any removals that do occur.	Incorporated into Issue 1.
(8)(9)(21)	Any removals that do occur should be restricted to specific areas where environmental deterioration is clear and only in cases where wild horse use is proven to be a major contributing factor to the deterioration.	Incorporated into Issue 1.
(8)(9)	Should helicopters be used for roundups, the Plan should incorporate the elements outlined in the American Wild Horse Preservation Campaign's Standard Operating Procedures (SOP) for humane treatment of horses during helicopter roundups. Current SOPs are highly inadequate and inhumane.	Incorporated into Issue 1.
(10)	The large number of wild horses is having a negative effect on the Devils Garden Research Natural Area (RNA). The horses have	Incorporated into Issue 2.

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Commenter(s)	Comment	Issue
	created trails throughout the RNA three to five inches deep. These trails can be seen from satellite imagery.	
(10)	Throughout the Devils Garden RNA, the horses are using old growth juniper as thermal cover, and have removed all vegetation under the juniper.	Incorporated into Issue 2.
(10)	Wildlife friendly fencing should be considered around the Devils Garden RNA to exclude both cattle and horses from this natural ecosystem set aside for study in 1935.	Incorporated into Issue 2.
(11)(14)	The idea of family structure within feral horses is a fallacy.	Incorporated into Issue 1.
(11)(14)	Another fallacy which should be debunked is the belief of a self-regulating population within horses. The only self-regulating feature within mammals is nutrient allocation: 1) Maintenance 2)Growth 3)Lactation and 4) Last is reproduction. Consequently, animals which do not reproduce have literally started eating themselves out of house and home.	Incorporated into Issue 1.
(11)	There is little research to substantiate or disprove the theory that use of helicopters is inhumane.	Incorporated into Issue 1.
(11)(14)	Issues with genetic diversity, when lowering populations of feral horses, are touted rhetoric of many feral horse advocates. However, according to a BLM Instruction Memorandum from 2009, there are only 5 of the 199 Herd Management areas showing signs of inbreeding.	Incorporated into Issue 1.
(11)(14)	The USFS should not get sidetracked by using this as a test herd for population control experiments and chemical sterilants. The use of SpayVac has not met the regulatory approval process, efficacy is not yet established, there is no population modeling data, nor has even the captive studies been completed.	Incorporated into Issue 1.
(11)(14)	I believe gelding is an inefficient use of taxpayer money and may cause disruption in social dominance, as geldings tend to be less aggressive.	Incorporated into Issue 1.
(11)(14)	If permanent sterilization is an option, then mares should be spayed.	Incorporated into Issue 1.
(11)(14)	It is the duty of the USFS to follow the "Wild Horse and Burro Act" and re-establish APPROPRIATE Management levels in this area. The current management or lack thereof, has devastated resources, affected the economy, and enabled the invasion of noxious weeds on the forest. The animals have expanded beyond the Wild Horse Territory and begun causing damage on private property as well as those allotments outside the territory.	Incorporated into Issues 1 & 2.
(11)(14)	Using the USFS own calculations in the Sage Steppe EIS for every AUM lost there is a direct loss to the economy of \$100. With the area multiplier of 1.5 this results in another \$50 in induced losses.	Incorporated into Issue 5.
(12)	The Proposed Action states it will guide the management of wild horses over the next 15-20 years. NEPA is stale after 5 years and any decision should be reevaluated after 5 years.	This Issue is already decided by policy.
(12)(21)	The Forest proposes to go back to a 1975 boundary rather than follow its own Forest Plan. The 1975 boundary including two areas separated by a smaller area- in other words an arbitrary boundary a horse would not understand.	This issue is already decided by law, regulation, Forest Plan, or other higher level decision.
(12)	The Forest provides no legitimate rationale for returning to the 1975 boundary, other than to appease livestock growers.	This issue has already been decided by law, regulation,

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Commenter(s)	Comment	Issue
		Forest Plan or other higher level decision.
(12)	We note the management of wild horses and the rangeland resources they depend on for their habitat as defined in the 1991 Modoc Forest Plan. We note the 10 items on pages 4 & 5 also refer to cows, yet this direction is ignored for cows while the Forest desires to enforce it for wild horses.	Incorporated into Issue 2.
(12)	We are also opposed to the three Forest Plan amendments and don't believe they are insignificant.	Incorporated into Issue 1.
(12)(28)	We remain opposed to the gathering of horses by helicopter. This is dangerous, horses are injured, and bands are arbitrarily broken up. The FS could hire some real cowboys to select specific horses for roundup keeping in mind age, sex and band units.	Incorporated into Issue 1.
(12)	We remain opposed to birth control, which remains fully untested in regard to side effects.	Incorporated into Issue 1.
(13)	The Territory has been designated for wild horses and should not be used for any private enterprise including any grazing by privately owned livestock.	This issue has already been decided by law, regulation, Forest Plan or other higher level decision.
(16)	You should do everything in your capacity to extend and improve management and protection of the wild horse herd at Devil's Garden, including defending the space they need to be a viable and healthy herd, ending the unconscionable helicopter roundups, better managing the springs they need for water- and on-going public education to help us see that wild horses belong on public lands.	Incorporated into Issues 1 & 2.
(17)(21)(24)(28) (31)	For insured diversity and continued viability, more than 150 breeding animals appear to be required to have potentially healthy horses in each the East and West WH Territories.	This issue is conjectural and not supported by scientific or factual evidence.
(17)	AMLs need to be clearly stated with slightly increased AML ranges to meet the health needs of the horses. The mechanism for changing AMLs in the future should also be clearly stated.	Incorporated into Issue 1.
(17)	Attention needs to be paid to the migratory patterns of the wild horses as well as their water and forage needs.	Incorporated into Issue 1.
(18)	The EA should include a preferred alternative that allocates at least 51% of the forage available for utilization to the DG WH compared with what is allocated to livestock & other wildlife. Hopefully the 51% available forage allocation will support a large herd of WH with an AML range of 400-750 animals.	Incorporated into Issue 1.
(18)(21)(24)(33)	The EA should include a fully analyzed tourism component for wildlife viewing and photographing WH in their natural habitat in the DG.	Incorporated into Issue 5.
(18)(32)(33)	Gelded animals proposed in Alternative 3 are absolutely unacceptable. The few remaining USFS WHTs must maintain healthy, reproducing WH herds.	Incorporated into Issue 1.
(19)(22)	Proposed plans to manage the resource and wild horses should not contain requirements which have a high expectation of failure i.e. managing by sex ratios when you cannot collect horses to determine sex, taking hair samples to establish baseline genetic diversity when the law was amended in 1971 and 2013 levels do not have a high probability of reflecting the genetic diversity of the	Incorporated into Issue 1.

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Commenter(s)	Comment	Issue
	population in 1971.	
(19)	The analysis of the wild horse plan cannot be analyzed without achieving the currently authorized AML to determine if is correct or faulty.	Incorporated into Issue 1.
(20)(22)	Any action plan chosen should include the expedient removal of all horses in excess of the current AML.	Incorporated into Issue 1.
(21)(29)(30)(31) (33)	The agency must disclose all costs associated with the capture, transportation, holding, preparation and adoption costs as compared to on the range.	Incorporated into Issue 1.
(22)	As the USFS is well aware, the wild horse population and territory has expanded greatly beyond initial and legal limits that were established on the Modoc National Forest with the passage of the Wild Horse Territory Boundary Act.	This issue is already decided by law, regulation, Forest Plan, or other higher level decision.
(22)	Proposed amendments to the 1991 Forest Plan are a concern. We believe that the population within the territory should be immediately managed to the 275-335 size that was committed to in the Forest Plan and wild horses outside the boundaries of the territory should be appropriately removed..	Incorporated into Issue 1.
(22)	Should the USFS wish to engage in a "complete and in-depth analysis of population inventory, resource monitoring..." and other such pursuits, as suggestion in Guideline 5A, CCA would suggest that this be done only after the wild horse population has been returned to the appropriate size.	Incorporated into Issue 1.
(23)	Wild horses become very territorial and herd cattle away from water holes.	Incorporated into Issue 5.
(23)	In the fall of 2011 we left lots of feed (on the Emigrant Allotment), and utilization showed the horses had consumed most of the feed that winter.	Incorporated into Issue 2.
(25)	We have had to do a lot of extra work and cost and changes in how we run our cattle due to endanger(ed) or threaten(ed) species. Should be the same for wild horses.	Incorporated into Issue 3.
(26)	The Forest should stay focused on those management tools that have proven successful over the years and have withstood legal challenges in the past. This is not the time or the project to inject experimental management options or to anticipate what conclusions the ongoing National Academy of Science stud might produce. When new and proven management options become available, the Territory Plan can be modified to include them.	Incorporated into Issue 1.
(26)	The Forest should avoid having the BLM make a separate decision for the Strip Allotment.	This issue has already been decided.
(26)	The Territory Plan should stay away from experimental fertility control methods. Products like Spayvac and Gonacon are currently being researched and not appropriate for consideration as management options. Spaying is effective, however there is not yet a safe and efficient means of implementation. Additional population control methods can be added to the plan when appropriate.	Incorporated into Issue 1.
(26)	The County strongly encourages the inclusion of the Standard Operating Procedures in the Proposed Actions.	Incorporated into Issue 1.
(27)	The fence along the Crowder Flat Road has escalated problems	Incorporated into Issue 1.

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Commenter(s)	Comment	Issue
	with horse movements.	
(27)	At the time wild horse territories were first determined, Avanzino and Triangle were specifically excluded [from the Territory] due to the amount of private property in the area at the time.	Incorporated into Issue 1.
(27)	About 150 wild horses are out of feed in the Black Rock Pasture as they were the year before and are proceeding to graze our private property.	Incorporated into Issue 1.
(29)	I request an alternative that increases the Appropriate Management Level for Wild Horses to accommodate the current estimated population.	Incorporated into Issue 1.
(29)	During gathers, there must be strict protocols for keeping family bands intact and maintaining integrity of social bands.	Incorporated into Issue 1.
(30)(33)	Genetic testing for the entire herd should be done before any management decisions are made.	Incorporated into Issue 1.
(30)	Aged horses should remain on the range and allowed to die a natural death on their home range.	Incorporated into Issue 1.
(33)	It is recommended to implement a plan that raises the wild horse proper population parameter to 2,500 for the Devil's Garden Herd. No horses should be gathered, given contraception, and no sex ratios skewed.	This issue is conjectural and not supported by scientific or factual evidence.
(34)	The use of helicopters for capture and monitoring, fence removal and/or reconstruction, and increasing access to water may have the potential to affect listed and candidate species	Incorporated into Issue 3.
(34)	Measures that minimize these potential effects are encouraged. Examples may include, but are not limited to the use of seasonal restrictions during sensitive life cycle stages, limiting the use of heavy equipment in or near important aquatic habitats, and careful consideration of sites selected for water access (34).	Incorporated into Issue 3.
(35)	Wild horses are, in fact, "feral animals" and could be categorized as an "invasive species" and I support a plan to remove the horses entirely from the public land.	This issue has already been decided by law, regulation, Forest Plan or other higher level decision.
(35)	The growing oversized herds of horses competing for habitat have affected out deer and antelope population as well as all the other animals that compete for their use.	Incorporated into Issue 3.
(35)	Controlled grazing provides jobs, beef (food), and constant attention to public land condition. Feral horses provide little or nothing to benefit the economy.	Incorporated into Issue 5.
(36)	While deer hunting on the Devil's Garden this last fall I was horrified to discover the massive number of horses and associated damage that they are doing to our environment in this area.	Incorporated into Issue 2.
(36)	The least traumatic and hence the most humane way to remove horses would be by hiring a few sharp shooters. Another option would be to simply issue permits for hunters to harvest the horses	This issue has already been decided by law, regulation, Forest Plan or other higher level decision.
(37)	The positive benefits from juniper removal/restoration work that is being implemented (for sage grouse) would be diminished if wild horse populations are not controlled.	Incorporated into Issue 3.
(37)	Wild horses surrounding and within MA 66-Clear Lake territory should be gathered first so as to manage their population closely	This Issue is outside the scope of the Proposed Action

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Commenter(s)	Comment	Issue
	to improve conditions for sage grouse in the area.	
(37)	Best management practices should be considered during horse gathers so as not to damage sagebrush habitat in the MA 66-Clear Lake Areas.	Incorporated into Issue 1.

Appendix D: Standard Operating Procedures for Wild Horse Gathers

Gathers are conducted by utilizing contractors from the Wild Horse Gathers-Western States Contract or USFS and or BLM personnel. The following procedures for gathering and handling wild horses apply whether a contractor or BLM personnel conduct a gather.

For helicopter gathers conducted by BLM personnel, gather operations will be conducted in conformance with the *Wild Horse Aviation Management Handbook* (January 2009).

Prior to any gathering operation, the BLM will provide for a pre-capture evaluation of existing conditions in the gather area(s). The evaluation will include animal conditions, prevailing temperatures, drought conditions, soil conditions, road conditions, and a topographic map with wilderness boundaries, the location of fences, other physical barriers, and acceptable trap locations in relation to animal distribution. The evaluation will determine whether the proposed activities will necessitate the presence of a veterinarian during operations. If it is determined that a large number of animals may need to be euthanized or capture operations could be facilitated by a veterinarian, these services would be arranged before the capture would proceed. The contractor will be apprised of all conditions and will be given instructions regarding the capture and handling of animals to ensure their health and welfare is protected.

Trap sites and temporary holding sites will be located to reduce the likelihood of injury and stress to the animals, and to minimize potential damage to the natural resources of the area. These sites would be located on or near existing roads whenever possible. The primary capture methods used in the performance of gather operations include:

1. Helicopter Drive Trapping. This capture method involves utilizing a helicopter to herd wild horses into a temporary trap.
2. Helicopter Assisted Roping. This capture method involves utilizing a helicopter to herd wild horses to ropers.
3. Bait or Water Trapping. This capture method involves utilizing bait (e.g., water or feed) to lure wild horses into a temporary trap.

The following procedures and stipulations will be followed to ensure the welfare, safety and humane treatment of wild horses in accordance with the provisions of 43 CFR 4700.

A. Capture Methods used in the Performance of Gather Contract Operations

1. The primary concern of the contractor is the safe and humane handling of all animals captured. All capture attempts shall incorporate the following:
 - a. All trap and holding facilities locations must be approved by the Contracting Officer's Representative (COR) and/or the Project Inspector (PI) prior to construction. The Contractor may also be required to change or move trap locations as determined by the COR/PI. All traps and holding facilities not located on public land must have prior written approval of the landowner.
2. The rate of movement and distance the animals travel shall not exceed limitations set by the COR/PI who will consider terrain, physical barriers, weather, condition of the animals and other factors. Under normal

circumstances this travel should not exceed 10 miles and may be much less dependent on existing conditions (i.e. ground conditions, animal health, extreme temperatures (high and low)).

3. All traps, wings, and holding facilities shall be constructed, maintained and operated to handle the animals in a safe and humane manner and be in accordance with the following:
 - a. Traps and holding facilities shall be constructed of portable panels, the top of which shall not be less than 72 inches high for horses, and the bottom rail of which shall not be more than 12 inches from ground level. All traps and holding facilities shall be oval or round in design.
 - b. All loading chute sides shall be a minimum of 6 feet high and shall be fully covered, plywood, metal without holes larger than 2"x4".
 - c. All runways shall be a minimum of 30 feet long and a minimum of 6 feet high for horses, and shall be covered with plywood, burlap, plastic snow fence or like material a minimum of 1 foot to 6 feet for horses. The location of the government furnished portable fly chute to restrain, age, or provide additional care for the animals shall be placed in the runway in a manner as instructed by or in concurrence with the COR/PI.
 - d. All crowding pens including the gates leading to the runways shall be covered with a material which prevents the animals from seeing out (plywood, burlap, plastic snow fence, etc.) and shall be covered a minimum of 2 feet to 6 feet for horses
 - e. All pens and runways used for the movement and handling of animals shall be connected with hinged self-locking or sliding gates.
4. No modification of existing fences will be made without authorization from the COR/PI. The Contractor shall be responsible for restoration of any fence modification which he has made.
5. When dust conditions occur within or adjacent to the trap or holding facility, the Contractor shall be required to wet down the ground with water.
6. Alternate pens, within the holding facility shall be furnished by the Contractor to separate mares or jennies with small foals, sick and injured animals, strays or other animals the COR determines need to be housed in a separate pen from the other animals. Animals shall be sorted as to age, number, size, temperament, sex, and condition when in the holding facility so as to minimize, to the extent possible, injury due to fighting and trampling. Under normal conditions, the government will require that animals be restrained for the purpose of determining an animal's age, sex, or other necessary procedures. In these instances, a portable restraining chute may be necessary and will be provided by the government. Alternate pens shall be furnished by the Contractor to hold animals if the specific gathering requires that animals be released back into the capture area(s). In areas requiring one or more satellite traps, and where a centralized holding facility is utilized, the contractor may be required to provide additional holding pens to segregate animals transported from remote locations so they may be returned to their traditional ranges. Either segregation or temporary marking and later segregation will be at the discretion of the COR.
7. The Contractor shall provide animals held in the traps and/or holding facilities with a continuous supply of fresh clean water at a minimum rate of 10 gallons per animal per day. Animals held for 10 hours or more in the traps or holding facilities shall be provided good quality hay at the rate of not less than two pounds of hay per 100 pounds of estimated body weight per day. The contractor will supply certified weed free hay if required by State, County, and Federal regulation.
8. An animal that is held at a temporary holding facility through the night is defined as a horse feed day. An animal that is held for only a portion of a day and is shipped or released does not constitute a feed day.
9. It is the responsibility of the Contractor to provide security to prevent loss, injury or death of captured animals until delivery to final destination.

10. The Contractor shall restrain sick or injured animals if treatment is necessary. The COR/PI will determine if animals must be euthanized and provide for the destruction of such animals. The Contractor may be required to humanely euthanize animals in the field and to dispose of the carcasses as directed by the COR/PI.
11. Animals shall be transported to their final destination from temporary holding facilities as quickly as possible after capture unless prior approval is granted by the COR for unusual circumstances. Animals to be released back into the HMA following gather operations may be held up to 21 days or as directed by the COR. Animals shall not be held in traps and/or temporary holding facilities on days when there is no work being conducted except as specified by the COR. The Contractor shall schedule shipments of animals to arrive at final destination between 7:00 a.m. and 4:00 p.m. No shipments shall be scheduled to arrive at final destination on Sunday and Federal holidays, unless prior approval has been obtained by the COR. Animals shall not be allowed to remain standing on trucks while not in transport for a combined period of greater than three (3) hours in any 24 hour period. Animals that are to be released back into the capture area may need to be transported back to the original trap site. This determination will be at the discretion of the COR/PI or Field Office horse specialist.

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

1. Capture attempts may be accomplished by utilizing bait (feed, water, mineral licks) to lure animals into a temporary trap. If this capture method is selected, the following applies:
 - a. Finger gates shall not be constructed of materials such as "T" posts, sharpened willows, etc., that may be injurious to animals.
 - b. All trigger and/or trip gate devices must be approved by the COR/PI prior to capture of animals.
 - c. Traps shall be checked a minimum of once every 10 hours.
2. Capture attempts may be accomplished by utilizing a helicopter to drive animals into a temporary trap. If the contractor selects this method the following applies:
 - a. A minimum of two saddle-horses shall be immediately available at the trap site to accomplish roping if necessary. Roping shall be done as determined by the COR/PI. Under no circumstances shall animals be tied down for more than one half hour.
 - b. The contractor shall assure that foals shall not be left behind, and orphaned.
3. Capture attempts may be accomplished by utilizing a helicopter to drive animals to ropers. If the contractor, with the approval of the COR/PI, selects this method the following applies:
 - a. Under no circumstances shall animals be tied down for more than one hour.
 - b. The contractor shall assure that foals shall not be left behind, or orphaned.
 - c. The rate of movement and distance the animals travel shall not exceed limitations set by the COR/PI who will consider terrain, physical barriers, weather, condition of the animals and other factors.

C. Use of Motorized Equipment

1. All motorized equipment employed in the transportation of captured animals shall be in compliance with appropriate State and Federal laws and regulations applicable to the humane transportation of animals. The Contractor shall provide the COR/PI, if requested, with a current safety inspection (less than one year old) for all motorized equipment and tractor-trailers used to transport animals to final destination.
2. All motorized equipment, tractor-trailers, and stock trailers shall be in good repair, of adequate rated capacity, and operated so as to ensure that captured animals are transported without undue risk or injury.
3. Only tractor-trailers or stock trailers with a covered top shall be allowed for transporting animals from trap site(s) to temporary holding facilities, and from temporary holding facilities to final destination(s). Sides or stock racks of all trailers used for transporting animals shall be a minimum height of 6 feet 6 inches from the floor. Single deck tractor-trailers 40 feet or longer shall have at least two (2) partition gates providing at least three (3) compartments within the trailer to separate animals. Tractor-trailers less than 40 feet shall have at least one partition gate providing at least two (2) compartments within the trailer to separate the animals. Compartments in all tractor-trailers shall be of equal size plus or minus 10 percent. Each partition shall be a minimum of 6 feet high and shall have a minimum 5 foot wide swinging gate. The use of double deck tractor-trailers is unacceptable and shall not be allowed.
 - a. All tractor-trailers used to transport animals to final destination(s) shall be equipped with at least one (1) door at the rear end of the trailer which is capable of sliding either horizontally or vertically. The rear door(s) of tractor-trailers and stock trailers must be capable of opening the full width of the trailer. Panels facing the inside of all trailers must be free of sharp edges or holes that could cause injury to the animals. The material facing the inside of all trailers must be strong enough so that the animals cannot push their hooves through the side. Final approval of tractor-trailers and stock trailers used to transport animals shall be held by the COR/PI.
 - b. Floors of tractor-trailers, stock trailers and loading chutes shall be covered and maintained with wood shavings to prevent the animals from slipping as much as possible during transport.
 - c. Animals to be loaded and transported in any trailer shall be as directed by the COR/PI and may include limitations on numbers according to age, size, sex, temperament and animal condition. The following minimum square feet per animal shall be allowed in all trailers:
 - 11 square feet per adult horse (1.4 linear foot in an 8 foot wide trailer);
 - 6 square feet per horse foal (.75 linear foot in an 8 foot wide trailer);
 - The COR/PI shall consider the condition and size of the animals, weather conditions, distance to be transported, or other factors when planning for the movement of captured animals. The COR/PI shall provide for any marking and/or inspection services required for the captured animals.
7. If the COR/PI determines that dust conditions are such that the animals could be endangered during transportation, the Contractor will be instructed to adjust speed.

D. Safety and Communications

1. The Contractor shall have the means to communicate with the COR/PI and all contractor personnel engaged in the capture of wild horses utilizing a VHF/FM Transceiver or VHF/FM portable Two-Way radio. If communications are ineffective the government will take steps necessary to protect the welfare of the animals.
2.
 - a. The proper operation, service and maintenance of all contractor furnished property is the responsibility of the Contractor. The BLM reserves the right to remove from service any contractor personnel or contractor furnished equipment which, in the opinion of the contracting officer or COR/PI violate contract rules, are unsafe or otherwise unsatisfactory. In this event, the Contractor will

- be notified in writing to furnish replacement personnel or equipment within 48 hours of notification. All such replacements must be approved in advance of operation by the Contracting Officer or his/her representative.
- b. The Contractor shall obtain the necessary FCC licenses for the radio system
 - c. All accidents occurring during the performance of any task order shall be immediately reported to the COR/PI.
3. Should the contractor choose to utilize a helicopter the following will apply:
- a. The Contractor must operate in compliance with Federal Aviation Regulations, Part 91. Pilots provided by the Contractor shall comply with the Contractor's Federal Aviation Certificates, applicable regulations of the State in which the gather is located.
 - b. Fueling operations shall not take place within 1,000 feet of animals.

E. Site Clearances

No personnel working at gather sites may excavate, remove, damage, or otherwise alter or deface or attempt to excavate, remove, damage or otherwise alter or deface any archaeological resource located on public lands or Indian lands. Prior to setting up a trap or temporary holding facility, BLM will conduct all necessary clearances (archaeological, T&E, etc.). All proposed site(s) must be inspected by a government archaeologist. Once archaeological clearance has been obtained, the trap or temporary holding facility may be set up. Said clearance shall be arranged for by the COR, PI, or other BLM employees. Gather sites and temporary holding facilities would not be constructed on wetlands or riparian zones.

F. Animal Characteristics and Behavior

Releases of wild horses would be near available water. If the area is new to them, a short-term adjustment period may be required while the wild horses become familiar with the new area.

G. Public Participation

Opportunities for public viewing (i.e. media, interested public) of gather operations will be made available to the extent possible; however, the primary considerations will be to protect the health, safety and welfare of the animals being gathered and the personnel involved. The public must adhere to guidance from the on-site BLM representative. It is BLM policy that the public will not be allowed to come into direct contact with wild horses being held in BLM facilities. Only authorized BLM personnel or contractors may enter the corrals or directly handle the animals. The general public may not enter the corrals or directly handle the animals at any time or for any reason during BLM operations.

H. Responsibility and Lines of Communication

The Contracting Officer's Representatives (CORs) and the project inspectors (PIs) have the direct responsibility to ensure the Contractor's compliance with the contract stipulations. The Assistant Field Managers for Resources and Field Managers will take an active role to ensure the appropriate lines of communication are established between the field, Field Office, State Office, National Program Office, and BLM Holding Facility offices. All employees involved in the gathering operations will keep the best interests of the animals at the forefront at all times.

All publicity, formal public contact and inquiries will be handled through the Assistant Field Managers for Renewable Resources and Field Office Public Affairs. These individuals will be the primary contact and will coordinate with the COR/PI on any inquiries. The COR will coordinate with the contractor and the BLM Corrals to ensure animals are being transported from the capture site in a safe and humane manner and are arriving in good condition.

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The contract specifications require humane treatment and care of the animals during removal operations. These specifications are designed to minimize the risk of injury and death during and after capture of the animals. The specifications will be vigorously enforced.

Should the Contractor show negligence and/or not perform according to contract stipulations, he will be issued written instructions, stop work orders, or defaulted.

Appendix E: Standard Operating Procedures for Wild Horse Population-Level Fertility Control Treatments

One-year Liquid Vaccine

The following implementation and monitoring requirements are part of the Proposed Action:

1. PZP vaccine would be administered through darting by trained USFS or BLM personnel or collaborating research partners only. For any darting operation, the designated personnel must have successfully completed a nationally recognized wildlife darting course and who have documented and successful experience darting wildlife under field conditions.
2. Mares that have never been treated would receive 0.5 cc of PZP vaccine emulsified with 0.5 cc of Freund's Modified Adjuvant (FMA) and loaded into darts at the time a decision has been made to dart a specific mare. Mares identified for re-treatment receive 0.5 cc of the PZP vaccine emulsified with 0.5 cc of Freund's Incomplete Adjuvant (FIA).
3. The liquid dose of PZP vaccine is administered using 1.0 cc Pneu-Darts with 1.5" barbless needles fired from either Dan Inject® or Pneu-Dart® capture gun.
4. Only designated darters would mix the vaccine/adjuvant and prepare the emulsion. Vaccine-adjuvant emulsion would be loaded into darts at the darting site and delivered by means of a capture gun.
5. Delivery of the vaccine would be by intramuscular injection into the left or right hip/gluteal muscles while the mare is standing still.
6. Safety for both humans and the horse is the foremost consideration in deciding to dart a mare. The Dan Inject® gun would not be used at ranges in excess of 30 m while the Pneu-Dart® capture gun would not be used over 50 m, and no attempt would be taken when other persons are within a 30-m radius of the target animal.
7. No attempts would be taken in high wind or when the horse is standing at an angle where the dart could miss the hip/gluteal region and hit the rib cage. The ideal is when the dart would strike the skin of the horse at a perfect 90° angle.
8. If a loaded dart is not used within two hours of the time of loading, the contents would be transferred to a new dart before attempting another horse. If the dart is not used before the end of the day, it would be stored under refrigeration and the contents transferred to another dart the next day. Refrigerated darts would not be used in the field.
9. No more than two people should be present at the time of a darting. The second person is responsible for locating fired darts. The second person should also be responsible for identifying the horse and keeping onlookers at a safe distance.
10. To the extent possible, all darting would be carried out in a discrete manner. However, if darting is to be done within view of non-participants or members of the public, an explanation of the nature of the project would be carried out either immediately before or after the darting.
11. Attempts will be made to recover all darts. To the extent possible, all darts which are discharged and drop from the horse at the darting site would be recovered before another darting occurs. In exceptional situations,

the site of a lost dart may be noted and marked, and recovery efforts made at a later time. All discharged darts would be examined after recovery in order to determine if the charge fired and the plunger fully expelled the vaccine.

12. All mares targeted for treatment will be clearly identifiable through photographs to enable researchers and HMA managers to positively identify the animals during the research project and at the time of removal during subsequent gathers.
13. Personnel conducting darting operations should be equipped with a two-way radio or cell phone to provide a communications link with the Project Veterinarian for advice and/or assistance. In the event of a veterinary emergency, darting personnel would immediately contact the Project Veterinarian, providing all available information concerning the nature and location of the incident.
14. In the event that a dart strikes a bone or imbeds in soft tissue and does not dislodge, the darter would follow the affected horse until the dart falls out or the horse can no longer be found. The darter would be responsible for daily observation of the horse until the situation is resolved.

22-month Time-release Pelleted Vaccine

The following implementation and monitoring requirements are part of the Proposed Action and Alternatives 3 and 4:

1. PZP vaccine would be administered only by trained USFS or BLM personnel or collaborating research partners.
2. The fertility control drug is administered with two separate injections: (1) a liquid dose of PZP is administered using an 18-gauge needle primarily by hand injection; (2) the pellets are preloaded into a 14-gauge needle. These are delivered using a modified syringe and jab-stick to inject the pellets into the gluteal muscles of the mares being returned to the range. The pellets are designed to release PZP over time similar to a time-release cold capsule.
3. Delivery of the vaccine would be by intramuscular injection into the gluteal muscles while the mare is restrained in a working chute. The primer would consist of 0.5 cc of liquid PZP emulsified with 0.5 cc of Freund's Modified Adjuvant (FMA). The pellets would be loaded into the jabstick for the second injection. With each injection, the liquid or pellets would be injected into the left hind quarters of the mare, above the imaginary line that connects the point of the hip (hook bone) and the point of the buttocks (pin bone).
4. In the future, the vaccine may be administered remotely using an approved long range darting protocol and delivery system if or when that technology is developed.
5. All treated mares will be freeze-marked on the hip or neck by WHT managers to positively identify the animals during the research project and at the time of removal during subsequent gathers.

Monitoring and Tracking of Treatments

1. At a minimum, estimation of population growth rates using helicopter or fixed-wing surveys will be conducted before any subsequent gather. During these surveys it is not necessary to identify which foals were born to which mares; only an estimate of population growth is needed (i.e. # of foals to # of adults).
2. Population growth rates of herds selected for intensive monitoring will be estimated every year post-treatment using helicopter or fixed-wing surveys. During these surveys it is not necessary to identify which foals were born to which mares, only an estimate of population growth is needed (i.e. # of foals to # of adults). If, during routine WHT field monitoring (on-the-ground), data describing mare to foal ratios can be collected, these data should also be shared with the NPO for possible analysis by the USGS.

3. A PZP Application Data sheet will be used by field applicators to record all pertinent data relating to identification of the mare (including photographs if mares are not freeze-marked) and date of treatment. Each applicator will submit a PZP Application Report and accompanying narrative and data sheets will be forwarded to the NPO (Reno, Nevada). A copy of the form and data sheets and any photos taken will be maintained at the field office.
4. A tracking system will be maintained by NPO detailing the quantity of PZP issued, the quantity used, disposition of any unused PZP, the number of treated mares in the WHT, district office, and State along with the freeze-mark(s) applied by the WHT and date.

Appendix F: Devil's Garden Plateau Wild Horse Territory Population Modeling Assumptions and Procedures

Objectives of Population Modeling

To complete the population for the Devil's Garden Plateau WHT, version 1.40 of the WinEquus program, created in April, 2002 was utilized. Review of the data output for each of the simulations provided many useful comparisons of possible outcomes for each Alternative. The developer, Stephen Jenkins, recommends thinking about the range of possible outcomes and not just focusing on the average or typical trial. Some questions that can be answered through the modeling include:

- Do any of the Alternatives "crash" the population?
- What effect does fertility control have on population growth rate?
- What effect do the different Alternatives have on the average population size?
- What effect do the different Alternatives have on the number of animals to be handled or removed from the WHT?

Population Data, Criteria, and Parameters Used for Population Modeling

The initial age and sex structure for the herd was determined from data collected from the BLM's WH&B Information System and is based on records of 1,012 wild horses gathered from the Devils Garden WHT. Table 1 shows the Age and Sex Structure.

Table 41: Age and Sex Structure

AGE	NO. FEMALES	NO. MALES	TOTAL NO. OF ANIMALS	PERCENTAGE OF ANIMALS IN EACH AGE GROUP
0	130	120	250	25%
1	93	79	172	17%
2	90	63	153	15%
3	58	25	83	8%
4	38	24	62	6%
5	42	17	59	6%
6-8	68	33	101	10%
9-12	32	49	81	8%
12+	22	29	51	5%
Totals/ Percentage	573 (57%)	439 (43%)	1,012	100%

This data was used for the Age and Sex distribution input each for the initial population, scaled down for the actual number of animals in each area.

All simulations used the survival probabilities and foaling rates supplied with the WinEquus population model for the Granite Range HMA. Survival and foaling rate data were extracted from Wild Horses of the Great Basin, by J. Berger (1986, University of Chicago Press, Chicago, IL). Rates are based on Berger's 6 year study in the Granite Range of northwestern Nevada.

Population probabilities and foaling rates utilized in the population modeling for all Alternatives are as shown in Table 2:

Table 42: Survival Probabilities and Foaling Rates

Age Class	Survival Probabilities		Foaling Rates
	Females	Males	
Foals	.917	.917	---
1	.969	.969	---
2	.951	.951	.35
3	.951	.951	.40
4	.951	.951	.65
5	.951	.951	.75
6	.951	.951	.85
7	.951	.951	.90
8	.951	.951	.90
9	.951	.951	.90
10-14	.951	.951	.85
15-19	.951	.951	.70
20+	.951	.951	.70

In order to complete population modeling for each of the four alternatives being analyzed, the following assumptions have been made:

Wild horses outside the territory have not been considered in this population modeling exercise as it is assumed they will be removed.

Gathering will occur on an annual basis until the population falls within the AML range.

Fertility control and sex skewing will begin the year after the population has fallen within the AML range.

It is assumed that animals of both sexes in the 15 to 20 year age classes will be turned back out on the range.

Note: Population modeling was done for each the East and West Home ranges, then summarized for the WHT Territory as a whole for analysis. Due to constraints on gathering, including space to hold animals, it would be more feasible to begin implementation actions by home range rather than the WHT as a whole.

The estimated population has been adjusted to allow for those foals that became adults as of January 1, 2012. The initial populations are as follows:

- East Home Range: 782 adults
- West Home Range: 288 adults

Tables 3 and 4 display parameters used for each alternative, by Home Range.

Table 43: Modeling Parameters (East Home Range)

Alternative	Population Estimate as of Jan. 1, 2013	Year and Number of Animals Removed to Achieve AML	Proposed AML Range	Estimated Population After Achieving AML	Date Fertility Control/Sex Ratio Adjustment is Initiated (if applicable)
No Action	782	Yr. 1(2013): 300 head Yr. 2: 300 head Yr. 3: 218 head	135-160*	160	N/A
Proposed Action/Alt.3	782	Yr. 1(2013): 300 head Yr. 2: 300 head Yr. 3: 218 head	101-219	160	2016
Alternative 4	782	Yr. 1 (2013): 300 head Yr. 2: 200 head	332-430*	402	2015

*Estimated AMLs based on ratio of animals in each home range as in current AML

Table 44: Modeling Parameters (West Home Range)

Alternative	Population Estimate as of Jan. 1, 2013	Gathers to Achieve AML	Proposed AML Range	Estimated Population After Achieving AML	Date Fertility Control/Sex Ratio Adjustment is Initiated (if applicable)
No Action	288	Yr. 1(2013): 300 head Yr. 2: 300 head Yr. 3: 218 head	150-175*	144	N/A
Proposed Action/Alt.3	288	Yr. 1(2013): 300 head Yr. 2: 300 head Yr. 3: 218 head	105-183	144	2016
Alternative 4	288	Yr. 1(2013) Gather for Fertility control only	368-470*	288	2013

*Estimated AMLs based on ratio of animals in each home range as in current AML.

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Table 5- displays the modeling parameters used for each Alternative. For the population modeling exercise, populations have been adjusted to be within the AML range.

Table 45: Modeling Parameters by Alternative

Home Range/ Alternative	Initial Population Level Used for Modeling	Initial Gather Year	Gathering Interval	Percent Effectiveness of Fertility Control	Percent of Population That Can Be Gathered	Percent of Each Sex To Be Removed
East/ NA Alt.	160	2016	1 year	N/A	40%	100% of both
East/ PA and Alt. 3	160	2016	4 years	Yr. 1- 84% Yr. 2- 64% Yr. 3- 50%	60%	80% females 70% males
East/Alt. 4	402	2015	1 year	Yr. 1- 84% Yr. 2- 64% Yr. 3- 50%	20%	70 % females 100% males
West/NA Alt.	144	2016	1 year	N/A	40%	100% of both
East/ PA and Alt. 3	144	2014	4 years	Yr. 1- 84% Yr. 2- 64% Yr. 3- 50%	60%	80% females 70% males
East/Alt. 4	288	2013	1 year	Yr. 1- 84% Yr. 2- 64% Yr. 3- 50%	20%	70% females 100% males

All simulations used the survival probabilities and foaling rates supplied with the WinEquus population model for the Granite Range HMA. Survival and foaling rate data were extracted from Wild Horses of the Great Basin, by J. Berger (1986, University of Chicago Press, Chicago, IL). Rates are based on Berger's 6 year study in the Granite Range of northwestern Nevada.

Population probabilities and foaling rates utilized in the population for all Alternatives are in Table 6:

Table 46: Survival Probabilities and Foaling Rates

Age Class	Survival Probabilities		Foaling Rates
	Females	Males	
Foals	.917	.917	---
1	.969	.969	---
2	.951	.951	.35
3	.951	.951	.40
4	.951	.951	.65
5	.951	.951	.75
6	.951	.951	.85
7	.951	.951	.90
8	.951	.951	.90
9	.951	.951	.90
10-14	.951	.951	.85
15-19	.951	.951	.70
20+	.951	.951	.70

Modeling Results by Alternative

No Action Alternative

Table 47: No Action Alternative Animals Gathered and Removed in 20 years

	East Home Range		West Home Range		Totals	
Trial	G*	R*	G	R	G	R
Lowest	424	317	294	273	718	590
10 th %	604	426	398	356	1002	782
25 th %	652	456	437	404	1089	860
Median	743	506	498	452	1241	958
75 th %	822	560	550	493	1372	1053
90 th %	902	615	602	536	1504	1151
Highest	1068	717	717	653	1785	1370

*G (Gather), R (Remove)

Table 48: No Action Alternative Average Population Growth Rate

Trial	East Home Range	West Home Range	WHT Average
Lowest	9.2%	8.4%	8.8%
10 th %	13.3%	12.0%	12.7%
25 th %	14.6%	13.0%	13.8%
Median	16.5%	14.7%	15.6%
75 th %	18.5%	16.2%	17.4%
90 th %	20.4%	17.7%	19.1%
Highest	23.9%	21.3%	22.6%

Table 49: No Action Alternative Population Sizes in 20 years

	East Home Range			West Home Range			Totals		
Trail	Min.	Ave.	Max.	Min.	Ave.	Max.	Min.	Ave.	Max.
Lowest	81	147	180	97	161	191	178	308	371
10 th %	118	160	184	122	172	200	240	332	384
25 th %	127	163	190	134	175	207	261	338	397
Median	136	165	195	144	178	214	280	343	409
75 th %	140	167	200	152	180	220	292	347	420
90 th %	145	170	206	157	183	226	302	353	432
Highest	149	177	259	162	186	236	311	363	495

Proposed Action and Alternative 3

Table 50: Proposed Action and Alternative 3 Animals Gathered and Removed in 20 years

	East Home Range			West Home Range			Totals		
Trial	G*	R*	T*	G	R	T	G	R	T
Lowest	383	260	30	330	219	25	713	479	55
10th %	520	352	42	444	296	36	964	648	78
25th %	552	375	45	470	318	40	1022	693	85
Median	664	444	55	574	378	48	1238	822	103
75th %	730	489	65	607	406	54	1337	895	119
90th %	806	535	71	646	430	57	1452	965	128
Highest	950	648	85	807	550	77	1757	1198	162

*G (Gather), R (Remove), T (Treat with Fertility Control)

Table 51: Average Population Growth Rate Proposed Action and Alternative 3

Trial	East Home Range	West Home Range	WHT Average
Lowest	7.8	8.4	8.1
10th %	9.8	10.3	10.1
25th %	11.1	11.4	11.3
Median	12.9	12.7	12.8
75th %	14.3	14.1	14.2
90th %	15.3	15.5	15.4
Highest	18.1	16.5	17.3

Table 52: Proposed Action and Alternative 3 Population Sizes in 20 years

	East Home Range			West Home Range			Totals		
Trail	Min.	Ave.	Max.	Min.	Ave.	Max.	Min.	Ave.	Max.
Lowest	101	164	227	89	148	197	190	312	424
10th %	123	182	240	104	154	207	227	336	447
25th %	134	189	256	112	160	219	246	349	475
Median	146	199	270	123	169	230	269	368	500
75th %	157	214	299	134	175	243	291	389	542
90th %	167	232	326	140	187	260	307	419	586
Highest	181	275	416	155	240	348	336	515	764

Alternative 4

Table 53: Alternative 4 Animals Gathered and Removed in 20 years

	East Home Range			West Home Range			Totals		
Trial	G*	R*	T*	G	R	T	G	R	T
Lowest	1539	511	262	1099	864	121	2638	1375	383
10th %	1806	951	289	1320	1006	158	3126	1957	447
25th %	1864	1119	310	1426	1096	179	3290	2215	489
Median	1957	1294	334	1604	1236	200	3561	2530	534
75th %	2066	1470	352	1792	1364	230	3858	1606	582
90th %	2153	1576	383	1948	1494	252	4101	3070	635
Highest	2596	1949	424	2429	1875	316	5025	3824	740

*G (Gather), R (Remove), T (Treat with Fertility Control)

Table 54: Alternative 4 Average Population Growth Rate

Trial	East Home Range	West Home Range	WHT Average
Lowest	5.9	12.6	9.3
10th %	11.9	13.8	12.9
25th %	13.6	14.7	14.2
Median	16.1	16.4	16.3
75th %	17.6	17.7	17.7
90th %	18.6	18.7	18.7
Highest	20.8	20.7	20.8

Table 55: Alternative 4 Population Sizes in 20 years

	East Home Range			West Home Range			Totals		
Trial	Min.	Ave.	Max.	Min.	Ave.	Max.	Min.	Ave.	Max.
Lowest	243	389	479	278	449	513	521	838	992
10th %	342	449	514	294	471	559	636	920	1073
25th %	365	460	534	302	484	577	667	944	1111
Median	390	481	568	317	499	605	707	980	1173
75th %	419	508	594	330	519	637	749	1027	1231
90th %	431	528	622	350	545	662	781	1073	1284
Highest	476	636	776	417	648	795	893	1284	1669

Summary Data Tables

The tables below show a side by side comparison of population modeling results for each of the Alternatives.

Table 56: Predicted Growth Rate in 20 Years (Devil's Garden WHT) Average Median Growth Rate

No Action Alternative	Proposed Action and Alternative 3	Alternative 4
15.6	12.8	16.3

Table 57: Predicted Number of Horses Gathered (G), Removed (R), and Treated (T) in 20 Years (Devil's Garden WHT) Median Number of Horses

No Action Alternative			Proposed Action and Alternative 3			Alternative 4		
Gather	Remove	Treat	Gather	Remove	Treat	Gather	Remove	Treat
1241	958	N/A	1238	822	103	3561	2530	534

Table 58: Predicted Population Size in 20 Years (Devil's Garden WHT) Median Population Size (No.)

No Action Alternative			Proposed Action and Alternative 3			Alternative 4		
Min	Med	Max	Min	Med	Max	Min	Med	Max
280	343	409	263	368	500	707	980	1173