United States Department of the Interior
Bureau of Land Management
Burns District Office
28910 Highway 20 West
Hines, Oregon 97738
541-589-4400 Phone
541-573-4411 Fax

Stinkingwater Herd Management Area Population Management Plan

Environmental Assessment

DOI-BLM-ORWA-B050-2017-0002-EA

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BLM

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I. INTRODUCTION

The Burns District Bureau of Land Management (BLM) proposes to gather and remove excess wild horses and implement population control measures on wild horse mares from the Stinkingwater Herd Management Area (HMA) in order to achieve a thriving natural ecological balance and manage the wild horse population within appropriate management level (AML) over a 10-year timeframe. Various methods of gathering and removal of wild horses are available (i.e. helicopter-drive trapping (Figure 1-1), bait/water trapping (Figure 1-2), and horseback-drive trapping). Two methods of mare fertility control, porcine zona pellucida (PZP) fertility control vaccine and ovariectomy via colpotomy, are analyzed in the document as potential methods of mare fertility control. The method(s) to be used would be determined by the authorized officer.

Stinkingwater HMA is located in Harney County, Oregon approximately 25 air miles east of Burns, Oregon (Appendix A – Stinkingwater HMA Vicinity Map). The HMA contains approximately 71,893 acres of BLM-managed land. Topography varies from slightly rolling hills to steep canyons. Elevation varies from approximately 3,500 to 5,800 feet. Precipitation ranges up to 16 inches annually and comes mainly in the form of snow. Temperatures vary from -30ºF in winter to 90ºF in summer.

The AML within the Stinkingwater HMA was established at 40–80 horses in the Three Rivers Resource Management Plan (RMP), Record of Decision (ROD), and Rangeland Program Summary (RPS) (September 1992). The upper limit of an AML should be below the number of adult horses that would cause rangeland damage (BLM Wild Horses and Burros Management Handbook, H-4700-1). The AML lower limit will normally be established at a number that allows the population to grow (at the annual population growth rate) to the upper limit over a 4- to 5-year period, without any interim gathers to remove excess wild horses (H-4700-1). The population growth rate in many HMAs approaches 20 percent or even higher (National Academy of Sciences (NAS) 2013). Therefore, with a 20 percent population growth rate, the low level of AML would achieve or exceed the high end of AML within 4 to 5 years. Since 1977, the Stinkingwater HMA has been surveyed 13 times and gathered to remove excess horses 7 times (partial and full gathers) to maintain the population within AML. A September 2016 simultaneous double-count aerial survey estimated a population size of 213 adult horses and 38 foals. Assuming a 20 percent population growth rate, the estimated wild horse population by fall 2017 would be approximately 251 adult horses plus 50 foals.

The AML for wild horses and burros across the west is 26,715. The current estimated on-range wild horse and burro population is 67,027 (as of March 1, 2016). There are currently 46,015 wild horses and burros in BLM off-range facilities as of March 2017. Nationally, there is a lack of available funding and space to care for additional animals in BLM short-

and long-term holding facilities. The current criteria for prioritizing gathers are as follows: court orders, public health and safety, sagebrush focal area Greater Sage-Grouse (GRSG) habitat gathers, implementation of research, private land encroachment, and emergency removal of imperiled animals. Due to these criteria, the chances are slim that Stinkingwater HMA would be authorized a wild horse gather that would permanently remove enough excess horses to bring the population to the low end of AML within the next 10 years. The action alternatives have been crafted with the consideration of dependence on the BLM Washington D.C. Office approval and funding. That being said, the Oregon Wild Horse and Burro Program has a relatively high track record for placement of animals into private care. Of the horses available for adoption following the 2010 Stinkingwater HMA gather, 76 percent were placed in private care. The 2009 Palomino Buttes gather had 92 percent placement in private care and 94 percent following the 2014 emergency gather. The horses from the Kiger and Riddle Mountain HMAs have had a near 100 percent adoption rate since 1986, with 100 percent of the horses adopted following the 2011 and 2015 gathers. Following the 2009 South Steens gather, approximately 71 percent were placed in private care. In 2016, horses were removed from the South Steens HMA with 110 offered for adoption online. This adoption received record bidder registrations, high successful bids (top adoption price was $4,265), and 93 horses were adopted (85 percent).

In addition to wild horse management in the Stinkingwater HMA, various management activities are on-going in the area including, but not limited to, livestock grazing management, western juniper control projects, noxious weed treatments, riparian restoration, and wildlife habitat improvement projects.

Stinkingwater HMA lies with the Drewsey GRSG Priority Area of Conservation (PAC); is home to locally important big game species such as elk, mule deer, and antelope; encompasses three separate livestock grazing allotments; and has perennial streams with native redband trout living in water quality limited streams. A portion is designated as the Biscuitroot Area of Environmental Concern (ACEC). In order to preserve and maintain a thriving natural ecological balance and multiple-use relationship, excess wild horses must be removed prior to damage to the range beginning to occur.

Figure 1-1: Photo example of helicopter-drive trapping.

Figure 1-2: Basic bait trap set up. This photo shows the gates propped open to allow horses time to get comfortable moving in and out of the trap. After several days, the far gate is closed and the gate in the foreground set to close once horses are in the trap.

A. Purpose and Need

The purpose of this action is to return and maintain the wild horse population within the established AML of 40–80 horses in the Stinkingwater HMA. There are currently an estimated 251 adult horses in the HMA; this includes those horses who have strayed to areas outside the HMA boundary, including private lands. There is a need to protect rangeland resources from deterioration associated with wild horse populations that exceed the established AML. This purpose is consistent with the provisions of section 1333(b)(2) of the Wild Free-Roaming Horse and Burro Act (Horse Act) of 1971, the multiple-use mandate of the Federal Land Policy and Management Act (FLPMA) of 1976, and the Three Rivers RMP/ROD that established the AML for the HMA.

Maintaining the AML at 40–80 horses would promote upland vegetation and riparian plant community health, watershed function, and habitat quality for wildlife populations including the GRSG, which is a Bureau-identified sensitive species. Maintenance of rangeland health would also promote preservation of native edible root populations within the Biscuitroot ACEC. Monitoring and maintaining all uses at appropriate levels aids in limiting or preventing rangeland degradation, direct competition for forage among various uses, and the effects caused by periods of diminished resources (i.e. drought).

B. Decision to be Made

The BLM's authorized officer will determine if excess wild horses exist in the HMA and decide whether or not to gather and remove excess wild horses, whether to implement population control measures, and what method(s) to use for each. The decision would affect wild horses within (and those that have strayed outside) the Stinkingwater HMA. The BLM's authorized officer's decision would not set or adjust AML nor would it adjust livestock use, as these were set through previous decisions.

C. Conformance with BLM Resource Management Plan(s)

The proposed action and all action alternatives are in conformance with the objectives, rationale, and allocation and management actions from the Three Rivers RMP/ROD (1992) and the Oregon Greater Sage-Grouse Approved Resources Management Plan Amendment (GRSG ARMPA) (2015).

Landscape-level Goals, Objectives, and Management Decisions

<u>Oregon Greater Sage-Grouse Approved Resource Management Plan Amendment (GRSG ARMPA) (September 2015), Wild Horses and Burros (WHB) Objectives (p. 2-21)</u>
Objective WHB 1: Manage wild horses and burros as components of BLM-administered lands in a manner that preserves and maintains a thriving natural ecological balance in a multiple-use relationship.
Objective WHB 2: Manage wild horse and burro population levels within established appropriate management levels.
MD WHB 1: Manage HMAs in GRSG habitat within established AML ranges to achieve and maintain GRSG habitat objectives.

MD WHB 3: Prioritize gathers and population growth suppression techniques in HMAs in GRSG habitat, unless removals are necessary in other areas to address higher priority environmental issues, including herd health impacts.
MD WHB 8: When conducting NEPA analysis for wild horse/burro management activities, water developments, or other rangeland improvements for wild horses, address the direct and indirect effects on GRSG populations and habitat.
MD WHB 9: Coordinate with professionals from other Federal and State agencies, researchers at universities, and others to utilize and evaluate new management tools (e.g., population growth suppression, inventory techniques, and telemetry) for implementing the WHB program.
MD WHB 10: When WHB are a factor in not meeting GRSG habitat objectives or influence declining GRSG populations in priority habitat management areas (PHMA), Oregon's gather priority for consideration by the Washington Office (WO) is as follows:

1. Response to an emergency. (e.g., fire, insect infestation, disease, or other events of unanticipated nature).
2. GRSG habitat.
3. Maintain a thriving natural ecological balance.

Three Rivers RMP/ROD (1992, p. 2-43)
WHB 1: Maintain healthy populations of wild horses within the Kiger, Palomino Buttes, Stinkingwater, and Riddle Mountain HMAs, and wild horses and burros in the Warm Springs HMA.

WHB 1.1: Continue to allocate the following acres and animal unit months (AUM) in active HMAs: … Stinkingwater HMA, 79,631 ac., 960 AUMs. This is equivalent to an AML of 40–80 horses (Proposed Three Rivers RMP, September 1991, Volume I – Text, [p.] 3-8).

WHB 1.3: Adjust wild horse and burro population levels in accordance with the results of monitoring studies and allotment evaluations, where such adjustments are needed in order to achieve and maintain objectives for a thriving natural ecological balance and multiple-use relationships in each herd area (HA).

Permanent adjustments would not be lower than the established minimum numbers in order to maintain viability. The AML would be based on the analysis of trend in range condition, utilization, actual use and other factors [that] provide for the protection of the public range from deterioration.

WHB 2: Enhance the management and protection of HAs and herds in the following HMAs: Kiger, Stinkingwater, Riddle Mountain, Palomino Buttes, and Warm Springs.

WHB 2.1: Acquire legal access to specific sources of private land and water upon which horses depend.

WHB 2.3: Select for high quality horses when gathered horses are returned to the range.

WHB 2.4: Provide facilities and water sources necessary to ensure the integrity of the individual herds.

WHB 3: Enhance and perpetuate the special or rare and unique characteristics that distinguish the respective herds in the resource area (RA).

WHB 3.1: Limit any release of wild horses or burros into an HMA to individuals which exhibit the characteristics designated for the HMA.

D. Consistency with Laws, Regulations, and Policies

The proposed action and all action alternatives have been designed to conform to Federal regulations, consultation requirements, and other authorities that direct and provide the framework and official guidance for management of BLM lands within the Burns District:

1. Wild Free-Roaming Horses and Burros Act of 1971 (Public Law (PL) 92-195), as amended.
2. Wild Free-Roaming Horse and Burro Management (43 CFR 4700). The following are excerpts from 43 CFR 4700.

    a. 4720.1: Removal of excess animals from public lands. "Upon examination of current information and a determination by the authorized officer that an excess of wild horses or burros exists, the authorized officer shall remove the excess animals immediately…."
    b. 4710.3-1: Herd management areas. "Herd Management Areas shall be established for maintenance of wild horse and burro herds."
    c. 4740.1: Use of motor vehicles or aircraft. "(a) Motor vehicles and aircraft may be used by the authorized officer in all phases of the administration of the Act, except that no motor vehicle or aircraft, other than helicopters, shall be used for the purpose of herding or chasing wild horses or burros for capture or destruction. All such use shall be conducted in a humane manner. (b) Before using helicopters or motor vehicles in the management of wild horses or burros, the authorized officer shall conduct a public hearing in the area where such use is to be made."
3. BLM Wild Horses and Burros Management Handbook, H-4700-1 (June 2010).
4. Stinkingwater Wild Horse Management Plan (1977). This plan outlined the boundaries of the original HMA, described other uses and resources within the boundaries, recommended an appropriate management level, and established wild horse objectives. Some of the objectives set forth in this plan include, but are not limited to:

    - To maintain between 40 and 80 head of wild, free roaming horses in the Stinkingwater HMA.
    - To supply sufficient winter range forage so that only the old, or animals weakened from causes other than malnutrition, die during the winter.
    - To provide forage to satisfy Class I privileges[1] to the extent possible after meeting reasonable needs of wild horses, watershed, and wildlife within the Stinkingwater HMA.

[1] Before 1978, BLM called livestock forage allocations on public lands "grazing privileges." The amount of privileges awarded to individuals and attached to their base property was limited by the "qualifications" of the property. In 1978 the term was formally defined as "grazing preference" which was based on forage allocations that occurred in the course of implementing land use plans under FLPMA.

- Restore and maintain the range in the Stinkingwater HMA in good condition except for small areas adjacent to water.
- Keep horse numbers sufficiently low in concentration areas…so that they contribute little to the watershed problems of those areas.
- Keep horse numbers low enough that they do not over browse shade species (willows and aspen) along Stinkingwater Creek.
- Selection for type and size.
  - No particular type will be selected; however, sound horses of good conformation will be selected when there is a choice.
  - Small horses (less than 700 pounds for studs) and large horses (more than 1,200 pounds for studs) will be eliminated from this herd when possible.

5. Stinkingwater Herd Management Area Plan (2009). This plan reiterated the wild horse objectives from the 1992 Three Rivers Resource Area RMP, outlined the desired condition of horse habitat (vegetation, water, cover, and space), and described the desired population:

   - AML has been determined to be 40 to 80 horses.
   - Sex ratio will be managed for a normal distribution, 50 [percent] male and 50 [percent] female.
   - Age structure – Horses will be managed for a normal age structure with representation from each age class in a pyramidal structure with young animals representing the largest age class at the base of the pyramid.
   - Recruitment rate – Stinkingwater horses will be managed for a normal recruitment rate of 20 percent or less.
   - Phenotype – Horses will be between 14 to 16 hands in height, weigh between 950 and 1,300 pounds, and will most frequently be any color, favoring red and blue roans.
   - Distribution – Wild horses will be managed for historic patterns of use within the Stinkingwater HMA, preserving the free-roaming behavior.

6. Livestock Grazing Allotment Objectives. As compared to the Stinkingwater HMA Plans that describe general habitat objectives and wild horse population characteristics, the following allotment management plans (AMP) establish more specific habitat objectives for the allotments within the HMA boundary.

   - Mountain AMP, EA-OR-05-025-061, 2007.
     Objective 1 – "Increase uniformity of livestock utilization levels and provide periodic growing season rest from livestock grazing for upland and riparian plant communities within the Mountain Allotment" (p. 2).
     Objective 5 – "Improve streambank stability and the ecological rating on Stinkingwater Creek…" (p. 4).
   - Texaco Basin AMP, May 1995.
     Objective: Cause a stable trend in the crested wheatgrass seedings and an upward trend in mid-seral stage mountain big sagebrush/bluebunch wheatgrass, Wyoming big sagebrush/bluebunch wheatgrass, and low sagebrush/bluebunch wheatgrass range sites in all pastures over the next 5 years, while maintaining those areas in late seral stage.

Actions: Utilization levels during the graze treatment should not exceed 60 percent on average within the crested wheatgrass areas and 50 percent within the bluebunch wheatgrass areas on average (p. 1).

- Stinkingwater AMP, DOI-BLM-OR-B050-2009-0042-EA, 2010.
  Objective 1 – "Increase hydric herbaceous and/or deciduous woody species composition in conjunction with upward trend in riparian habitat condition on publicly administered portions of Stinkingwater Creek, Little Stinkingwater Creek, and Clear Creek over the next 5 years…" (p. 4).
  Objective 2 – "Maintain or increase the frequency of occurrence of native perennial forbs on all sagebrush ecological sites to maintain sage-grouse brood-rearing habitat over the next 5 years…" (p. 4).

  This AMP also established target utilization levels for key species in each pasture. Target utilization levels for crested wheatgrass are 60 percent and for native grasses (i.e. bluebunch wheatgrass), 50 percent.

7. Instruction Memorandum (IM) No. 2009-062, Wild Horse and Burro Genetic Baseline Sampling.
8. IM No. 2009-090, Population-Level Fertility Control Field Trials: Herd Management Area (HMA) Selection, Vaccine Application, Monitoring and Reporting Requirements.
9. IM No. 2010-057, Wild Horse and Burro Population Inventory and Estimation.
10. IM No. 2013-058, Wild Horse and Burro Gathers: Public and Media Management.
11. IM No. 2013-146, Exception to Policy in BLM Handbook H-4700-1 and Manual 4720.41: Helicopter Gather of Wild Horses and Burros between March 1 and June 30 Due to Emergency Conditions and Escalating Problems.
12. IM No. 2014-132, Guidance for the Sale of Wild Horses and Burros.
13. IM No. 2015-070, Animal Health, Maintenance, Evaluation and Response.
14. IM No. 2015-151, Comprehensive Animal Welfare Program for Wild Horse and Burro Gathers.
15. The Federal Land Policy and Management Act (FLMPA) of 1976, as amended.
16. National Environmental Policy Act (NEPA) (42 U.S.C. 4321–4347, 1970).
17. BLM NEPA Handbook, H-1790-1 (January 2008), FLPMA (43 U.S.C. 1701, 1976), Section 302(b) of FLPMA states, "all public lands are to be managed so as to prevent unnecessary or undue degradation of the lands."
18. Public Rangelands Improvement Act (43 U.S.C. 1901, 1978).
19. Standards for Rangeland Health and Guidelines for Livestock Grazing Management for Public Lands Administered by the BLM in the States of Oregon and Washington (1997).
20. Vegetation Treatment Using Herbicides on Bureau of Land Management Lands in 17 Western States Programmatic Final Environmental Impact Statement (FEIS) (2010) and ROD (2010).
21. Integrated Invasive Plant Management for the Burns District Revised EA (DOI-BLM-OR-B000-2011-0041-EA) Decision Record (2015).
22. BLM Manual 6310, Conducting Wilderness Characteristics Inventory on BLM Lands (March 2012), Section 201 of FLPMA requires that BLM maintain on a continuing basis an inventory of all public lands and their resources and other values, which

includes wilderness characteristics. It also provides that the preparation and maintenance of the inventory shall not, of itself, change or prevent change of the management or use of public lands.

23. BLM Manual 6320, Considering Lands with Wilderness Characteristics in the BLM Land Use Planning Process. Section .04 Responsibilities, "C. District Managers and Field Managers shall: 1. Update and maintain the wilderness inventory for lands within the planning area consistent with BLM wilderness characteristics inventory guidance. 2. Ensure that wilderness characteristics inventories are considered and that, as warranted, lands with wilderness characteristics are protected in a manner consistent with this manual in BLM planning processes."
24. Upper Malheur Subbasin Water Quality Restoration Plan for Streams Administered by the BLM – Burns District, 2012 update.
25. Biscuitroot ACEC Management Plan (1999).

E. Scoping and Identification of Issues

On January 18, 2017, the BLM mailed a scoping letter to 65 interested individuals, groups, and agencies regarding the proposed removal of excess horses and population management in the Stinkingwater HMA. The scoping letter was also posted to BLM's ePlanning website. Letters and emails were received from five individuals and groups during the scoping period. Comments to clarify background information associated with the Stinkingwater HMA are listed below and have been addressed in the EA.

- *Why have no gathers occurred on the HMA since 2010 despite the population now in excess of the high AML by 155 horses?*
- *What circumstances led to the drastic increase of wild horses on Stinkingwater HMA following the summer 2010 gather that reportedly left 40 horses on the range?*
- *The National Academy of Science 2013 review of the wild horse and burro program stated that "a large body of scientific literature on techniques for inventorying horses and other large mammals…suggests that the proportion of animals missed on surveys ranges from 10 to 50 percent." If BLM gathers 211 horses from Stinkingwater HMA, the remaining on-range population, taking into account this likely underestimation, would still range from 47-114 horses – numbers above low AML.*
- *Please clarify the gathering of approximately 90 percent of the estimated population, selectively removing excess and returning horses to low AML of 40.*
- *If BLM decides to utilize fertility control, does Stinkingwater HMA have the resources and capacity necessary to conduct full gathers on a near-annual basis to ensure effective re-application of fertility control treatments to at least 90 percent of breeding-age mares?*

The issues identified in the letters and emails from the public, along with the issues identified during Burns District BLM interdisciplinary team (IDT) meetings and through contact with other agencies, are listed below. Comments and the following issues were used to guide the effects analysis in chapter III.

F. Issues for Analysis

Wild Horses

- *What would the effects of the alternatives be on the genetic diversity and health of the Stinkingwater herd?*
- *What would be the effects of the population suppression methods being considered in the alternatives on wild horse behavior?*
- *What would be the direct effects of the alternatives on wild horses?*

Soils and Biological Crusts

- *What would be the effects of the alternatives on soils?*

Upland Vegetation

- *What would be the effects of the alternatives on upland vegetation health?*

Recreation

- *What would be the effects of the alternatives on recreation?*

Noxious Weeds

- *What would be the effects of the alternatives on noxious weeds?*

Wildlife

- *What would be the effects of the alternatives on GRSG and their habitat?*

Riparian Zones, Wetlands, Water Quality, Fish and Special Status Species (SSS)

- *What would be the effects of the alternatives on water quality and riparian conditions within the HMA and on adjacent private land?*

Cultural Resources, American Indian Traditional Practices, Biscuitroot ACEC

- *What would be the effects of the alternatives on the Biscuitroot gathering area and other cultural practices and resources?*
- *What would be the effects of the alternatives on the Biscuitroot ACEC?*

Livestock Grazing Management and Rangelands

- *What would be the effects of the alternatives on livestock grazing management and associated ranch operations?*

Social and Economic Values

- *What would be the costs associated with the various population management actions?*

G. Issues Considered but Eliminated from Detailed Analysis

How would various methods of wild horse population management affect lands with wilderness characteristics within the Stinkingwater HMA?

There are no wilderness resources present in the Stinkingwater HMA; however, there have been citizen-proposed wilderness areas with portions of those areas within the HMA. Citizen-proposed wilderness areas are considered in the wilderness characteristics inventory process; however, they are not part of BLM's resource management plans.

There are portions of two citizen-proposed wilderness characteristics units within the Stinkingwater HMA: Tin Can Ridge Unit and Middle River – Upton Mountain Unit.

Tin Can Ridge Unit (12,179 acre subunit of the 62,885 acre Coleman Creek Unit 2-1): In 2010 and again in 2013, a wilderness inventory was completed by a BLM IDT in

response to proposed projects in the area. Juniper treatments in the unit have left it in an unnatural condition. The juniper trees were cut and left where they fell, leaving flat cut stumps throughout the unit that are substantially noticeable. The unit is expected to return to a natural condition as the stumps deteriorate over time. Due to the present unnatural condition of the unit, it does not have wilderness characteristics.

Middle River – Upton Mountain Unit (OR-025-001A): In 2007, BLM received a proposal from the Oregon Natural Desert Association (ONDA) for the Middle River Wilderness Study Area (WSA). In 2011, a BLM IDT documented their wilderness inventory findings. The conclusion was the proposed Middle River WSA was composed of smaller subunits that were then analyzed.

The Upton Mountain subunit was of sufficient size and found to be in a natural condition. Outstanding opportunities for solitude were not found due to the lack of screening from vegetation or topography. Opportunities for primitive types of recreation were found; however, they were determined to not be outstanding. Supplemental values were found throughout the unit. The unit is part of the Stinkingwater HMA. The unit provides year-round sage-grouse habitat and is also within California Big Horn Sheep habitat. Rare plants grow in the unit (Oregon Prince's Plume and Leiberg's Clover). The conclusion of the team was that the area does not have wilderness character.

II. DESCRIPTION OF PROPOSED ACTION AND ALTERNATIVES

This section of the environmental assessment (EA) describes the no action, proposed action, and three action alternatives. This section also identifies alternatives that were considered but eliminated from detailed analysis.

The Wild Horses and Burros Management Handbook (H-4700-1, 2010) explains that AMLs are established at levels that allow the population to grow (at the annual population growth rate of approximately 20 percent) to the upper limit over a 4–5 year period, without any interim gathers to remove excess wild horses. Most HMAs in Oregon were on this approximate gather schedule for the past 25–30 years; however, this schedule is changing due to the lack of available holding space and funding. The handbook goes on to explain that some HMAs may require more frequent removals to maintain population size within AML. The proposed action and action alternatives represent a reasonable range to cover the full spectrum of alternatives that meet the purpose and need.

- Alternative A – No Action – Defer Gather and Removal
- Alternative B – Proposed Action - Selective Removal Gather to Low AML and Apply Available Temporary Fertility Treatment
- Alternative C – Selective Gather and Removal to Low AML ***without*** Applying Temporary Fertility Treatment
- Alternative D – Gate Cut Removal Gather to Low AML
- Alternative E - Gather, Slow Population Growth by Spaying a Portion of the Current Mare Population, and Remove as Holding Space Becomes Available

All action alternatives (B–E) were developed to respond to the identified resource issues and the purpose and need to differing degrees. Alternative A, No Action, would not achieve the identified purpose and need; however, it is analyzed in this EA to provide a basis for comparison with all action alternatives and to assess the effects of not conducting population management. Alternative A, the no action alternative, does not conform to the Horse Act which requires BLM to immediately remove excess wild horses.

A. Alternative A – No Action – Defer Gather and Removal

Under alternative A, the no action alternative, no gather would occur and no additional management actions would be taken to control the size or sex ratio of the wild horse population at this time. Using a 20 percent population growth rate, within one normal gather cycle (4 years) wild horse numbers would increase to approximately 636 adult horses by fall 2021 under the no action alternative. By fall 2027, the end of the 10-year timeframe of this EA, the wild horse population would be over 1,500 adult horses. Wild horses ranging outside the HMA boundaries would remain in areas not designated for their management, including private lands.

B. Alternative B – Proposed Action - Selective Removal Gather to Low AML and Apply Available Temporary Fertility Treatment

Alternative B is designed to manage wild horse populations over a 10-year timeframe and would incorporate two to three gather cycles along with the application of temporary population growth suppression. Implementation of the proposed action would begin in the fall of 2017.

The first portion of the proposed action would be to gather approximately 90–100 percent of the total wild horse population and remove excess horses down to the low end of AML. A high percentage of the herd would be gathered in order to: (1) select horses to return to the HMA to re-establish the low end of AML and (2) remove excess wild horses that would be prepared for the adoption program. The BLM's goal for selective gathers would be to gather 100 percent of the herd, but experience over the years has shown that gathering approximately 90 percent is more likely. Oftentimes lone stallions or small bands are difficult to find and/or to capture. For selective gathers, the logical objective is to gather up to 90 percent. This would mean if horses were gathered in fall 2017, approximately 270 horses or more, roughly 90 percent of the estimated herd size based on current estimates, would be gathered using the helicopter-drive method.

Approximately 261 excess horses would be removed from the Stinkingwater HMA, including those that have strayed outside the HMA boundary, to re-establish the herd size at the low end of AML (40 horses). The remaining population would be re-established with a 50/50 sex ratio: 20 stallions and 20 mares. Up to 18 of the 20 mares returned to the HMA would be treated with available, temporary fertility control vaccine. The available fertility control PZP will be analyzed in this alternative. A description of its application can be found below.

The effectiveness period of PZP has varied over the years of its use ranging from 2–3 years (Turner et al. 2007) to 10 months (Turner 2014, Progress Report to BLM). Therefore, it is anticipated the typical gather cycle of 4–5 years could be extended 10 months to 3 years.

During the 10-year timeframe of this plan, future helicopter gathers would be scheduled once the high end of AML is achieved. The number of horses gathered and excess removed would be adjusted based upon the estimated herd size and the number of excess horses determined at the time of the gather. The population would be managed within AML as a result of the initial gather and consecutive gathers every 4–5 years. In the absence of an initial gather in 2017 or consecutive years, the proposed action includes gathering to low AML regardless of population size. For example, if the initial gather happened in 2027 anywhere from 1,000 to 1,500 horses could be removed. All other project design features would be the same irrespective of the number of animals gathered and removed.

Each helicopter gather would take approximately 1 week. BLM would plan to gather as soon as holding space and funding become available and BLM's Washington D.C. Office provides authorization. The gather would be initiated following public notice on the BLM Press Releases webpage, https://www.blm.gov/news/oregon-washington. No horses found outside of the HMA would be returned to the range.

Smaller bait/water, horseback-drive, or helicopter-drive trapping operations would be conducted as needed between normal helicopter-drive gather cycles. These trapping methods would be used as tools to remove excess horses in areas where concentrations of wild horses are detrimental to habitat conditions or other resources within the HMA, to remove wild horses from private lands or public lands outside the HMA boundary, to selectively remove a portion of excess horses for placement into the adoption program, or to capture, treat, and release horses for application of fertility treatment. Bait/water, horseback-drive, and helicopter-drive trapping operations could take anywhere from one week to several months depending on the amount of animals to trap, weather conditions, or other considerations. Operations would be conducted either by contract or by BLM personnel. Refer to table 2-1 for a summary of the proposed methods of capture of wild horses for removal, relocation, and/or application of fertility treatment.

Table 2-1: Proposed Action Methods for Capturing Horses for Removal, Relocation, and/or Application of Fertility Treatment

Method	Reason	When
Helicopter drive gather	To remove excess horses to maintain AML.	Fall 2017 and approximately every 4–5 years when the horse population exceeds AML.
Helicopter-drive trapping	To remove or relocate wild horses when concentrations are causing detriment to habitat conditions or other resources within the HMA.	As needed between helicopter-drive gather cycles.
Bait/water trapping	To selectively remove a portion of excess horses for placement in the adoption program.	
Horseback-drive trapping	To capture, treat, and release horses for application of fertility treatment.	

Site-specific removal criteria were never set for Stinkingwater HMA; therefore, animals removed from the HMA would be chosen based on a selective removal strategy set forth in BLM Manual Section 4720.33. Wild horses would be removed in the following order:

- First Priority: Age Class – Four Years and Younger;
- Second Priority: Age Class – Eleven to Nineteen Years;
- Third Priority: Age Class – Five to Ten Years; and
- Fourth Priority: Age Class – Twenty Years and Older (which should not be permanently removed from the HMA unless specific exceptions prevent them from being turned back to the range). In general, this age group can survive in the HMA, but may have greater difficulty adapting to captivity and the stress of handling and shipping if removed.

BLM Manual Section 4720.33 further specifies some animals that should be removed irrespective of their age class. These animals include, but are not limited to, nuisance animals and animals residing outside the HMA or in an area of an inactive HA.

Captured wild horses would be released back into the HMA under the following criteria:

- Released horses would be selected to maintain a diverse age structure with 20 mares and 20 stallions (low AML = 40 total), a 50/50 sex ratio.
- Horses to be released would be selected to maintain a saddle horse conformation, a height of 14–16 hands, and a weight of 950–1,300 pounds. Any color would be selected to return but with an emphasis on red and blue roans. These characteristics were originally established in the 1977 Stinkingwater Wild Horse Management Plan.

- Horses selected for return to the HMA may be returned directly from the short-term holding facility constructed during the gather operation. However, it is likely most horses would be transported to the Oregon Wild Horse Corral Facility in Hines, Oregon for aging and application of fertility control treatment.
- Of the 20 mares to remain within the HMA, up to 18 mares would be treated with fertility control vaccine. These mares would be transported from the gather to the Oregon Wild Horse Corral Facility in Hines, Oregon where they would receive the first injection (primer dose) of their 2-injection "Native" porcine zona pellucida (PZP) treatment. PZP is the most common form of immunocontraception for wild horses, which stimulates the production of antibodies that bind sperm receptors on the egg's surface, thereby preventing sperm attachment and fertilization (Sacco 1997, Nunez et al. 2010). Mares would be held at the facility on hay and water for 2–6 weeks until given the second liquid PZP injection or time-release pellets (PZP-22). Mares treated with PZP would be documented via physical description or would be hip marked for future identification. Refer to Figure 2-1 for a photo example of PZP application in a mare. The BLM would then return the mares to the HMA. If these mares are captured in subsequent gathers, they would receive a booster of native PZP or time release pellets[2] and be immediately returned to the range, unless population and characteristics objectives could not be achieved without the removal of a previously treated mare. PZP would be administered following IM No. 2009-090, Population-Level Fertility Control Field Trials: Herd Management Area Selection, Vaccine Application, Monitoring and Reporting Requirements (Appendix B).

Figure 2-1: Photo example of PZP-22 application in a mare.

When returning horses to the HMA following the gather, BLM will try to scatter them in small bands (less than 10 horses) across the HMA in an attempt to improve distribution.

[2] PZP fertility control vaccine would be used in the initial gather but may be substituted as advancements are made with more effective and longer lasting fertility control treatments and methods. If a new vaccine type became available during the 10-year timeframe of this analysis, adequate NEPA would be completed to determine whether BLM needs to prepare a new or supplemental analysis.

After the initial helicopter gather in 2017, the BLM proposes 1 to 2 future helicopter gathers of approximately 90 to 100 percent of the population, beginning 4 to 5 years following the initial proposed gather, over a period of the next 10 years (following the date of the decision record (DR) for this EA). This 10-year timeframe enables BLM to determine the effectiveness of the proposed action at successfully maintaining population levels within AML in Stinkingwater HMA. During the 10-year timeframe, gathers would be carried out under the same (or updated) Comprehensive Animal Welfare Program for Wild Horse and Burro Gathers (IM No. 2015-151) (Appendix C). The same selective removal criteria, population control measures, release criteria, and sex ratio adjustment strategies would also be applied as described in the section above. Adaptive management would be employed that incorporates the use of the most promising methods of fertility control: for example, a single treatment, multi-year contraceptive. PZP fertility control vaccine would be used in the initial gather but may be substituted as advancements are made with more effective and longer lasting fertility control treatments and methods. If a new vaccine type became available during the 10-year timeframe of this analysis, adequate NEPA would be completed to determine whether BLM needs to prepare a new or supplemental analysis. Future gather dates and target removal numbers for gathers within the next 10 years would be determined based on future population surveys and a determination that "excess" horses exist within the HMA. In the worst case scenario, if a gather did not occur until late in the 10-year timeframe of this analysis (as a result of a funding or prioritization constraint), BLM would need to gather and remove up to 1,500 horses during one gather operation in order to achieve AML. Unless immediate removal is required (e.g. private land, public safety, emergency situation), a notice to the public would be sent out 30 days prior to any future gather.

1. Project Design Features Common to All Action Alternatives (B–E)

- Timeframe for comparison of all action alternatives is 10 years. Implementation of management actions would begin in the fall of 2017 and would continue over the next 10 years unless environmental conditions change enough to require analysis of additional management actions.
- Helicopter-drive gather and removal operations would take approximately 7 days to complete. Several factors such as animal condition, herd health, weather conditions, or other considerations could result in adjustments in the schedule.
- Helicopter gather operations would be scheduled any time from July 1 through February 28 in any year.
- Trap sites would be approximately 0.5 acre in size.
- Trap sites would be selected in areas where horses are located to the greatest extent possible.
- Trap sites and temporary holding facilities would be located in previously used sites or other disturbed areas whenever possible. These areas would be seeded with a seed mix appropriate to the specific site if bare soil exceeds more than 10 square yards per location. The seed applied on sites would be a mix of native and desirable non-native species.
- Undisturbed areas identified as trap sites or holding facilities would be inventoried, prior to being used, for cultural and botanical resources. If cultural or

botanical resources were encountered, these locations would not be utilized unless they could be modified to avoid effects to the resources.

- Trap sites and temporary holding facilities would be surveyed for noxious weeds prior to gather activities. Any weeds found would be treated using the most appropriate methods. All gather activity sites would be monitored for at least 2 years post-gather. Any weeds found would be treated using the most appropriate methods, as outlined in the decision record for the Integrated Invasive Plant Management For the Burns District Revised EA (DOI-BLM-OR-B000-2011-0041-EA) (July 2015).
- All vehicles and equipment used during gather operations would be cleaned before and following implementation to guard against spreading noxious weeds.
- Efforts would be made to keep trap and holding locations away from areas with noxious weed infestations.
- Gather sites would be noted and reported to range and weed personnel for monitoring and/or treatment of new and existing infestations.
- Maintenance may be conducted along roads accessing trap sites and holding facilities prior to the start of gather operations to ensure safe passage for vehicles hauling equipment and horses to and from these sites. Any gravel required for road maintenance is to be certified weed-free gravel and obtained by purchase (if from a private mineral material source) or permit from BLM (if from a BLM-managed mineral material source). Road maintenance would be done in accordance with the Three Rivers RMP Best Management Practices (Appendix 1) and BLM Manual 9113, Roads, and would be in compliance with the Oregon GRSG ARMPA (2015). Maintenance may be conducted along any existing road within the Stinkingwater HMA or accessing the Stinkingwater wild horses outside the HMA (Appendix A – Stinkingwater HMA Vicinity Map).
- Gather and trapping operations would be conducted in compliance with the Oregon GRSG ARMPA (2015); specifically:
  - MD SSS-11: No helicopter trapping would occur between March 1 and June 30. Bait trapping and/or moving horses between pastures via helicopter could occur during this time period but would be in compliance with lek hourly restrictions.
  - MD SSS-13: All authorized actions in GRSG habitat would be in compliance with the required design features (RDF) and best management practices (BMP) outlined in appendix C of the GRSG ARMPA (2015).
- Gather and trapping operations would be conducted in accordance with the standard operating procedures (SOP) described in Comprehensive Animal Welfare Program for Wild Horse and Burro Gathers (IM No. 2015-151) which defines standards, training, and monitoring for conducting safe, efficient, and successful wild horse and burro gather operations while ensuring humane care and treatment of all animals gathered (appendix C).
- An Animal and Plant Health Inspection Service (APHIS) veterinarian would be onsite during helicopter gathers, as needed, to examine animals and make recommendations to BLM for care and treatment of the wild horses.
- Decisions to humanely euthanize animals in field situations would be made in conformance with BLM policy (Appendix D, IM 2015-070).

- On all horses gathered (removed and returned), data including sex and age distribution would be recorded. Additional information such as color, condition class information (Henneke et al. 1983), size, disposition of the animal, and other information may also be recorded.
- Excess animals would be transported to the Oregon Wild Horse Corrals Facility via semi-truck and trailer where they would be prepared (freezemarked, vaccinated, and dewormed) for adoption.
- Hair samples would be collected to assess genetic diversity of the herd, as outlined in WO IM 2009-062, Wild Horse and Burro Genetic Baseline Sampling. Hair samples would be collected from a minimum of 25 percent of the post-gather population.
- Public and media management during gather operations would be conducted in accordance with WO IM 2013-058 (Wild Horse and Burro (WHB) Gathers: Public and Media Management). This IM establishes BLM policy and procedures for safe and transparent visitation by the public and media at wild horse and burro gather operations, while ensuring the humane treatment of wild horses and burros.
- The Oregon Wild Horse Corrals Facility in Hines, Oregon would be open during normal operating hours during the processing of horses captured, application of fertility control vaccine, and ovariectomy procedures. A location outside the barn gates would be designated as a safe public viewing area. The general public would not be allowed inside the barn during processing or surgeries to avoid potential situations where the safety of the animal, public, or handling staff could be put at risk. The standard procedure at the Oregon Wild Horse Corrals Facility is to allow individuals of the public into the barn areas during the adoption process (e.g., when they are choosing between two to three horses or when finalizing paperwork in the barn office). This allows the individual adopter to observe the horse's behavior and lends to promoting the genuine excitement of adopting a wild horse. Other times when the public are allowed into the barn is during BLM-led tours or with individuals collaborating with BLM for on-the-range management (i.e. selection of horses to return to the range). The public is not allowed in the barns during activities such as processing, hoof trimming, sorting, gelding, and other procedures where there is increased potential for injury to the horse(s), BLM staff, or contracted veterinarians.
- Emergency gathers: BLM Manual 4720.22 defines an emergency situation as an unexpected event that threatens the health and welfare of a wild horse or burro population, its habitat, wildlife habitat, or rangeland resources and health. Emergency gathers may be necessary during this 10-year timeframe for reasons including disease, fire, insect infestation, or other events of catastrophic nature and/or unanticipated natural events that affect forage and water availability for wild horses. Emergency gather operations would follow the project design elements described in this section and BLM IM 2009-085, Managing Gathers Resulting from Escalating Problems and Emergency Situations.
- Trapping activities would be scheduled in coordination with the rangeland management specialist to avoid conflict with authorized grazing rotations.

2. Monitoring Common to All Action Alternatives (B–E)

- The BLM contracting officer's representative (COR) and project inspectors (PI) assigned to the gather would be responsible for ensuring contract personnel abide by the contract specifications in the Comprehensive Animal Welfare Program for Wild Horse and Burro Gathers (Appendix C - IM No. 2015-151) (applies to all action alternatives).
- Ongoing monitoring of forage condition and utilization, water availability, and animal health, as well as aerial population surveys, would continue on the Stinkingwater HMA (applies to all alternatives). Aerial inventories are conducted every 2 to 3 years for each HMA on Burns District. Population estimates for Stinkingwater HMA will be updated as inventories are conducted in the future.
- Genetic monitoring (as outlined in IM 2009-062) would also continue following gathers and/or trapping. If genetic monitoring indicates a loss of genetic diversity, the BLM would consider introduction of horses from HMAs in similar environments to maintain the projected genetic diversity (applies to all action alternatives).
- Fertility control monitoring would be conducted in accordance with the population-level fertility control treatment SOPs in IM 2009-090, Population Level Fertility Control Field Trials: Herd Management Area Selection, Vaccine Application, Monitoring and Reporting Requirements (Appendix B) (under alternative B only).

C. Alternative C – Selective Gather and Removal to Low AML ***without*** Applying Temporary Fertility Treatment

Alternative C would follow the same actions proposed in Alternative B - Proposed Action, with the exception of applying fertility vaccine treatment. None of the animals returned to the HMA would have fertility treatments applied to them.

D. Alternative D – Gate Cut Removal Gather to Low AML

A "gate cut" removal means that during a gather, once enough horses are captured to leave 40 horses (low AML) remaining within the HMA, all operations will cease. A gate cut removal is generally conducted to limit any additional stress on the wild horses within a defined gather area and reduce gather costs. In this situation, wild horses would be gathered and removed regardless of age class, sex ratio, color, or conformation to reach the post-gather target number. No selection for desirable characteristics to remain on the range would occur. All horses captured would be transported to the Oregon Wild Horse Corrals Facility and prepared for placement in the adoption program. Fertility control would not be applied, and no changes to the herd's existing sex ratio would be made. Horses remaining in the HMA would not be managed to maintain the desirable characteristics of the Stinkingwater herd. Alternative D would follow the same Comprehensive Animal Welfare Program for Wild Horse and Burro Gathers (Appendix C - IM No. 2015-151) as the proposed action.

E. Alternative E – Gather, Slow Population Growth by Spaying a Portion of the Current Mare Population, and Remove as Holding Space Becomes Available

This alternative is designed under the assumption that a full gather with removals to the low end of AML would not occur in the next several years due to the lack of funding for off-range holding and the low ranking of Stinkingwater HMA on the WHB national priority list for gathers, yet there being an urgent need to prevent further rangeland degradation caused by excess horses. Initially, in 2017, a full gather (approximately 90 to 100 percent of the horses) would be authorized with only a limited number of removals of adoption age (5 years and under) horses. After adoption age horses have been chosen, all remaining stallions would be returned to the range. A group of 20 mares fitting the desirable characteristics of the herd and of various age classes would be selected to remain as the reproducing herd and then returned to the range. The remaining mares ages 2 to 15 would receive an ovariectomy via colpotomy, or other available method of ovariectomy, for permanent infertility. These mares would then be returned to the range. A 50/50 sex ratio would remain in the HMA. As funding allows and holding space becomes available within the 10-year timeframe of this plan, a full gather with removals to low AML would occur.

The WHB Management Handbook (H-4700-1, 2010) section 4.1.1 explains that WHB will be managed as self-sustaining populations of healthy animals in balance with other uses and the productive capacity of their habitat. This alternative leaves 40 reproducing horses (low end of AML) in the HMA, as do all the action alternatives. Although the Three Rivers RMP/ROD (1992) does not expressly authorize, but does not prohibit non-reproducing horses in its HMAs, the RMP/ROD directs the use of currently approved methods for control of population levels and requires that permanent adjustments in population levels will not be lower than established minimum numbers. This alternative achieves the management actions set forth in that land use plan (LUP), as it utilizes population control methods and maintains an equivalent breeding population within the HMA. This alternative is also in conformance with the multiple-use mandate of FLMPA (1976), follows the management guidelines of section 4.1.1 of the WHB Handbook, and is in conformance with the Horse Act (1971), specifically sections 1333 (a) and (b)(1).

The ovariectomy via colpotomy method is analyzed in this alternative because it is the only method that has been conducted and studied in comparable circumstances; the Sheldon National Wildlife Refuge in Nevada conducted ovariectomy via colpotomy on 114 feral mares and released them back with a mixture of infertile stallions as well as untreated mares and stallions (Collins and Kasbohm 2016). The ovariectomy via colpotomy procedure described below was developed by veterinarians experienced in equine reproductive surgery. The described procedure is the same procedure that was proposed to and approved by the Oregon State University Institutional Animal Care and Use Committee in May 2016 (OSU 2016).

Ovariectomy via colpotomy procedure

Mares selected for treatment would have a standard BLM-issued, unique identifying freezemark on the left side of the neck. In addition, each would receive a hip brand, high on the left hip, so it is visible during aerial inventories.

A veterinarian licensed in the State of Oregon and experienced in equine reproductive surgery would perform the procedures. In addition, BLM would contract with an independent veterinarian who would provide review of the protocol and be present to provide animal welfare oversight during the surgeries and follow-up care.

The surgery veterinarian would determine each mare's health status as being adequate prior to surgery and having a body condition score (BCS) of at least 4 (Henneke et al. 1983). Each mare would be held in a padded, hydraulic chute where she would undergo palpation per rectum and ultrasound for pregnancy. Approximate state of gestation would be recorded. If the internal structure of a mare appears or feels abnormal, that mare would not receive an ovariectomy and would be placed in the adoption program.

Mares selected for ovariectomy would be held without feed for 36 hours prior to surgery for maximum evacuation of the bowels, allowing adequate room in the abdomen with minimal interference from the intestines. Holding mares off feed minimizes the negative impact of distended intestines near the surgical region. Water would not be withheld.

While in the well-padded chute, each mare would have her tail wrapped and tied up and to the side. Each mare would be intravenously administered a mixture of detomidine hydrochloride (10–20 ug/kg; 5–10mg), Butorphanol (0.02–0.04 mg/kg; 5–15 mg), and Xylazine (0.2–0.5 mg/kg; 100–300 mg) to sedate and provide analgesia (to minimize discomfort) for surgery. (Exact dosages may be adjusted as determined by the veterinarian.) Anti-inflammatory/analgesic (pain) treatment would include flunixin meglumine (Banamine) at 1.1 mg/kg (10 ml of 50 mg/ml). Tetanus antitoxin would be given to any unvaccinated individuals. Each mare would also be administered a long-duration antibiotic such as Excede (Ceftiofur Crystalline Free Acid, Zoetis, Florham Park, New Jersey). Excede is effective for 4 days.

Mares in late gestational stages may present an issue of maneuverability, causing limited access to the ovaries due to the position of the foal. For instance, in the Sheldon study the veterinarian decided not to treat only a small number of mares because they were close to term, which made access difficult (Gail Collins, U.S. Fish and Wildlife Service (USFWS), pers. comm.). The veterinarian will have two opportunities to make the determination whether or not to proceed with the surgery; (1) during the initial rectal palpation and health status check, and (2) after the surgeon's hand has entered the abdomen to isolate the ovaries.

Following sedation, a rectal examination would be performed to evacuate the rectum and determine pregnancy status. While the surgical field may not be entirely sterile, all reasonable steps (i.e. power wash and bleach the chute, run sprinklers to reduce dust in

the area, etc.) would be taken to ensure that it is aseptic. The perineal region would be aseptically cleansed and the vagina would be aseptically prepared for surgery using tamed iodine solution prior to insertion of the surgeon's sterile gloved arm into the vaginal vault. The procedure would involve making an incision, approximately 1–3 centimeters long, in the anterior-dorsal-lateral vagina. This area of the reproductive tract has no nerve receptors; therefore the mare feels pressure and stretching vs. pain. The incision would be bluntly enlarged digitally (using the veterinarian's fingers) to perforate the peritoneum to allow the surgeon's hand to enter the abdomen. The method, blunt dissection, separates rather than transects the muscle fibers so the incision decreases in length when the vaginal muscles contract after the tranquilization wanes post-surgery (Bowen 2015). The ovary and associated mesovarium are isolated by direct manual palpation. At this point, administration of the local anesthesia to each ovary can take place. Local anesthesia would consist of a mixture using 5 ml of bupivacaine (0.5 percent) and 5 ml of 2 percent lidocaine hydrochloride injected into each ovarian pedicle. This combination was selected to provide rapid onset (lidocaine) and extended duration (bupivacaine) of effect, eliminating pain associated with removal of the ovaries. Removal of the ovaries would be done with a chain ecraseur, seen in the hands of the veterinarian in figure 2-2 and figure 2-3.

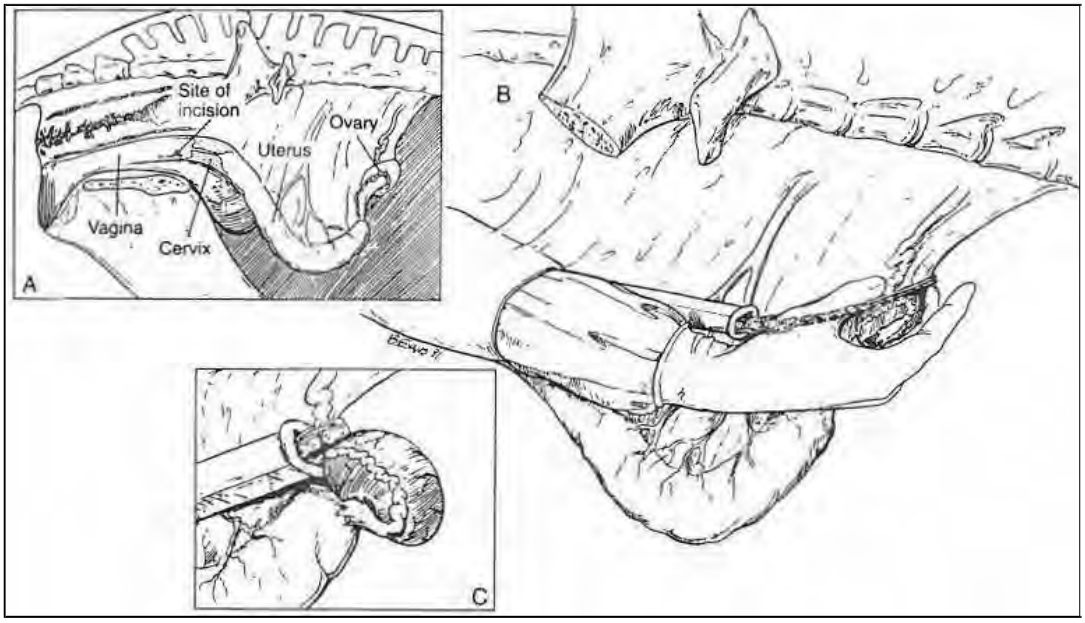

Figure 2-2: Removal of the ovaries: (A) the site for the vaginal incision is located ventrolateral and caudal to the cervix. (B) The chain loop of the ecraseur is positioned over the hand so that the ovary can be grasped and drawn inside the loop. (C) After ensuring that only the ovarian pedicle is within the loop, the pedicle is slowly crushed and transected. (From Kobluk et al. 1995.)

Figure 2-3: A chain ecraseur being used during an ovariectomy via colpotomy procedure.

Consistent with current standard of care, the colpotomy incision would be allowed to heal by second intention (heals without suturing). Second intention healing of the surgical incision in the anterior vagina avoids complications associated with placing suture materials in the incision, and experimental studies have revealed that the breaking strength of secondarily healed wounds is comparable to that of primarily closed wounds (Auer and Stick 1999, p. 136; Johnson et al. 1982).

This procedure is anticipated to take approximately 15–20 minutes per horse. Variation on this amount of time could be based on the horse's behavior in the chute.

Once the procedure is complete, the mare would be released from the chute and allowed to recover from a sedate state in a pen by herself where she would be provided adequate feed and water. Once sedation has worn off the mare would be moved into a pen with other mares who have received the procedure. Wild horses are typically more comfortable amongst other horses when in a corral setting as compared to solitude. Veterinarians would be onsite to observe for a minimum of 2 days postoperatively. Mares would be closely monitored daily for 2 weeks by BLM staff. Any mare showing signs of postoperative complications would receive treatment as indicated by a veterinarian. After at least 2 weeks of healing, the treated mares would be transported back to the HMA and released.

During the 10-year timeframe of this project, BLM would continue to pursue gather techniques that would reduce the population to within AML. If during future gather and removal operations ovariectomized mares were captured and removed to maintain the population within AML, they would be placed in the adoption program.

F. Alternatives Considered but Eliminated from Further Analysis

1. Adjust the Wild Horse Sex Ratio to 75 Percent Male and 25 Percent Female

Wild horse populations will produce roughly equal numbers of males and females over time (H-4700-1, 4.4.1). Garrott (1991b) found that for a 12-year period 65 of 74 (88 percent) herds sampled in Nevada, Oregon, and Wyoming had a foal sex ratio that did not differ from 50:50 (Roelle and Oyler-McCance 2015). Re-establishing a 50/50 male to female sex ratio is also expected to avoid consequences found to be caused by skewing the ratio in either direction. In the Pryor Mountain Wild Horse Range, Singer and Schoeneker (2000) found that increases in the number of males on this HMA lowered the breeding male age but did not alter the birth rate. In addition, bachelor males will likely continue to seek matings, thus increasing the overall level of male-male aggression (Rubenstein 1986). Further concern of adjusting the sex ratio of 40 wild horses in favor of males would be the effect on genetic health of the herd. Dropping the initial amount of reproducing mares to 10 could drastically limit genetic variability. Even with current management of 40 horses at a 50/50 sex ratio, BLM must closely monitor the genetic health of the herd and periodically introduce horses from other HMAs in order to boost and/or maintain adequate genetic variability. Adjusting sex ratios to favor males is a possible management tool. However, this management option should be considered in HMAs and complexes where the low end of AML is greater than 150 animals as it may affect social structure, herd interactions (e.g., band size), and genetic health (h-4700-1). This alternative would be inconsistent with the basic policy objectives for the management of the HMA.

2. Closure of HMA to Livestock Use

This alternative was not brought forward for detailed analysis because such an action would not be in conformance with the multiple-use mandate of the FLMPA (1976) and the existing LUP, Three Rivers RMP/ROD/RPS, which authorizes AUMs for wild horse and for livestock grazing in the allotments within Stinkingwater HMA (appendix 1, pp. I-90, 91, 94, and 112). Livestock grazing is identified as a major use of the public land and is to be conducted in a manner which will meet multiple-use and sustained yield objectives (Three Rivers RMP/ROD/RPS 1992, p. 2-33). Livestock grazing management is designed to achieve standards for rangeland health and conform to guidelines for livestock grazing management (S&G). Some rangeland health standards are not currently being achieved due to annual grass invasion and juniper encroachment. Three of the five standards for rangeland health relate to riparian area management. Current wild horse populations are the main causal factor for declining riparian conditions because they are used as home ranges and receive year-round use. The closure of the HMA to livestock grazing without maintaining wild horse populations within AML would be inconsistent with the Horse Act (1971) which directs the Secretary to immediately remove excess wild horses. Livestock grazing is reduced or eliminated following the process outlined in the regulations found at 43 CFR Part 4100. This alternative would not achieve the purpose and need.

3. Complete Removal of Wild Horses from the HMA

Complete removal of wild horses from the Stinkingwater HMA was eliminated from detailed analysis because it would not be in conformance with the Horse Act (1971) nor the multiple-use mandate of FLPMA (1976); this alternative would therefore not achieve the purpose and need of this document. The Three Rivers RMP/ROD/RPS (1992) specifically authorizes AUMs and reestablished AML for wild horse use in Stinkingwater HMA on page 2-43. This LUP provides a management objective to "Maintain healthy populations of wild horses within the Kiger, Palomino Buttes, Stinkingwater, and Riddle Mountain Herd Management Areas, and wild horses and burros in the Warm Springs HMA" (p. 2-43); it does not include management direction to eliminate AML for wild horses. Elimination of wild horses and closure of HMAs can only be conducted during the land use planning process or within an RMP revision or amendment; this project is neither.

4. Bait and Water Trapping Only

An alternative considered but eliminated from detailed analysis was the use of bait and/or water trapping as the primary or sole gathering method. The use of bait and water trapping, although effective in specific areas and circumstances, would not be cost-effective or practical as the primary gather method for this HMA. However, water or bait trapping may be used as a supplementary approach to achieve the desired goals of alternatives B–D if gather efficiencies are too low using a helicopter or a helicopter gather cannot be scheduled. Water and bait trapping is an effective tool for specific management purposes such as removing groups of horses from an accessible concentration area. The use of only bait and water trapping was dismissed from detailed analysis because much of this HMA has limited road access capable of handling pickups and livestock trailers. The lack of adequate road access would make it technically infeasible to construct traps and safely transport captured wild horses from these areas of the HMA.

5. Gather by Horseback Only

Use of horseback-drive trapping to remove excess wild horses can be effective on a small scale (less than 50 horses); but due to the large geographic size of the HMA (71,893 BLM-managed acres), access restrictions (e.g. rough, two-track roads), topography with deep canyons, and approachability of the horses, this technique would be ineffective and impractical. Horseback-drive trapping is also labor intensive as compared to helicopter-drive trapping. Helicopter-drive trapping would require approximately 7 days to gather this HMA vs. 2–3 months with 5 or more people during horseback-drive trapping. Horseback-drive trapping can also be dangerous to the domestic horses and riders herding the wild horses. For these reasons, this alternative is technically infeasible and was eliminated from further consideration.

6. Intensive Fertility Control

This alternative would encompass a 10-year timeframe with an initial helicopter gather to bring the horse numbers down to the low end of AML. This alternative is a fertility treatment program consisting of administration of a liquid primer dose of PZP (or other available and effective fertility vaccine) to all released mares (age 2 and older) at the time of the initial gather and an annual booster vaccination of liquid PZP (or an available fertility vaccine) applied through remote darting. The program would be designed to treat mares ages 2 through 4 and ages 11 through 20+. Following the initial primer dose and 1-year booster at the time of gather, all mares ages 5–10 would not be retreated on the range until age 11. The intent of such an alternative would be to reduce the population growth rate each year, thereby eliminating or reducing the need to remove horses through future bait or helicopter gathers.

Although there are specific portions of the HMA where Stinkingwater horses are more approachable, most horses are not amenable to humans within 0.5 mile of them for identification and darting of the fertility vaccine. The high elevation and limited access during late winter or early spring for annual darting make this alternative technically infeasible for this HMA. When identifying the most promising fertility-control methods, the NAS (2013) concluded there are HMAs in which remote delivery (i.e. darting) is possible, but these seem to be exceptions. Given the current fertility-control options, remote delivery appears not to be a practical characteristic of an effective population management tool, but it could be useful in some scenarios (NAS 2013). Access to animals for timely inoculation and other management constraints may affect the utility of PZP as a management tool for western feral horse populations (Ransom et al. 2011).

7. Manage Stinkingwater HMA as a Non-reproducing Herd

This alternative would gather the entire wild horse population of Stinkingwater HMA. A group of 40 horses (20 mares and 20 stallions) would be chosen to return to the HMA. Prior to returning the horses to the HMA, all 40 would be permanently sterilized by ovariectomy via colpotomy and castration, respectively. These 40 horses would then be returned to the HMA and would make up the non-reproducing herd.

The WHB Management Handbook (H-4700-1, 2010) section 4.1.1 explains that WHB shall be managed as self-sustaining populations of healthy animals in balance with other uses and the productive capacity of their habitat. Self-sustaining is defined as the ability of reproducing herds of wild horses and burros to maintain themselves in a healthy condition and to produce healthy foals (H-4700-1, p. 59). However, some selected HMAs may be managed for non-reproducing wild horses to aid in controlling on-the-range population numbers. (See 4.5.4.) The WHB Management Handbook defines non-reproducing wild horses as an HMA composed, in whole or in part, of sterilized wild horses (either stallions or mares) to aid in controlling on-the-range population numbers. Examples of criteria that could be used to select HMAs for management of non-reproducing wild horses include: no special or unique herd

characteristics, low ecologic condition, limited public land water, and reliance on private water (section 2.1.3). The Stinkingwater HMA does not necessarily fit these criteria examples, especially under an alternative for a non-reproducing *herd*, as these horses are relatively adoptable[3] as compared to other HMAs across the nation, indicating they have special or unique characteristics; overall ecological condition is being maintained; there are multiple perennial water sources on public land across the HMA; and there is no reliance on private water sources.

The handbook (section 4.5.4.1) explains that "LUPs *should* identify the HMAs to be managed for non-reproducing wild horses and the criteria for their selection. Completion of additional site-specific environmental analysis, issuance of a decision, and providing opportunity for administrative review under 43 CFR Part 4.21 *may* also be necessary." The BLM interprets this section of the handbook to encompass proposals for non-reproducing *herds*: when there are no fertile horses and the herd is unable to self-sustain their population. This alternative would trigger an amendment to an LUP that does not select non-reproducing HMAs. This alternative was eliminated from further analysis because it is inconsistent with the basic policy objectives for the management of the Stinkingwater HMA and is not in compliance with the Three Rivers RMP/ROD (1992).

III. AFFECTED ENVIRONMENT AND ENVIRONMENTAL EFFECTS

A. Introduction

This chapter details the affected environment section, which is the baseline resource data displaying current conditions of each identified resource with an issue (i.e., the physical, biological, and resources) that could be potentially affected by any of the alternatives discussed in Chapter II. For example, in the affected environment section for wild horses in this EA, the wild horse population in the area of the potential effect is currently estimated as 301 animals, including 50 foals. Without this baseline data there can be no effective comparison of alternatives. The intent of this chapter is to give enough information for the reader to compare the present with the predicted future condition resulting from enactment of the project activities (environmental effects discussed next), and for the decision maker to make an informed decision.

This chapter also details the environmental effects section, which is the analytic basis for comparing the potential effects of enacting each of the alternatives detailed in Chapter II. Direct effects are caused by the action and occur at the same time and place. Indirect effects are caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable. For example in the environmental consequences discussion for cultural resources in this EA, it is stated, "Under alternative A [No Action], the number of wild horses in the HMA could increase to near 1500 within 10 years. Such a huge increase in horse numbers, along with existing livestock grazing, could negatively affect surface and shallowly buried archaeological sites and prehistoric-historic root and fruit gathering camps.…"

[3] Seventy-six percent of horses available for adoption following the 2010 gather have been placed in private care.

Cumulative effects are those impacts resulting from the incremental impact of an action when added to other past, present, or reasonably foreseeable actions (RFFA) regardless of what agency or person undertakes such other actions. RFFAs include those Federal and non-federal activities not yet undertaken, but sufficiently likely to occur, that a responsible official of ordinary prudence would take such activities into account in reaching a decision. These Federal and non-federal activities that must be taken into account in the analysis of cumulative impact include, but are not limited to, activities for which there are existing decisions, funding, or proposals identified by the Bureau. RFFAs do not include those actions that are highly speculative or indefinite. RFFAs for this project are continued livestock grazing, wild horse use, weed treatments, road maintenance, recreation and hunting activities, range improvement projects, and treatments associated with the rehabilitation of wildfires, such as the Buzzard Complex Emergency Stabilization and Rehabilitation (ESR). Burns District is also preparing an EA (DOI-BLM-ORWA-B000-2016-0001-EA) for a district-wide fuel break and green strip proposal. Further detail regarding this EA can be found in the Upland Vegetation section (p. 108) of this EA. The district is also in the early stages of preparing a determination of NEPA adequacy (DNA) for juniper control in the Stinkingwater Mountains. These RFFAs are discussed under each resource, as applicable.

B. Identified Resource with Issue

Issues are analyzed when—

- Analysis is necessary for making a reasoned choice from among the alternatives (e.g., is there a measurable difference between the alternatives with respect to the issue?);
- The issue identifies a potentially significant environmental effect; or,
- Public interest or a law/regulation dictates that effects should be displayed.

Through internal and external scoping the BLM Burns District IDT has reviewed and identified issues affected by the alternatives. The Affected Environment Table (Appendix E) summarizes the results of that review. The resources with no issues identified and listed as either not affected or not present will not be discussed further in this document, with the exception of lands with wilderness character discussed in the Issues Considered but Eliminated from Further Analysis section. Resources with an issue(s) will be analyzed in detail in this chapter. Issues analyzed are listed in Chapter I.F.

1. Wild Horses

The following issues are addressed in this section.

- *What would the effects of the alternatives be on the genetic diversity and health of the Stinkingwater herd?*
- *What would be the effects of the population suppression methods being considered in the alternatives on wild horse behavior?*
- *What would be the direct effects of the alternatives on wild horses?*

a. **Affected Environment – Wild Horses**

Habitat for wild horses is composed of four essential components: forage, water, cover, and space. These components must be present within the HMA in sufficient amounts to sustain healthy wild horse populations and healthy rangelands over the long term (H-4700-1 2010, Ch. 3). Escalating problems are defined as conditions that deteriorate over time (H-4700-1 2010, 4.7.7). The key indicator of an escalating problem is a decline in the amount of forage or water available for wild horse use, which results in negative impacts to animal condition and rangeland health, causing horses to seek resources outside the HMA boundaries. Causal factors are normally drought or animal numbers in excess of AML (H-4700-1 2010, 4.7.1).

In 1977, the first Stinkingwater Wild Horse Management Plan was written. This plan was written to "manage, protect, and control the herd of wild horses in the Stinkingwater Herd Management Area in a thriving condition as dictated by PL 92-195, Part 4710, of the Code of Federal Regulations for the Public Lands and MFP [Management Framework Plan] Decisions." The plan described the use areas of wild horses and explained that fencing has reduced the area and divided the common herd area of what at one time could have been considered the Stinkingwater horse herd. "Miller Canyon was fenced off from the common use area in 1959…The Stinkingwater Herd Management Area was divided from the Middle Fork Herd Management Area because there no longer appears to be a[n] intermixing of horses between these two areas" (p. 2). In the Planned Actions section of the 1977 plan, page 16 calls for the elimination of horses from Miller Canyon Allotment #5535. It summarized control levels (p. 18), or population size, per use area as follows:

Sub Herd or Area	Minimum	Maximum
Crow Camp Field & West Field	15	30
Buzzard Ridge Field & Middle Fork Seeding	15	30
Conley Basin Field	10	20
Miller Canyon	0	0
Combined Total	40	80

The plan goes on to outline forage allocation by AUMs for wild horses. An AUM is the amount of forage (approximately 800 pounds of air-dried forage) necessary to sustain one adult horse or two burros for one month (H-4700-1). This plan places a restriction on livestock management in the Stinkingwater HMA to reserve the following amounts of forage for wild, free-roaming horses (p. 21).

Middle Fork Seeding	100 AUMs
Buzzard Ridge Field	260 AUMs
Crow Camp Field	260 AUMs
West Field	100 AUMs
Conley Basin Field	240 AUMs
TOTAL	960 AUMs

The 1992 Three Rivers RMP/ROD/RPS authorized 960 AUMs for horses on 79,631 acres in the Stinkingwater HMA. The 960 AUMs are equivalent to an AML of 40–80 horses (Proposed Three Rivers RMP, September 1991, Volume I – Text, p. 3-8). The RMP states "Retain inactive status on the following herd areas (HAs): Middle Fork HA 37,885 ac. … Miller Canyon HA 6,572 ac." (p. 2-43). Therefore, this LUP effectively removed Middle Fork HA and Miller Canyon HA from the active management area of Stinkingwater HMA. However, the RMP goes on to show the Miller Canyon HA within the active wild horse management area of Stinkingwater HMA in the map on page 2-47. This error in the 1992 Three Rivers RMP was corrected in January 2017 through a Plan Maintenance Sheet TR-8. The current Stinkingwater HMA encompasses 85,407 total acres; including 71,893 BLM-managed acres, 10,898 privately owned acres, and 2,615 acres of Bureau of Recreation land.

The authorized AUMs for the Stinkingwater HMA have not changed since 1977 even with the reductions in active management areas.

In accordance with the 1977 Stinkingwater Wild Horse Management Plan the horses are to be managed to exhibit saddle horse conformation, a height of 14–16 hands and weight of 950–1,300 lbs. Any color is acceptable with an emphasis on retaining red and blue roans.

Figure 3-1: Examples of the conformation and variety of color found in the Stinkingwater HMA. ***Photo credit to Devlin Holloway.***

Stinkingwater HMA is greatly divided by drastic topographical features (deep stream canyons) and private land within and surrounding the HMA. Management of the perennial streams and their associated riparian habitat has, over the years, caused the construction of fences to enable improved livestock grazing management. Along with fences, private land ownership on two sides of the HMA creates a major movement bottleneck in the middle of the HMA. (See Appendix A, Stinkingwater HMA Vicinity Map.) These limitations have caused horses within the HMA to select home ranges on either side of the divisions and, for the most part, they remain in those locations until the next gather is completed. This was an issue being considered during the 1977 HMA Plan where it was explained that, "while this is considered as one herd, it must be managed as three herds because fences limit movement of the horses. It is expected that there will be only very limited interchange between the use areas" (p. 15). These pastures and home ranges are rather small in comparison to the pastures and home ranges in other HMAs that have fewer division fences and land ownership issues (i.e. Warm Springs HMA, Palomino Buttes HMA, and South Steens HMA). The small home ranges lead to relatively high concentrations of wild horses within a 5-year period.

The BLM last gathered horses from the HMA to the low end of AML in August 2010. Horses came off the range in excellent condition with BCSs of 5–7. Many horses exhibited draft horse conformation. Color phases of horses captured included roans (blue/gray/red/strawberry), several buckskins, bays, chestnuts, a palomino foal, sorrels, blacks, and a few grays. Immediately following gather operations 14 horses remained uncaptured on the range. In November of 2010, 24 horses were selected and returned to the range to re-establish the low end of AML. Another five horses from Kiger, Riddle, Hog Creek, South Steens and Stinkingwater HMAs were released to Stinkingwater HMA on August 2, 2011, to help boost genetic variation in this relatively small herd. A September 9, 2014, helicopter inventory using the direct count method documented a total of 144 wild horses (124 adults and 20 foals) within the HMA. No horses were observed on that date outside the HMA boundaries although BLM staff and livestock permittees report horses in the River and Riverside Allotments as well as private lands. Horses typically move north, downstream, along Stinkingwater Creek during the fall and winter months onto private lands outside of the HMA. Their use of private forage and degradation of riparian habitat is amplified as the population expands beyond AML. If horses were in fact gathered from the HMA to the low end of AML in 2010, the annual population growth rate in the Stinkingwater HMA between the 2010 gather and 2014 survey would be approximately 45 percent. This is quite high given the average annual population growth rate for wild horse herds is approximately 20 percent.

In September 2016 a simultaneous double-count survey was conducted using methods recommended by BLM policy (BLM 2010, IM 2010-057) and a recent NAS review (NAS 2013). During this survey, 199 adults and 36 foals were observed. The data collected during the September 2016 survey was analyzed to

estimate sighting probabilities for horses, the raw counts were corrected for systematic biases (undercounts) that are known to occur in aerial surveys (Lublow and Ransom 2016), and confidence intervals (which are measures of uncertainty) associated with the estimated population sizes were provided. This analysis (Appendix F, Statistical analysis for 2016 horse survey of horse populations in Warm Springs HMA and Stinkingwater HMA, Oregon) provided an estimated population size of 213 adult horses and 38 foals. Of the total observed during the September 2016 survey, 34 adults and 6 foals were outside the HMA boundaries (Appendix G, September 2016 Stinkingwater HMA Survey Map).

Using the total adult horses documented during the two inventories (2014 and 2016), calculations of population growth rate indicate a rate of near 30 percent. It is likely that more horses remained in the HMA following the 2010 gather than expected and that Stinkingwater HMA's annual population growth rate is higher than the average 20 percent. This is probable as horses were gathered in excellent conditions (BCS 5–7 = moderate to fleshy) and there are few natural predators in the area. Assuming a 20 percent population growth rate from September 2016 through fall 2017, the estimated wild horse population would be 251 adult wild horses (plus 50 foals). An exact annual population growth rate is not available for this herd so a 20 percent population growth rate is used based on the NAS (2013) explanation that growth rates approaching 20 percent or even higher are realized in many horse populations (p. 55). This annual population growth rate includes both survival and fecundity rates (NAS 2013). By fall 2017, use by wild horses would exceed the forage allocated to their use (960 AUMs at high AML) by 2,122 to 2,304 AUMS. Upland forage utilization monitoring using the Landscape Appearance Method[4] in Stinkingwater Pass Pasture from June 2016 documents moderate (41–60 percent) utilization levels in this portion of the HMA experiencing concentrated wild horse use, prior to livestock entering the pasture. As indicated on pages 7–8 of this EA, objectives from the allotment management plans for the allotments within this HMA strive for uniform utilization levels within the pastures and a utilization target not to exceed 50 percent for key native forage species and 60 percent for non-natives such as crested wheatgrass. This target is for all users of the pasture including livestock, horses, and wildlife. The BLM staff completed a wild horse sighting report on May 17, 2017, which documented 89 adults and 9 foals congregating in one area of the Stinkingwater Pass Pasture along the Stinkingwater Access Road. Site visits to Stinkingwater Pasture in Mountain Allotment show heavy to severe late season use along the riparian area of Stinkingwater Creek on both BLM and private lands within the pasture.

[4] Landscape Appearance Method is defined as a qualitative assessment technique that uses an ocular estimate of forage utilization based on the general appearance of the rangeland. Utilization levels are determined by comparing observations with written descriptions of each utilization class. An example description of a utilization class is as follows: *(21–40 percent) The rangeland may be topped, skimmed, or grazed in patches. The low value herbaceous plants are ungrazed and 60 to 80 percent of the number of current seed stalks of herbaceous plants remain intact. Most young plants are undamaged.*

Genetics analysis of the Stinkingwater herd was completed by E. Gus Cothran from Texas A&M University using blood samples collected from 30 horses during the 2005 gather and hair samples collected from 24 horses during the 2010 gather. Table 3-1 is a summary of the two genetic reports within Stinkingwater HMA associated with the 2005 and 2010 gathers. As described in BLM Manual H-4700-1, WHB Management Handbook, Section 4.4.6.2 Interpreting Genetics Data, the observed heterozygosity (*Ho*) is a measure of how much diversity is found, on average, within individual animals in a wild horse herd. *Ho* is insensitive to sample size, although the larger the sample, the more robust the estimate. *Ho* values below the mean for feral populations are an indication that the wild horse herd may have diversity issues. Herds with *Ho* values that are one standard deviation below the mean are considered at critical risk; critical risk levels are shown in table 3-1 below. The *Fis* is the estimated inbreeding level. *Fis* levels greater than 0.25 are considered critical level and suggestive of an inbreeding problem.

Table 3-1: Stinkingwater HMA 2005 and 2010 Genetic Variability Measures Comparison.

Stinkingwater HMA - Genetic Variability Measures		
	Ho	*Fis*
2005 (blood samples)	0.39	-0.049
Critical Level (blood)	0.31	>0.25
2005 Wild Horse Mean	0.36	-0.035
2005 Domestic Horse Mean	0.371	-0.014
2010 (hair samples)	0.726	-0.067
Critical Level (hair)	0.66	>0.25
2010 Wild Horse Mean	0.716	-0.012
2010 Domestic Horse Mean	0.71	0.012

Following the 2005 gather, "the overall pattern of [genetic] similarity values and variants present indicates mixed origins which is consistent with the high allelic diversity" (Cothran 2008). Cothran summarized the report with "Genetic variability within the Stinkingwater herd is high… There is no need for any action for the Stinkingwater herd" (Cothran 2008). Cothran recommended monitoring at about 5-year intervals because the herd has a low AML so the possibility of loss of genetic variation is relatively high. Further recommendation to exchange individuals between local herds was added to reduce the rate of loss of variability.

Genetic similarity results following the 2010 gather indicate a herd with mixed origins that has some heavy draft horse ancestry (Cothran 2010). Cothran (2010) summarized that current variability levels are low but not so low that immediate action is needed. Cothran explained that the herd should be monitored closely due to the high proportion of rare alleles and the overall low allelic diversity and recommended re-sampling in 3–5 years (2010). On August 2, 2011, five stallions from various local HMAs were released in the Stinkingwater HMA to help boost

variability levels. (Refer to table 3-2 on p. 37–38) Full genetic reports from the 2005 gather (Cothran 2008) and 2010 gather (Cothran 2010) are available at the Burns District BLM Office.

Stinkingwater HMA encompasses the Mountain Allotment (5532), the Stinkingwater Allotment (5531), and the Texaco Basin Allotment (5566). Cattle are the livestock type authorized for these allotments. McInnis and Vavra (1987) found at least 88 percent of the mean annual diets of horses and cattle consisted of grasses; therefore, there is potential for direct competition for forage within these allotments. In McInnis and Vavra's (1987) work, horses and cattle showed predilection for many of the same forages, and dietary overlap was substantial (62–78 percent) every season. In addition, dietary overlap between horses and cattle grazing common sagebrush-grassland range in eastern Oregon averages 67, 69, and 72 percent during spring, summer, and winter, respectively (Vavra and Sneva 1978). "Dietary overlap is not sufficient evidence for exploitative competition (Colwell and Futuyma 1971), and consequences of overlap partially depend upon availability of the resource" (McInnis and Vavra 1987). Site observations and utilization studies indicate wild horse utilization patterns are similar to those of livestock; however, wild horses will typically use range farther from water than cattle. When water and forage are available together, the range will be smaller, and when they are not available together, wild horses concentrate in areas of ample forage and travel further distances to water (Green and Green 1977, as cited in Miller 1983). As previously stated, the home ranges of the Stinkingwater horses are currently relatively small due to the restrictive, small size of the pastures and because there is adequate forage surrounding the multiple perennial water sources and reliable manmade water sources. However, the recent high concentration of horses in certain use areas is an indication of the potential for degradation of rangeland resources and the increase in home range size as forage availability decreases within the use area. Observations during a June 17, 2016, wild horse utilization study in the Stinkingwater Pass Pasture note that a majority of the use is occurring within 1 mile of the Stinkingwater Access Road. There appeared to be widespread, early growing season utilization across this use area with plants exhibiting regrowth but limited seed production. Plants are being forced to essentially begin their growth and reproduction cycle over again, but by this point in the season there is inadequate time and soil moisture available to produce and set seed to complete the reproductive cycle. This type of early season grazing is acceptable if conducted on a periodic basis, not annually. Early season use that prevents key forage species from completing their growth and reproduction cycle tends to reduce plant vigor as carbohydrate reserves are spent on regrowth.

The main wild horse concentration areas in the HMA are within the Stinkingwater Pass Pasture, Conley Basin Pasture, Stinkingwater Seeding Pasture, and Stinkingwater Creek Pasture. Horses have been observed outside the HMA in several locations: the Devine Flat Pasture (private land), the Winnemucca Field of

Riverside Allotment, Mountain Pasture of Buck Mountain Allotment, private land along Stinkingwater Creek, and the River Pasture of River Allotment.

The most common management action that occurs within the project area for wild horses is horse gathers, which are to be done as the herd reaches the maximum established AML number and when monitoring data (census, utilization, use supervision, etc.) indicate ecological balance would be exceeded. Depending on reproductive rates, results of rangeland monitoring data, funding, and management considerations, horses within Oregon HMAs are typically gathered and removed on a 4- to 5-year cycle. Since 1977 there have been numerous surveys, gathers, and releases within the HMA. Table 3-2 shows the wild horse counts for each activity occurring since 1977.

Table 3-2: Stinkingwater HMA – Census, Gather and Release History since 1977.

Date	Activity	Horses Gathered	Horses Observed or Released	Comments
2/4/1977	inventory		144	Total horses (adults and foals); included 6 horses in Miller Canyon.
10/1/1978	gather	177	23	This gather was only of the areas of Buzzard Ridge, Little Stinkingwater, and Crow Camp.
10/23/1978	release		26 adults, 3 foals	19 of these horses were from Jackies Butte HMA.
3/26/1981	inventory		64	
12/21/1984	inventory		108 adults, 11 foals	
8/26/1987	inventory		71	Notes - "because of the weather and time of day, most of the horses were not seen."
10/13/1987	gather	145	55	Removed 142 and returned 3. Removed all horses from Miller Canyon. Horses remain in Little Stinkingwater, Crow Camp, Conly Basin, and Clear Creek Seeding.
2/3/1989	gather	18		These horses were removed from outside the HMA; Riverside Allotment and Coleman Creek Allotment.
11/30/1989	gather	72		Only gathered from Conly Basin and Clear Creek. Returned 11 to Conly Basin.
12/1/1989	inventory		73	
9/2/1992	inventory		79	Estimate of 20–30 horses not counted during flight.
9/16/1992	gather	75		One band came from Buck Mountain Allotment (outside HMA). Returned 4 (1 mare, 3 stallions) to range.
9/18/1992	inventory		46	11–13 were not included in the total but were residing in Miller Canyon Allotment, which is not in active HMA management.
10/13/1992	release		2	2 horses released.
6/14/1993	release		5	5 horses released.

Date	Activity	Horses Gathered	Horses Observed or Released	Comments
1/11/1995	inventory		57	Included in total, 34 observed during inventory and 23 known to reside in certain pastures but not seen during inventory.
9/16/1997	inventory		63 adults, 11 foals	
6/29/2000	inventory		83 adults, 9 foals	Total includes 4 adults from Miller Canyon that were not observed during inventory.
9/18/2002	inventory		98 adults, 21 foals	Not seen during inventory but known to reside in the following pastures are 3 in Conly Basin, 4 in Miller Canyon, and 8 in River Allotment.
7/8/2004	inventory		142 adults, 33 foals	38 adults were outside the HMA.
9/13/2005	gather	203	49	9 horses remained after the gather, 25 were released from holding, then 15 were released from other Oregon HMAs 10/14/05.
7/31/2009	inventory		136 adults, 43 foals	12 adults/5 foals in Winnemucca field (outside HMA).
8/18/2010	gather	210	14	Gathered 22 horses from Riverside Allotment (outside HMA). 14 remained on the range.
11/30/2010	release		24	24 horses released to Stinkingwater from Burns facility.
8/2/2011	release		5	5 horses released from Kiger, Riddle, Hog Creek, South Steens, and Stinkingwater HMAs.
9/9/2014	inventory		124 adults, 20 foals	
9/28/2016	inventory		213 adults, 38 foals	These numbers are derived from Lublow's 2016 analysis of direct count numbers with sighting probabilities, corrected raw counts for under counts, and confidence intervals.

b. **Environmental Consequences – Wild Horses**

Effects Common to All Alternatives

Results of WinEquus Population Modeling

The WinEquus Wild Horse Population Model was designed for and used in this analysis for comparing no action, fertility control, and removal as management strategies. The fertility control portion of the model uses effectiveness results from applications of PZP in the field. Appendix H provides the comparison of alternatives resulting from the WinEquus population model. Population modeling using Version 1.4 of the WinEquus population model (Jenkins 2002) was completed to analyze possible differences in effects that could occur to wild horse populations between alternatives. The purpose of the modeling was to analyze and compare effects of action alternatives on population size, average population growth rate, and average removal number. The minimum number of years for analysis in the WinEquus program is 10 years. The 10-year analysis gives results on growth rate (in 10 years) population on year 11, and the estimated number of horses removed over the 11-year timeframe. The 10-year analysis fits with the 10-year timeframe of this EA. See appendix H for additional detail on the model

results. Table 3-3 summarizes the model results. Alternative A – No Action resulted in the highest population size in 11 years, naturally since there would be no action taken to control population. Alternative B – Proposed Action resulted in the smallest population growth rate and the least number of horses removed. Alternatives C and D were calculated as the same management action as they have similar population management outcomes. Alternative E is not a management alternative that can be run through the WinEquus model. However, results from alternative E would be very similar to those from alternatives C and D. In 11 years, the population size would be virtually the same under all action alternatives but with fewer sent to off-range holding under the proposed action. Table 3-3 displays the median over 11 years, not the range of possibilities for population size. For example, at 20 percent annual population growth rate, within 10 years the population under the no action alternative would actually be 1,584 adult horses by fall 2027. Stinkingwater HMA has shown a population growth rate of well over 20 percent following the past two gathers, therefore the population could be even higher in 10 years.

Table 3-3: WinEquus Comparison Table: Average Population Size, Growth Rates, and Next Projected Gather Year per Alternative.

Alternative	Avg. Pop. Size (11 years)	Avg. Growth Rate Next 10 years (%)	Next Project Gather (Year)	Est'd No. to Remove (Next 11 years)
Alt. A: No Action	959	19.4	N/A	N/A
Alt. B: Proposed Action - Gather with Fertility Control	92	16.3	2021	342
Alt. C: Gather without Fertility Control Alt. D: Gate Cut Removal Gather	94	20.3	2021	361

The modeling was used to identify if any of the alternatives would eliminate the population or cause numbers or growth rates to reach a point where there was no new recruitment to the population. Modeling data indicate sustainable population levels, growth rates that remain within reasonable levels, and an unlikely potential for adverse effects to the population.

Cumulative Effects Analysis Area

The cumulative effects analysis area (CEAA) for wild horses is the HMA boundary for all action alternatives (alternatives B–E) as they aim to maintain wild horse populations within AML that should provide adequate resources for the horses within the HMA. The no action alternative would have a CEAA for wild horses of an estimated 10 miles outside the HMA boundary in all directions. This area was chosen because the AML is currently exceeded and wild horses are residing outside the HMA boundary in several locations. No action to maintain

populations within AML often causes horses to drift outside of an HMA as resources inside the HMA become limited. For the action alternatives (alternatives B–E), following a gather with removals to the low end of AML, cumulative effects would be observed within a 4–5 year period as the high end of AML is again achieved and/or surpassed. For the no action alternative (alternative A), the high end of AML has already been surpassed, and therefore cumulative effects are currently being observed.

Past and present actions such as livestock grazing, wild horse gathers, range improvement projects, wildlife use, noxious weed treatments, and wildfire rehabilitation projects have influenced the existing environment within the CEAA. The RFFAs in the CEAA that may contribute to cumulative effects to wild horses include recreation, maintenance of existing range improvements, wildlife use, fire rehabilitation actions, noxious weed treatments, the District-wide Fuel Break and Greenstrip EA, and the Stinkingwater Mountains Juniper Control DNA.

Effects Common to All Action Alternatives (B–E)

All action alternatives initiate with a gather to remove excess animals or slow the population growth before additional damage to the range occurs. Over the past 35 years, various effects to wild horses resulting from gather activities have been observed. Under the action alternatives, effects to wild horses would be both direct and indirect, occurring to both individual horses and the population as a whole. The BLM has been conducting wild horse gathers since the mid-1970s. During this time, methods and procedures have been identified and refined to minimize stress and effects to wild horses during gather operations. The procedures outlined in IM 2015-151 (Appendix C) would be implemented to ensure a safe and humane gather occurs, which would minimize potential stress and injury to wild horses.

In any given gather, gather-related mortality averages about 0.5 percent (Government Accountability Office, GAO-09-77, p. 49), which is considered very low when handling wild animals. Another average of about 0.7 percent of the captured animals are humanely euthanized in accordance with BLM policy (refer to Appendix D, IM 2015-070) due to pre-existing conditions (Government Accountability Office, GAO-09-77, p. 49). These data affirm use of helicopters and motorized vehicles has proven to be a safe, humane, effective, and practical means for the gather and removal of excess wild horses (and burros) from public lands. BLM Manual 4720.41 prohibits the capture of wild horses by using a helicopter during the foaling period, which is defined as 6 weeks on either side of the peak foaling period, generally March 1 to June 30. However, IM 2013-146 allows for the use of helicopter gathers during peak foaling season due to emergency conditions and escalating problems.

Both helicopter gathers and bait/water trapping can be stressful to wild horses. There is policy in place for gathers (both helicopter and bait/water) to enable efficient and successful gather operations while ensuring humane care and treatment of the animals gathered (IM 2015-151). This policy includes SOPs such as time of year and temperature ranges for helicopter gathers to reduce physical stress to the horses while being herded toward a trap; maximum distances to herd horses based on climatic conditions, topography, and condition of horses; and handling procedures once the animals are in the trap. In Oregon, wild horse or burro fatalities related to gather operations are less than 1 percent of the animals captured for both helicopter and bait/water trap gathers. Injuries generally occur once the animal is in the confined space of the trap. When capture and handling of wild animals is required to achieve management objectives, it is the responsibility of the management professionals to plan and execute operations that minimize the animals' risks of injury and death; however, when capturing any type of large, wild animal one must expect a certain percentage of injury or death. Multiple studies in the wildlife research and management field have worked to improve understanding of the margins of safe capture and handling and have documented their findings of capture-related mortality. Delgiudice and others (2005) reported 984 captures and recaptures of white-tailed deer (*Odocolleus virginianus*), primarily by Clover trap[5], under a wide range of winter weather conditions. Their results showed the incidence of capture accidents (e.g., trauma-induced paralysis or death) was 2.9 percent. Oregon Department of Fish and Wildlife (ODFW) Assistant District Wildlife Biologist, Autumn Larkins, stated the general consensus between biologists on capture-related mortality in wildlife is that, "…anything up to 4 percent is the reality of the aerial capture process. Once you get over 5 percent you need to reevaluate because something is not working, either the conditions are too poor, the methods are inappropriate, etc." (Autumn Larkins, ODFW, pers. comm. 2014).

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

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

[5] Clover trap: A portable net trap to capture deer. This trap has been modified over the years since its original design by Clover in 1954. The trap is constructed with a pipe or tubing frame with netting stretched over the frame. A drop gate is activated by a trip cord (Schemnitz 1980).

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

To minimize potential for injuries from fighting, animals are transported from the trap site to the temporary (or short-term) holding facility where stallions are sorted from mares and foals as quickly and safely as possible, then moved into large holding pens where they are provided with hay and water. On many gathers, no wild horses receive injuries or die. On some gathers, due to the temperaments of the horses, they are not as calm and injuries are more frequent.

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

A few foals may be orphaned during a gather. This can occur if the mare rejects the foal, the foal becomes separated from its mother and cannot be matched up following sorting, the mare dies or must be humanely euthanized during the gather, the foal is ill or weak and needs immediate care that requires removal from the mother, or the mother does not produce enough milk to support the foal. On occasion, foals are gathered that were previously orphaned on the range (prior to the gather) because mothers rejected them or died. These foals are usually in poor, unthrifty condition. Every effort is made to provide appropriate care to orphan foals.

Electrolyte solutions may be administered or orphan foals may be fed milk replacer as needed to support their nutritional needs. Orphan foals may be placed in foster homes in order to receive additional care. Despite these efforts, some orphan foals may die or be humanely euthanized as an act of mercy if the prognosis for survival is very poor.

During a summer gather, foals are smaller than during gathers conducted during the winter months. Water requirements are greater than in the winter due to the

heat. If forage or water is limiting, animals may be travelling long distances between water and forage, and may become more easily dehydrated. To minimize potential for distress during summer gathers, capture operations are often limited to early morning hours when temperatures are cooler. The distance animals must travel to the trap is also shortened to minimize potential stress. The BLM and gather contractor make sure there is plenty of clean water for the animals to drink once captured. A supply of electrolytes is kept on hand to apply to the drinking water if necessary. Electrolytes help to replace the body fluids that may be lost during capture and handling.

Through the capture and sorting process, wild horses are examined for health, presence of injuries, and other defects. Decisions to humanely euthanize animals in field situations would be made in conformance with BLM policy. BLM's Animal Health, Maintenance, Evaluation and Response (IM 2015-070, Appendix D) is used as a guide to determine if animals meet the criteria and should be humanely euthanized.

Wild horses not captured may be temporarily disturbed and moved into another area during the gather operation. With the exception of changes to herd demographics from removals, direct population effects have proven to be temporary in nature with most, if not all, effects disappearing within hours to several days of release. No observable effects would be expected within 1 month of release, except for a heightened awareness of human presence.

By maintaining wild horse population size within the AML, there would be a lower density of wild horses across the HMA, reducing competition for resources and allowing wild horses to utilize their preferred habitat. Maintaining population size within the established AML would be expected to improve forage quantity and quality and promote healthy populations of wild horses in a thriving natural ecological balance and multiple-use relationship on the public lands in the area. Deterioration of the range associated with wild horse overpopulation would be avoided. Managing wild horse populations in balance with available habitat and other, multiple uses would lessen potential for individual animals or the herd to be affected by climatic fluctuations causing drought and reductions in available forage. Population management would lead to avoidance of or minimize the need for emergency gathers and increase success of the herd over the long term. In its 2013 report, the NAS National Research Council concluded that "free-ranging horse populations are growing at high rates because their numbers are held below levels affected by food limitation and density dependence. Regularly removing horses holds population levels below food-limited carrying capacity. Thus, population growth rate could be increased by removals through compensatory population growth from decreased competition for forage" (NAS 2013). This report also concluded that animal responses to density dependence, due to food limitation, will increase the number of animals that are in poor body condition and dying from starvation (NAS 2013). The report further indicates rangeland health, as well as food and water resources for other animals that share the range, would

be affected by resource limited horse populations, which could be in conflict with the legislative mandate that BLM maintain a thriving natural ecological balance (NAS 2013).

Transport, Short-term Holding, and Adoption (or Sale) Preparation

Animals would be transported from the capture/temporary holding corrals to the designated BLM short-term holding corral facility(s). From there, they would be made available for adoption or sale to qualified individuals or sent to long-term holding (grassland) pastures. Over the 10-year implementation of management actions, the disposition of removed excess horses would follow existing or updated policies.

Wild horses selected for removal from the range are transported to the receiving short-term holding facility by straight deck semi-trailers or gooseneck stock trailers. Vehicles are inspected by the BLM COR or PI prior to use to ensure wild horses can be safely transported and the interiors of the vehicles are in sanitary condition. Wild horses are segregated by age and sex and loaded into separate compartments.

A small number of mares may be shipped with foals. Transportation of recently captured wild horses is limited to a maximum of 8 hours. During transport, potential effects to individual horses can include stress, as well as slipping, falling, kicking, biting, or being stepped on by another animal. Unless wild horses are in extremely poor condition, it is rare for an animal to be seriously injured or die during transport.

Upon arrival at the short-term holding facility, recently captured wild horses are off-loaded by compartment and placed in holding pens where they are fed good-quality hay and water. Most wild horses begin to eat and drink immediately and adjust rapidly to their new situation. Any animals affected by a chronic or incurable disease, injury, lameness, or serious physical defect (such as severe tooth loss or wear, clubfeet, and other severe congenital abnormalities) would be humanely euthanized using methods under the guidelines in appendix D. Wild horses in underweight condition or animals with injuries are sorted and placed in hospital pens, fed separately, and/or treated for their injuries as indicated. Recently captured wild horses, generally mares, in underweight condition may have difficulty transitioning to feed. Some of these animals are in such poor condition it is unlikely they would have survived if left on the range. Similarly, some mares may lose their fetuses. Every effort is taken to help the mare make a quiet, low-stress transition to captivity and domestic feed to minimize the risk of miscarriage or death.

After recently captured wild horses have transitioned to their new environment, they are prepared for adoption or sale. Preparation involves freeze marking the animals with a unique identification number, drawing a blood sample to test for equine infection anemia, vaccinating against common diseases, castration (of

male horses) as necessary, and deworming. During the preparation process, potential effects to wild horses are similar to those that can occur during handling and transportation. Serious injuries and deaths from injuries during the preparation process can occur.

At short-term corral facilitates, a minimum of 700 square feet is provided per animal. Mortality at short-term holding facilities averages approximately 5 percent per year (GAO-09-77, p. 51), and includes animals euthanized due to pre-existing conditions; animals in extremely poor condition; animals which are unable to transition to feed; and animals which are seriously injured or accidentally die during sorting, handling, or preparation.

Adoption or Sale with Limitations, and Long-Term Pasture

Adoption applicants are required to have at least a 400 square foot corral with panels at least 6 feet tall for horses over 18 months of age. Applicants are required to provide adequate shelter, feed, and water. The BLM retains title to the horse for 1 year and the horse and facilities are inspected to ensure the adopter is complying with the BLM's requirements. After 1 year, the adopter may take title to the horse, at which point the horse becomes the property of the adopter. Adoptions are conducted in accordance with 43 CFR 4750.

Potential buyers must fill out an application and be pre-approved before they may buy a wild horse. A sale-eligible wild horse is any animal more than 10 years old; or which has been offered unsuccessfully for adoption 3 times. The application also specifies all buyers are not to resell the animal to slaughter buyers or anyone who would sell the animal to a commercial processing plant. Sales of wild horses would be conducted in accordance with BLM policy under IM 2014-132 or any future BLM direction on sales.

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

Long-term pastures are designed to provide excess wild horses with humane, lifelong care in a natural setting off public rangelands. Wild horses are maintained in grassland pastures large enough to allow free-roaming behavior and with forage, water, and shelter necessary to sustain them in good condition.

About 32,000 wild horses, in excess of the existing adoption or sale demand (because of age or other factors), are currently being held in long-term pastures. These animals are generally more than 10 years of age. Located in mid or tall grass prairie regions of the United States, these long-term holding pastures are highly productive grasslands as compared to more arid western rangelands.

Generally, mares and castrated stallions (geldings) are segregated into separate pastures. No reproduction occurs in the long-term grassland pastures, but foals born to pregnant mares are gathered and weaned when they reach about 8 to 10 months of age and are then shipped to short-term facilities where they are made available for adoption.

Handling by humans is minimized to the extent possible, although regular on-the-ground observation and weekly counts of wild horses to ascertain their numbers, well-being, and safety are conducted. A very small percentage of the animals may be humanely euthanized if they are in underweight condition and are not expected to improve to a BCS of three or greater due to age or other factors. Natural mortality of wild horses in long-term holding pastures averages approximately 8 percent per year, but can be higher or lower depending on the average age of the horses pastured (GAO-09-77, p. 52).

Euthanasia and Sale without Limitation

While humane euthanasia and sale without limitation of healthy horses for which there is no adoption demand is authorized under the Horse Act, it has been restricted either by a moratorium instituted by the director of BLM or by the annual Congressional appropriations bill for the Department of the Interior in most years.

Alternative A - No Action - Defer Gather and Removal

Under this alternative, the risks to horses due to gathering, handling, and transport would be avoided.

Based upon the normal 20 percent annual population growth rate for wild horse herds, the no action alternative (no gather or removal) would result in 251 adult horses in the HMA by fall 2017. Results from WinEquus using the no action alternative indicate in 11 years there would be approximately 959 horses in the HMA.

In the 1977 HMA plan there was discussion on horse seasonal migration and interchange between use areas being restricted by fences. Due to the steep canyons with perennial streams, the fences have become necessary to manage the timing and intensity of livestock grazing. Due to the fences and topographical barriers, objectives in the 1977 HMA Plan included “keep[ing] horse numbers sufficiently low in Concentration Areas…so that they contribute little to the watershed problems of those areas” (p. 13).

The BLM has observed impacts from horses on riparian and upland use areas within the HMA with the current population. Taking no action on removing horses from the HMA or applying fertility control would only exacerbate the problem. As the population increases, not only would horses have competition for forage and water from wildlife and livestock, but amongst themselves as well. Horses usually occupy home ranges (undefended, nonexclusive areas), however, when resources are limited, mutual avoidance occurs but can intensify into increased aggression for territory (defended, exclusive areas). In a wild horse behavior study in the Grand Canyon, Berger (1977) summarized home ranges for all bands decreased in size in successive warm months, probably due to increased ambient temperature and drought, resulting in greater utilization of spring areas that led to increased interband confrontation and agonistic display. Miller and Denniston (1979) reported that even females participated along with male group mates when threatening another group of horses at water. Increased occurrences of aggressive activities, caused by lack of necessary resources, and the consequent acute injuries or effects to the health and wellbeing of wild horses would not follow BLM's objective of managing for a thriving natural ecological balance within an HMA.

Although BLM is unable to quantify cumulative effects under the no action alternative, the effects of this alternative on present and RFFAs and in wild horse habitat would be detrimental. Failure to achieve objectives from AMPs, the Three Rivers RMP/ROD (1992), and the Oregon GRSG ARMPA (specifically the riparian, upland, and forage and water resources objectives) would be realized more rapidly under the no action alternative as compared to the action alternatives, which aim to maintain wild horse populations within AML. The no action alternative does not encourage the success of noxious weed treatments, wildfire rehabilitation efforts, and livestock grazing management activities. Similarly, the success of the Burns District Fuel Breaks and Greenstrip project and Stinkingwater Mountains juniper treatments would be hindered as the wild horse population continued to increase. As forage/water availability dwindles due to wild horse population increases, BLM would work with the livestock grazing permittees to make further adjustments to their authorized use and rotations to prevent additional resource damage. However, as the population grows, increased competition for forage, water, and home ranges between wild horse bands would become apparent, disrupting social behavior and increasing risk to herd health as forage quantity and quality become more limited. Populations growing to the point where resources are limited would not only be in conflict with the legislative mandate that BLM maintain a thriving natural ecological balance, but would have far harsher impacts (i.e. starvation) than alternatives that proposed contraception techniques.

Alternative B - Proposed Action - Selective Removal Gather to Low AML and Apply Available Temporary Fertility Treatment

Despite the Stinkingwater HMA being low on the national WHB priority list for gathers, this alternative is designed with the assumption that the Washington Office will give approval and provide funding for a full gather with removals in the relatively near future (within 3 years).

Under the proposed alternative an initial 2017 helicopter gather would occur and capture up to 90 to 100 percent of the herd. Horses would be selected for type and the population on the range would be re-established at the low end of AML. A 50/50 sex ratio would be returned to range with up to 90 percent of the mares treated with PZP vaccine (or available, effective fertility treatment). Under this alternative, bait, water, or horseback drive trapping of horses in high congregation areas or areas outside the HMA could be conducted between helicopter gather cycles. These trapping activities coupled with the application of temporary fertility treatment should aid in extending the gather cycle. The WinEquus model does not consider supplemental bait/water/horseback drive trapping and therefore predicts the next gather to be in 2021. That is only 4 years from the initial gather date, which does not extend the gather cycle but does allow for retreatment of mares with fertility vaccine; because the average population growth rate would be reduced, the necessary removals would be less than those necessary to maintain AML under alternatives C and D. Refer to the Social and Economic Values section (Ch. III.B.10) for a comparison of costs associated with each alternative and with holding horses removed from the range.

By gathering 90 to 100 percent of the horses within the HMA, BLM would be better able to select horses to return to the HMA possessing the desired characteristics of the Stinkingwater herd.

This selection process enables sound management of the genetic and desirable physical characteristics of the herd. The management Burns District BLM has applied to the Stinkingwater herd over the years has allowed the genetic variability to be monitored regularly and maintained within adequate parameters, as per E. Gus Cothran's 2008 and 2010 genetic analyses of the Stinkingwater HMA. Nevertheless, due to the small size of this herd, Dr. Cothran recommends monitoring this herd every 3–5 years and exchanging individuals from other herds to reduce the loss of variability (Cothran 2008 and 2010). Gathering every 4 to 5 years allows BLM to collect Deoxyribonucleic acid (DNA) samples, closely monitor the genetic variability of the herd, and make appropriate changes (i.e. translocation from other HMAs) when testing deems them necessary. A consistent gather cycle also enables the maintenance and improvement of desirable physical traits within the herd.

Up to 90 percent of the twenty mares released back to the HMA would be treated with a 2-injection liquid PZP inoculation following the initial gather (or another

available fertility treatment following future gathers during the 10-year plan). PZP acts as a vaccine against pregnancy by stimulating the production of zona pellucida antibodies in female mammals (Ransom et al. 2011, Liu et al. 1989, Sacco 1977). These antibodies provide a barrier that prevents sperm from binding to the surface of an ovum and results in limited penetration of the zona pellucida and subsequent limited pregnancy in horses (Ransom et al. 2011, Kirkpatrick et al. 1990, Liu et al. 1989). "Fertility control application should achieve a substantial treatment effect while maintaining some long-term population growth to mitigate the effects of environmental catastrophes" (BLM IM 2009-090). Stinkingwater HMA was chosen for a fertility vaccination treatment area because annual herd growth rates are typically greater than 5 percent and treatment of at least 50 percent (up to 90 percent) of all breeding-age mares within the herd is possible during a helicopter gather. The post-gather population size at low AML (40 horses) would be relatively small for treatment with fertility vaccine and the riskiest alternative in terms of maintaining adequate genetic variability. However, according to the WinEquus population model trials of removal with fertility control (Alternative B – Proposed Action), the health of individual animals or the long-term viability of the herd would not be threatened because over the next 10 years there would be an average growth rate of 16.3 percent and an average population size of 92 horses in 11 years (refer to Table 3-3: WinEquus Comparison Table and appendix H). Also, according to the WinEquus trials run for this alternative the next projected gather year would be 2021. At that time DNA samples would be collected and genetic analysis completed to determine if appropriate management changes are needed.

In a study where 2-injection PZP was applied to wild mares in Nevada, Turner and others (1997) determined that the 2-injection protocol brought the reproductive success rate to around 4.5 percent versus the 53 percent success rate of untreated mares. However, the effect of PZP treatment in 2-injection mares was sustained through 1, but not 2, breeding seasons, indicating a return to fertility after 1 year (Turner et al. 1997). Some mares given the standard 2-injection protocol will become fertile the second breeding season following the treatment but some will remain infertile for another or even 2 years, thus, you should see some reduction in foaling up to 4 years out (Dr. Jay Kirkpatrick, written comm. 2013). Continued research on PZP-22 by Turner indicate that current formulations of PZP-22 lead to only 1 year of contraception, not 2 (2014 Progress Report to BLM). Instances of PZP-22 application in HMAs within the Burns District BLM indicate that it remains minimally effective at slowing population growth between gather cycles (4–5 years). A multi-year, high efficacy rate would be more desirable for long-term (3–5 years) population management, specifically in HMAs where wild horses are inaccessible. In an effort to broaden the scope for successful contraceptive management with the use of a single-treatment, multi-year contraceptive vaccine, results from Rutberg and others (2017) found that initial PZP-22 primer treatments on mares in their study showed disappointing effectiveness, although a single PZP booster administered 2–3.2 years later effectively reduced fertility across 3 consecutive years (Rutberg et al.

2017). Whether delivered by dart or by hand, PZP boosters reduced foaling rates in treated mares by roughly 65–72 percent relative to untreated control mares over 3 years (Rutberg et al. 2017). Authors were encouraged by the demonstration of management flexibility in PZP-22 application because data suggested that the interval between initial and booster treatments (2–3.2 years) does not obviously influence effectiveness or longevity of the booster (Rutberg et al. 2017). Their findings provide evidence of a double-treatment, multi-year contraceptive that is already available for use, which is a major step toward improving vaccine longevity.

Contradictory evidence exists regarding the effect of PZP on the behavior of mares treated and on the social structure of a herd. In a highly social species such as feral horses it is critical to ensure that management strategies do not negatively impact social behavior (Madosky 2011). When asked his opinion about behavioral changes associated with native PZP, the liquid formulation accompanied by a primer that is effective for 1 year, Dr. Jay Kirkpatrick stated that after 23 years of experience in the field, using native PZP, researchers observing wild horse mares feel that fundamental wild horse social behavior is not changed by the vaccine (Kirkpatrick et al. 2012). He explains that any behavioral changes that can be documented are the results of successful contraception (e.g. absence of foals, better body condition, or increased longevity) (Kirkpatrick et al. 2012). In contrast, Powell (1999) discusses how PZP-treated mares continually undergo non-conceptive cycles and thus demonstrate estrous behavior throughout the season, causing stallions to continue to tend and mate with mares until they cease to cycle in the fall. In addition, results of a study conducted by Madosky and others (2010) on Shackleford Banks Island horses indicate that PZP used to control population numbers has a significant negative effect on harem stability. Ransom and others (2010) found that direct effects of PZP treatment on the behavior of feral horses appear to be limited primarily to reproductive behaviors, and most other differences detected were attributed to the effects of body condition, band fidelity, or foal presence. Ransom and others (2010) found that treated females received significantly (54.5 percent) more reproductive behaviors from stallions than did control females; Madosky (2011) found that PZP contracepted mares changed harems significantly more often than control mares (PZP causes a decrease in harem fidelity regardless of season); and Nunez and others (2014) found that PZP-treated mares exhibited higher infidelity to their band stallion during the non-breeding season than control mares. Results from the study by Nunez and others (2014) show that mares in the midst of changing groups exhibit increased fecal cortisol levels. They acknowledge that the results show that PZP treatment itself does not increase cortisol levels in recipient animals; however, consistent band changes may put them at higher risk of chronic stress (Nunez et al. 2014). While studying the return of previously PZP-treated mares to their physiological and behavioral baselines, Nunez and others (2017) found that mares previously receiving 4+ treatments changed groups more frequently than did untreated mares. However, the results also show that with less frequent treatment (i.e. PZP-22 applied during 4–5 year gather cycles of the

proposed action) some of these effects can be ameliorated with time and therefore enable more flexible population management.

An additional concern associated with the use of PZP is the potential for late foaling dates on previously treated mares. Nunez and others (2010) concluded that PZP recipient mares exhibited a change in their reproductive schedule; recipient mares gave birth over a broader time period than did non-recipients. The study by Nunez and others (2010) provides the first evidence that mares treated with PZP can extend ovulatory cycling beyond the normal breeding season. Results from a study by Ransom and others (2011) support early investigations by Liu and others (1989) and Kirkpatrick and others (1990) that application of PZP does not affect pregnancies in progress. However, a later study by Ransom and others (2013) expands on those findings of Nunez and others (2010) and explains how parturition phenology (birthing season) for North American feral horses has been shown to peak during May (Berger 1986, Garrott and Siniff 1992, Nunez et al. 2010) and that photoperiod and temperature are powerful inputs driving the biological rhythms of conception and birth in horses. With an 11-month gestation period, this timing maximizes the likelihood that foals will be born and spend their first few months of life at a time when the weather is warm and food is plentiful (Crowell-Davis 2007). The peak foaling period of untreated females in a study by Ransom and others (2013) was the middle of May. Ransom and others (2013) found that PZP-treated females demonstrate a markedly different parturition phenology with the latest birth occurring 7.5 months after the peak in births from untreated females. This latest foal would have been born in late January when available forage is limited, forage lacks nutrients needed for lactating mares, and temperatures are typically at their lowest. Ransom and others (2013) caution that the ultimate consequence of altered birth phenology is survival.

Another concern that has been raised is that persistent use of any immunocontraceptive could lead to an increase in the prevalence of genes associated with a poor immune response (Cooper and Larson 2006, Ransom et al. 2014a). This premise is based on an assumption that lack of response to PZP is a heritable trait, and that the frequency of that trait will increase over time in a population of PZP-treated animals. BLM is not aware of any studies that have quantified the heritability of a lack of response to PZP vaccine in horses. Magiafoglou and others (2003) clarify that if the variation in immune response is due to environmental factors (e.g. body condition or social rank) and not due to genetic factors, then there will be no expected effect of the immune phenotype on future generations. Although this topic may merit further study, lack of clarity should not preclude the use of immunocontraceptives to help stabilize extremely rapidly growing herds.

Concern has been raised over the potential that repeated PZP treatment may lead to longer-term sterility, and that sterility may result from PZP treatment before puberty. In their study of reversibility of PZP treatments of wild horses,

Kirkpatrick and Turner (2002) showed that most mares receiving 2 initial injections and up to 1 subsequent annual booster returned to fertility within 1 year, whereas mares receiving 3 or 4 consecutive years of treatment experienced delays of 3 to 4 years in return to foaling (Rutberg et al. 2017). In the study by Kirkpatrick and Turner (2002), mares were treated with PZP vaccine for 1, 2, 3, 4, 5, or 7 consecutive years. "All five mares treated for 4 or 5 consecutive years have also returned to fertility, but over longer periods of time. Mares treated for 7 consecutive years have not returned to fertility, but several, while still infertile, have started ovulating again" (Kirkpatrick and Turner 2002). The proposed action does not include annual treatment of mares with PZP (refer to Alternatives Considered but Eliminated from Further Analysis, Intensive Fertility Control, p. 26) and would be similar to the treatments conducted by Rutberg and others (2017). Therefore, mares would return to fertility within 3–4 years. In her graduate thesis, Knight (2014) reported evidence of sterility caused by timing of the initial dose of PZP—treatment prior to puberty. Based on BLM's removal criteria for horses removed from the HMA (p. 14), it is not likely that any of the mares returned to the range would have not passed puberty because the 1–4 year olds are the first priority for removal. Even if there is potential for sterility of mares treated by PZP prior to puberty, there would be little concern for effects to genetic variability of the herd because all action alternatives incorporate BLM's management plan for genetic monitoring and maintenance of genetic variability. (Refer to Monitoring section, p. 19, in Monitoring Common to All Action Alternatives.) Table 3-2: Stinkingwater HMA – Census, Gather and Release History since 1977 shows various occasions where BLM has released horses from local HMAs to help boost genetic variability of this herd with a relatively small AML.

Wild horse populations will produce roughly equal numbers of males and females over time (H-4700-1, 4.4.1). Re-establishing a 50/50 male to female sex ratio is also expected to avoid consequences found to be caused by skewing the ratio in either direction. In the Pryor Mountain Wild Horse Range, Singer and Schoeneker (2000) found that increases in the number of males on this HMA lowered the breeding male age but did not alter the birth rate. In addition, bachelor males will likely continue to seek matings, thus increasing the overall level of male-male aggression (Rubenstein 1986).

Reducing and then maintaining wild horse numbers within AML during the 10-year timeframe of the proposed action using available fertility control along with gathers when horses are found to be in excess of the high end of AML would reduce the risk of horses experiencing periods of diminished available forage and/or water (e.g. during drought). Having a plan in place would allow BLM staff to monitor and take appropriate action when needed, before an emergency situation arises. Using adaptive management that involves incorporating the use of the most promising methods of fertility control (as long as they are available for use) may allow BLM to extend the years between gather cycles while continuing to maintain numbers within AML and providing for a thriving natural

ecological balance. Successful management of many species often relies on actions that involve intensive handling of individuals (Ashley and Holcombe 2001). Nevertheless, extending a gather cycle based upon a slowing of the population growth would reduce the frequency of stressful events, such as gathers, put on horses.

Although BLM is unable to quantify cumulative effects under the proposed action, the effects of past, present, and RFFAs would benefit wild horse habitat. The objectives and management decisions set forth in the associated AMPs, Three Rivers RMP/ROD (1992), and the Oregon GRSG ARMPA to maintain or improve riparian condition, upland health, forage and water resources, and sage-grouse habitat would most likely be achieved under Alternative B - Proposed Action because this alternative, if implemented as planned, combines some of the best available tools and actions appropriate to the Stinkingwater HMA to maintain wild horse populations within AML. The proposed action also encourages the success of noxious weed treatments, wildfire rehabilitation efforts, and livestock grazing management activities by maintaining AML. Similarly, the success of the Burns District Fuel Breaks and Greenstrip project and Stinkingwater Mountains juniper treatments would be more readily realized with the wild horse population maintained within AML where a thriving natural ecological balance can be maintained.

Alternative C - Selective Gather and Removal to Low AML <u>without</u> Applying Temporary Fertility Treatment

Alternative C is the same as the proposed action (alternative B) with the exception of applying fertility treatment. With no fertility treatment applied, wild horse numbers are expected to increase by approximately 20 percent annually as compared to a lower population growth rate under effective PZP treatment (alternative B). If the fall 2017 post-gather population in the Stinkingwater HMA is 40 horses (low AML), then within 4 years (2021) the herd size would be approximately 100 horses. As predicted under the WinEquus model, over an 11-year period approximately 32 additional horses would be removed from the range and put into the adoption program or long-term holding, as compared to the proposed action. Refer to the Social and Economic Values section (Ch. III.B.10) for a comparison of costs associated with each alternative and holding horses removed from the range.

An alternative that omits fertility treatment as an action item reduces the concern for maintenance of genetic variability because the number of breeding mares would be maximized following gathers as mares would not skip 1 to 2 years of contribution to the genetics of the population. As discussed in Alternative B - Proposed Action the genetic variability of the herd when applying fertility control with removals is a concern but can be managed through consistent gathers with DNA analysis and translocation of horses from other HMAs to boost genetic

variability when necessary. This management would be the same under alternative C.

An alternative without fertility treatment also takes into consideration the concerns regarding the ethics of potentially altering animal behavior and social structure through use of fertility control agents on wild horses. As discussed in the proposed action (alternative B), a literature review of the effects of immunocontraception on the behavior of wild horses provides a wide array of concerns indicating further study is warranted. Nevertheless, under this alternative, the population growth rate would remain at status quo yet the natural reproductive cycles and social behavior would remain without interference from fertility control treatments.

Cumulative effects on wild horses as a result of this alternative would be similar to those described in alternative B.

Alternative D - Gate Cut Removal Gather to Low AML

BLM Manual 4720.34 states budgetary limitations or other considerations may require consideration of "gate cut" removals (i.e. exceptions to the selective removal requirements) to achieve population objectives. This gather option is valid in situations where resources (e.g. water or forage) for horses are limited and threatening their wellbeing; however, does not address the long-term management of the herd. With a gate cut removal, horses not captured would likely be the more difficult horses to gather and manage, further perpetuating that trait. Gate cut removals eliminate the ability to remove wild horses based on animal health or desirable or historical characteristics, which often results in unintended impacts to the remaining herds. For example, horses of larger size, gentle disposition, or bright/light coloring are often easier to locate and capture and therefore are typically the first to be captured and removed. Under the gate cut removal method, these horses would not be returned to the HMA. This has the potential to permanently remove these genetic traits from the herd. Sex ratios and age distributions of the uncaptured population would be unknown because the gather would stop when approximately 40 horses (low AML) remain in the HMA. These factors make estimating population growth and managing herd characteristics in the HMA difficult. Nevertheless, wild horses that are not gathered may be minimally impacted due to the helicopter activity but would otherwise be unaffected. Under this alternative, all impacts to horses comprising low AML would cease once gather operations were complete, as compared to alternatives B, C, and E. Additional stress on horses would not be realized as they would not be held at the holding corrals for extended lengths of time awaiting selection for return to the HMA or for fertility control application.

Results from WinEquus indicate that population size in 11 years under this alternative would be the same as Alternative C - Selective Gather and Removal to low AML <u>without</u> Applying Temporary Fertility Treatment and would be very

similar to Alternative B - Proposed Action. Wild horse populations would be similar to the other action alternatives but the disposition and quality of the herd would be different as there would be no selection process for the horses remaining in the HMA. Horses with poor disposition or that are territorial and causing resource damage in sensitive areas may not be removed under this alternative. Nuisance horses would remain in their use areas making movement toward achieving objectives such as riparian and upland from the associated AMPs, the Three Rivers RMP/ROD (1992), and the Oregon GRSG ARMPA more difficult to achieve.

Cumulative effects on wild horses as a result of this alternative would be similar to those described in alternative B.

Alternative E - Gather, Slow Population Growth by Spaying a Portion of the Current Mare Population, and Remove as Holding Space Becomes Available

Alternative E considers the reality of the current wild horse population crisis occurring on BLM-managed lands and in at capacity, short- and long-term holding facilities. This alternative considers the fact that the Stinkingwater HMA horses are fairly low on the priority list for attainment of AML and removal of excess horses despite the HMA being within GRSG PHMA, resource degradation currently occurring in wild horse congregation areas, and population at 155 horses over the high AML (80 horses). If a full gather was conducted on the Stinkingwater herd in fall 2017 and there were 251 adult horses (approximately half being mares) prior to the gather, 20 mares would be selected for the reproducing herd, and approximately 108 excess mares (less any adopted) would be ovariectomized and returned to the range. This alternative would drastically reduce the amount of foals born annually as compared to the no action alternative, which takes no action to suppress population growth. The population growth rate under this alternative would be the same as alternatives C and D (approximately 20 percent) because there would be the same number of fertile mares.

Genetic results would be the same or better than alternative C as there would be more fertile stallions available to breed mares, and there would be the same number of untreated mares (20) returned to the range. As stated in the project design features for all action alternatives, hair samples would be collected to assess genetic diversity of the herd, as outlined in WO IM 2009-062 (Wild Horse and Burro Genetic Baseline Sampling). Oregon BLM has consistently conducted genetics analysis for each of its HMAs, which have relatively small AMLs, and has effectively maintained adequate to high genetic diversity through close monitoring and translocation of horses from other HMAs in times when genetic results indicate the need. This model is consistent with recommendations by Mills and Allendorf (1996) that a minimum of 1 and a maximum of 10 migrants per generation would be an appropriate general rule of thumb for genetic purposes. In a United States Geological Survey (USGS) study by Roelle and Oyler-McCance (2015) a simulation model was used to examine the potential

demographic and genetic consequences of applying a mare sterilant to wild horse populations; they assumed permanent sterility in their model. Their results show that only in the most extreme circumstances (such as low initial genetic diversity, low population growth rate, high proportion of mares treated, no change in management for 50 years) would there likely be any noticeable effect on genetic diversity or a significant probability of extirpation of a herd (Roelle and Oyler-McCance 2015). Monitoring and adaptive management would reduce the probability of unacceptable results even further, which has been standard operating procedure for management of Oregon HMAs for years. Roelle and Oyler-McCance (2015) conclude that nothing in their results indicates wild horse managers should steer away from permanent contraceptive techniques, as long as results are monitored and adjustments are made if necessary.

Removal of the ovaries, of course, is permanent and 100 percent effective for preventing further pregnancy. In 1903, Williams first described a vaginal approach, or colpotomy, using an ecraseur to ovariectomize mares (Loesch and Rodgerson 2003, Williams 1903). The ovariectomy via colpotomy procedure has been conducted for over 100 years and is considered acceptable in rural medicine on open (non-pregnant), domestic mares. When wild horse mares are captured for fertility control treatment there would likely be mares in various stages of gestations. There are some unknowns regarding the risk associated with conducting ovariectomy on pregnant mares.

The average mare gestation period usually ranges from 335 to 340 days (Evans et al. 1977, p. 373). There are few peer-reviewed studies documenting the effects of ovariectomy on the success of the pregnancy in a mare. The mare's ovaries and their production of progesterone are required during the first 70 days of pregnancy to maintain the pregnancy (National Research Council (NRC) Proposal Review 2015). Evans and others (1977) stated that by 200 days, the secretion of progesterone by the corpora lutea is insignificant since removal of the ovaries does not result in abortion (p. 376). "If this procedure were performed in the first 120 days of pregnancy, the fetus would be resorbed or aborted by the mother. If performed after 120 days, the pregnancy should be maintained. The effect of ovary removal on a pregnancy at 90–120 days of gestation is unpredictable because it is during this stage of gestation that the transition from corpus luteum to placental support typically occurs" (NRC Proposal Review 2015). Holtan and others (1979) evaluated the effects of bilateral ovariectomy at selected times between 25 and 210 days of gestation on 50 mature pony mares. Their results show that abortion (resorption) of the conceptus (fetus) occurred in all 14 mares ovariectomized before day 50 of gestation, that pregnancy was maintained in 11 of 20 mares after ovariectomy between days 50 and 70, and that pregnancy was not interrupted in any of the 12 mares ovariectomized on days 140 or 210. Those results are similar to the suggestions of the NRC committee that after 120 days gestation the pregnancy should be maintained. If the peak foaling period is in May (Berger 1986, Garrot and Siniff 1992, Nunez et al 2010) and gestation is approximately 11 months then peak conception must happen in June. Therefore,

if an ovariectomy were conducted on pregnant mares in early November, then a large proportion should be past the 120 days gestation required to maintain a pregnancy without ovaries. For those mares at 71 to 119 days gestation, maintenance of the pregnancy would likely be greater than 55 percent based on the study by Holtan and others (1979) who reported approximately 55 percent (11 out of 20) of mares maintained their pregnancy after receiving an ovariectomy between days 50 and 70.

Recently published research from the Sheldon National Wildlife Refuge in northwest Nevada describes a study in which 114 feral mares were captured and treated with ovariectomy via colpotomy (August through October surgeries) (Collins and Kasbohm 2016). Gestational stage was not recorded on the treated mares, but a majority of the mares were pregnant (Gail Collins, USFWS, pers. comm.). Only a small number of mares were very close to full term and did not receive the surgery as the veterinarian could not get good access to the ovaries due to the position of the foal (Gail Collins, USFWS, pers. comm.). After holding the mares for up to an average of 8 days for observation, they were returned to the range with other untreated mares and stallions (Collins and Kasbohm 2016). During holding, the only complications were observed within 2 days of surgery. Two fatalities were observed, potentially related to the procedure; one mare bled to death internally due to a clotting abnormality, and another mare became sick, aborted her foal, and died (anecdotal evidence indicated that she had a peritoneal infection) (Leon Pielstick, pers. comm.). The observed major complication rate for ovariectomized mares following the procedure was less than 2 percent.

During the Sheldon National Wildlife Refuge ovariectomy study (further referenced as the Sheldon study), Banamine was added to the procedure to reduce signs of colic post-surgery. Mares generally walked out of the chute and started to eat; some would raise their tail and act as if they were defecating; however, in most mares one could not notice signs of discomfort (Bowen 2015). There are major complications that could occur from an ovariectomy via colpotomy, however, the potential for complications is low, as displayed in the Sheldon study results. In their discussion of ovariectomy via colpotomy, McKinnon and Vasey (2007) considered the procedure safe and efficacious in many instances, able to be performed expediently by personnel experienced with examination of the female reproductive tract, and associated with a complication rate that is similar to or less than male castration. In a study of the effects of bilateral ovariectomy via colpotomy on 23 mares, Hooper and others (1993) reported that problems were minimal. They explain how “postoperative complications were reported in the medical record of only 1 of the 23 mares; however, problems were noticed by the owners of 4 other mares after discharge from the hospital” (Hooper et al. 1993). Hooper and others tracked the five mares in the study that had problems after surgery and reported that evidence was inconclusive in each as to the role played by surgery (p. 1045).

No fertility control method exists that does not affect physiology or behavior of a mare (NAS 2013). That being said, it is valid for there to be concern over the interband dynamics of ovariectomized mares. Generally, the effects of ovariectomy on body condition and longevity would likely be very similar to that of a PZP-treated mare as there would be no energetic costs associated with pregnancy and lactation. A PZP-treated mare will continually undergo non-conceptive cycles and thus demonstrate estrous behavior throughout the season, causing stallions to continue to tend and mate until mares cease the cycle in the fall (Powell 1999). Although the cyclic production of estrogen by the ovaries is required for stimulation of estrus and mating behavior in virtually all species, the horse is an exception (NAS 2013). When the ovaries are removed from a mare she cannot have an estrous cycle; however, she may show signs of estrous behavior. Unpredictable results follow bilateral ovariectomy for the treatment of abnormal nymphomaniac behavior (in domestic mares) (Kobluk et al. 1995). It has been reported that 60 percent of ovariectomized mares will cease estrous behavior following surgery (Loesch and Rodgerson 2003, Vaugh 1984). If free-ranging ovariectomized mares also show estrous behavior and occasionally allow copulation, interest of the stallion may be maintained, which could foster band cohesion (NAS 2013). This last statement could be validated by the observations of group associations on the Sheldon National Wildlife Refuge where feral stallions were surgically vasectomized or chemically epididymectomized and mares were ovariectomized via colpotomy and released back onto the range with untreated horses (Collins and Kasbohm 2016). During multiple aerial surveys in years following treatment, it was documented that all treated individuals appeared to maintain group associations, and there were no groups consisting only of treated males or only of treated females (Collins and Kasbohm 2016). In addition, of solitary animals documented during surveys, there were no observations of solitary treated females (Collins and Kasbohm 2016). This data helps support the expectation that ovariectomized mares would not lose interest in or be cast out of the social dynamics of a wild horse herd. As noted by the NAS (2013) the ideal fertility control method would not eliminate sexual behavior or change social structure substantially.

In the Sheldon National Wildlife Refuge study of ovariectomized feral mares, there was no data collected on interband behavior (e.g. estrous display, increased tending by stallions, etc.) once released. A study conducted for 15 days in January 1978 by Asa and others (1980) compared the sexual behavior in ovariectomized and seasonally anovulatory (intact) pony mares and found that there were no statistical differences between the two conditions for any measure of proceptivity, copulatory, or days in estrous. This explains why treated mares at Sheldon continued to be accepted into harem bands; they were basically acting the same as a non-pregnant mare. Mares are unusual among the ungulates in that they periodically exhibit estrous behavior during the anovulatory period. This display of sexual behavior by the mare throughout the year is thought to facilitate maintenance of the horse's social structure, in which the male remains with a group of females year round, in contrast with most ungulates in which the females

and males only come together during the mating season (Crowell-Davis 2007). However, the pregnant mare is very different behaviorally from ovariectomized and seasonally anovulatory mares, which frequently display sexual behavior (Asa et al. 1980, Asa et al. 1983). There could be a concern over having a large proportion of ovariectomized mares in a herd when they may more frequently display sexual behavior as compared to a pregnant mare. It should also be noted that estrous behavior has been observed with low frequency among both pregnant female and anovulatory female horses (Asa et al. 1983, Crowell-Davis 2007, Ransom et al. 2014b). Five to ten percent of pregnant mares exhibit estrous behavior (Crowell-Davis 2007). Although the physiological cause of this phenomenon is not fully understood (Crowell-Davis 2007), it is thought to be a bonding mechanism that assists in the maintenance of stable social groups of horses year round (Ransom et al. 2014b). The complexity of social behaviors among free-roaming horses is not entirely centered on reproductive receptivity, and fertility control treatments that suppress the reproductive system and reproductive behaviors should contribute to minimal changes to social behavior (Ransom et al. 2014b, Collins and Kasbohm 2016).

Cumulative effects on wild horses as a result of this alternative would be similar to those described in alternative B.

2. American Indian Traditional Practices

The following issue is addressed in this section.

- *What would be the effects of the alternatives on the Biscuitroot gathering area and other cultural practices and resources?*

a. Affected Environment – American Indian Traditional Practices

The tribal use of the Stinkingwater Mountain area is seasonal, primarily in the period April–July for the collection of roots and game animals. Six species of *Lomatium sp.,* two of Indian carrot (*Perideridia sp.*), and two of *Allium sp.* are dug in the period from April–July. In addition, marmots, a favored game species, are hunted in the rocky rims and scree slopes in the Stinkingwater Pass area during this time. A significant spiritual element is involved in these activities. Outsiders not familiar with American Indian cultural traditions would assume that root gathering is strictly "work" or a family outing. However, tribal members attribute more meaning to the exercise and avoid as many outside distractions as possible when gathering roots.

The Burns Paiute Tribe, the primary user of the Stinkingwater Pass gathering area, has complained of livestock (presumably cattle and, possibly, horses) eating the roots and disrupting the gathering process. The Burns District Archaeologist has only seen evidence of livestock eating roots once in his multiple monitoring trips every spring in the last 22 years.

Other complaints from the Burns Paiute Tribe that other Northwest tribal groups come to the area and "over dig" roots have been leveled. Thirteen monitoring plots were set up in 1998 to monitor root population levels but were only used for 2 years in 1999 and 2000. No shift in root population numbers was noted during the 2-year period. With monitoring supposed to occur at the same time every year, the minor annual variations in population numbers can be attributed to changes in the local weather, especially during early spring.

One additional threat to edible plant species in the Stinkingwater area is the spread of medusahead rye grass, a plant that crowds out surrounding vegetation and has a preference for silty or clay loams, common to the area. No herbicide treatment has occurred within the Stinkingwater root-gathering area at this time but it is conceivable that treatment is not far in the future in order to protect populations of edible plants and, by extension, traditional uses.

b. Environmental Consequences – American Indian Traditional Practices

Alternative A - No Action - Defer Gather and Removal

Under alternative A, the number of horses in the HMA could dramatically increase over a 10-year timeframe, potentially reducing numbers and vigor of edible root plants where they are annually gathered by Indian people. A reduction or degradation of the edible root population could result in abandonment of traditional practices in this area, not to mention the negative effects to the spiritual aspects of the annual root harvest.

Previous effects by grazing cattle and horses have not been substantiated except in one instance in an onion (*Allium sp.)* patch in 2005. Monitoring data, collected in 1999 and 2000, did not show more than minimal change in species and numbers of plants due to livestock/horse consumption or over digging by visiting Indian users. It is my belief that livestock and congregations of wild horses hamper the root-gathering "experience" more by their physical presence than physical damage to the root crops.

Juniper control efforts, whether for sage-grouse habitat improvement or the formation of firebreaks along main control points such as roads, are planned for some areas in the Stinkingwater HMA. Specifically, cutting roadside juniper along the main access roads to create a firebreak. Other juniper cutting, outside of firebreaks, is opposed by the Burns Paiute Tribe because many of the older junipers are found within prehistoric-historic root camps or are special trees recognized by tribal members.

The greatest threat to the edible plant species and, by extension, traditional uses in the Stinkingwater area is medusahead rye encroachment. This can cause a physical loss of root populations. The remaining effects listed above could affect

the mood or setting and degrade the spiritual aspect of the traditional use, an important part of the use.

Cumulative effects, other than medusahead encroachment, are negligible in the Stinkingwater HMA. Medusahead encroachment coupled with much higher numbers of wild horses would likely show a larger decrease in populations of edible plants than with medusahead encroachment alone.

Alternative B - Proposed Action - Selective Removal Gather to Low AML and Apply Available Temporary Fertility Treatment

American Indian traditional practices would not be affected because helicopter gathers take only a few days, and occur outside of the April–July root-gathering season. The effects of trapping are miniscule if done outside of the collection activities period. Bait/water trapping could occur year round but would likely create little distraction during the root-gathering season as it is a passive activity that creates little noise and commotion.

It is possible that reducing the number of horses in the root-gathering portion of the HMA would reduce grazing pressure on different root species. As mentioned in the no action alternative, it is thought that livestock do not graze on root crops to any great extent. However, a severalfold increase in horse numbers over a period of time could increase congregation effects and cause surface disturbance. Increased surface disturbance could negatively affect root crops, reducing the number of plants available for gathering. Alternative B would minimize this effect compared to the no action alternative.

The cumulative effects under alternative B to root populations would be reduced due to decreased horse congregation; and, likely, fewer disturbed areas that tend to increase the potential for noxious weed (i.e. medusahead) invasion. The reduction of horses congregating in the root-gathering areas should reduce the cumulative effects of other distractions to the mood, setting, and spiritual aspect of the traditional uses.

Alternative C - Selective Gather and Removal to Low AML <u>without</u> Applying Temporary Fertility Treatment

Effects on root populations under alternative C would be similar to those under alternative B.

The cumulative effects under alternative C would be similar to those described in alternative B.

Alternative D - Gate Cut Removal Gather to Low AML

Effects on root populations under alternative D would be similar to those under alternative B

The cumulative effects under alternative D to root populations would be similar to those described in alternative B.

Alternative E - Gather, Slow Population Growth by Spaying a Portion of the Current Mare Population, and Remove as Holding Space Becomes Available

Effects on root populations under alternative E would be similar to those under alternative B if horses were eventually gathered and removed down to the low end of AML within the 10-year timeframe.

The cumulative effects under alternative E to root populations would be similar to those described in alternative B, once the wild horse population is reduced to the low end of AML.

3. Areas of Critical Environmental Concern (ACEC)

The following issue is addressed in this section.

- *What would be the effects of the alternatives on the Biscuitroot ACEC?*

a. Affected Environment – ACEC

The Biscuitroot Cultural ACEC is primarily focused on preserving native edible root populations and occupies the far northern portion of the Stinkingwater HMA. It encompasses 6,500 acres of BLM-managed land located on both sides of Highway 20 in the Stinkingwater Summit area. It is one of the premier root-gathering locations in the Northwest and highly prized by various Indian tribes, especially the Burns Paiute Tribe. The edible root populations, prehistoric-historic root camps, and root collection areas are all part of an annual cultural activity by the Burns Paiute Tribe and, occasionally, other regional tribes.

b. Environmental Consequences – ACEC

Alternative A - No Action - Defer Gather and Removal

Under alternative A, the number of wild horses in the HMA could increase to near 1,500 within 10 years. The huge increase in horse numbers, along with existing livestock grazing, could negatively affect root populations and thereby, be counter to the management goals of the Biscuitroot ACEC to preserve root populations in perpetuity. The portion of the ACEC within the HMA is a favorite place for horses in the spring due to the vast expanses of grasses and conveniently located waterholes. Increased grazing effects (eating plants, trampling, or hoof shear) on

edible root plants, especially during their active growing period, could reduce the number of edible roots available, weaken surviving specimens, and disrupt or eliminate seed dispersal.

Previous effects by grazing cattle and horses have not been substantiated except in one instance in an onion (*Allium sp.)* patch in 2005. Monitoring data in the ACEC, collected in 1999 and 2000, did not show more than minimal change in species and numbers of plants due to livestock/horse consumption or over digging by visiting Indian users. It is my belief that livestock and congregations of wild horses hamper the root-gathering "experience" more by their physical presence than by physical damage to the root crops.

Juniper control efforts, such as the formation of firebreaks along main control points such as roads, are planned for some areas in the ACEC. The projects should not negatively affect the edible root populations or cultural activity within the ACEC. Other juniper cutting outside the firebreaks is opposed by the Burns Paiute Tribe because many of the older junipers are found within prehistoric-historic root camps or are special trees recognized by tribal members.

The greatest threat to the edible plant species and, by extension, the ACEC, is medusahead rye encroachment. The invasion of this annual grass can cause a physical loss of root populations.

Cumulative effects, other than medusahead encroachment, are negligible in the Biscuitroot Cultural ACEC. Medusahead encroachment coupled with much higher numbers of wild horses would likely show a larger decrease in populations of edible plants than with medusahead encroachment alone.

Alternative B - Proposed Action - Selective Removal Gather to Low AML and Apply Available Temporary Fertility Treatment

The proposed activities under alternative B would not affect root populations because trap sites would be in previously disturbed areas. New trap areas would be visited prior to gathers in order to insure that they would not disturb prime root-gathering areas.

It is possible that reducing the number of horses in the ACEC portion of the HMA would reduce grazing pressure on different root species. As mentioned in the no action alternative, it is thought that livestock do not graze on root crops to any measurable extent. However, a severalfold increase in horse numbers over a period of time could increase congregation effects and cause surface disturbance. Increased surface disturbance could negatively affect root crops in the ACEC, reducing the number of plants available for gathering. Alternative B would minimize this effect compared to the no action alternative.

Maintenance of horse numbers within AML in conjunction with planned livestock grazing to achieve rangeland health standards, including upland plant community health, would ensure the sustainability of culturally important root crops.

Under alternative B, the cumulative effects of wild horse populations coupled with medusahead invasion on root populations in the ACEC would be reduced due to the proposed management activities that would decrease horse congregation.

Alternative C - Selective Gather and Removal to Low AML without Applying Temporary Fertility Treatment

Effects on root populations under alternative C would be similar to those under alternative B.

The cumulative effects under alternative C to root populations in the ACEC would be similar to those described in alternative B.

Alternative D - Gate Cut Removal Gather to Low AML

Effects on root populations under alternative D would be similar to those under alternative B.

The cumulative effects under alternative D to root populations in the ACEC would be similar to those described in alternative B.

Alternative E - Gather, Slow Population Growth by Spaying a Portion of the Current Mare Population, and Remove as Holding Space Becomes Available

Effects on root populations under alternative E would be similar to those under Alternative B if a gather and removal occurred within the 10-year timeframe to reduce the population to the low end of AML.

The cumulative effects under alternative E to root populations in the ACEC would be similar to those described in alternative B, once the wild horse population is reduced to the low end of AML.

4. Cultural Resources

The following issue is addressed in this section.

- *What would be the effects of the alternatives on the Biscuitroot gathering area and other cultural practices and resources?*

a. Affected Environment – Cultural Resources

Less than 10 percent of the HMA has been inventoried for cultural resources. However, some of the known site locations intersect with geographic information system (GIS) horse observation locations. Because the Stinkingwater Mountains are rich in edible root and fruit plants, the region is and was a prime location in the prehistoric and historic American Indian populations' seasonal round. Site density in the HMA, especially the western half, is very high. This part of the HMA is also used by wild horses, as shown in GIS horse observation data that includes on the ground observations and census data.

The majority of cultural sites located in the HMA have not been monitored since they were discovered and recorded. Only one site, transected by the Stinkingwater access road and near a livestock waterhole is routinely monitored. Livestock wallowing and loafing impacts (surface disturbance to 6 inches deep) have been noted on this small, 0.25-acre site. However, it is unknown whether the impact is due to cattle or horses. The condition and trend in the remaining sites in the HMA is unknown.

b. Environmental Consequences – Cultural Resources

Alternative A - No Action - Defer Gather and Removal

Under alternative A, the number of wild horses in the HMA could increase to near 1,500 within 10 years. Such a huge increase in horse numbers, along with existing livestock grazing, could negatively affect surface and shallowly buried archaeological sites and prehistoric-historic root and fruit gathering camps if they are located near or within congregation areas. Increased grazing effects (trailing, trampling, or hoof shear) in cultural sites would break and/or displace surface artifacts. Anywhere concentrated trampling or hoof shear took place could damage subsurface cultural deposits and expose them to other surface erosion.

Cultural sites are location-specific and do not move on the landscape. Therefore, cumulative effects are only relevant when in the same physical location as a cultural site.

Other project activities within the HMA that could affect National Register eligible properties would be mitigated through various means prior to project implementation. As a result, cumulative effects, outside of the management of the HMA, on National Register eligible properties are negligible under alternative A.

Alternative B - Proposed Action - Selective Removal Gather to Low AML and Apply Available Temporary Fertility Treatment

The proposed activities under alternative B would not affect surface or buried cultural resources because existing trap areas would be in previously disturbed areas. New trap areas would be inventoried by district cultural staff prior to gathers in order to insure that they would not disturb prime root-gathering areas.

Cultural sites are location-specific and do not move on the landscape. Therefore, cumulative effects are only relevant when in the same physical location as a cultural site.

Other project activities within the HMA that could affect National Register eligible properties would be mitigated through project design features, described in the proposed action, prior to project implementation. As a result, cumulative effects, outside of the management of the HMA, on National Register eligible properties are negligible under alternative B.

Alternative C - Selective Gather and Removal to Low AML <u>without</u> Applying Temporary Fertility Treatment

Effects and cumulative effects on cultural sites under alternative C would be similar to those under alternative B.

Alternative D - Gate Cut Removal Gather to Low AML

Effects and cumulative effects on cultural sites under alternative D would be similar to those under alternative B.

Alternative E - Gather, Slow Population Growth by Spaying a Portion of the Current Mare Population, and Remove as Holding Space Becomes Available

Effects and cumulative effects on cultural sites under alternative E would be similar to those under alternative B if a gather and removal occurred within the 10-year timeframe to reduce the population to the low end of AML.

5. Riparian Zones, Wetlands, Water Quality, Fish, and Special Status Species

The following issue is addressed in this section.

- *What would be the effects of the alternatives on water quality and riparian conditions within the HMA and on adjacent private land?*

a. Affected Environment - Riparian Zones, Wetlands, Water Quality, Fish, and Special Status Species

Riparian areas within the Stinkingwater Allotment are monitored through permanent photo points, proper functioning condition (PFC) assessments, water temperature probes, Greenline monitoring, and site visits. Riparian monitoring occurs approximately every 2–5 years, depending on the monitoring type.

There are approximately 8.5 miles of Stinkingwater Creek and its associated riparian zone within the Stinkingwater HMA. Portions of this creek (approximately 1 mile) do not meet the riparian and wetland zone standard for rangeland health due, in part, to wild horse use. Topography in the Stinkingwater Pasture and a half-mile water gap on Stinkingwater Creek concentrate wild horse, cattle, and other wildlife use along two portions of Stinkingwater Creek. Wild horses have made Stinkingwater Pasture, which has approximately 7 miles of Stinkingwater Creek crossing both BLM-managed and private lands, one of their home ranges. Horses stay in this pasture year round and congregate most of their use in the downstream portions that are mostly privately owned. This pasture has livestock grazing management authorized for improvement of riparian conditions; however, the year-round wild horse use is causing degraded conditions along the riparian zone, most noticeably on the private lands. Figure 3-2, on the following page, shows the use by wild horses on riparian areas of this pasture. The left photo was taken prior to the 2010 wild horse gather and the photo on the right was taken in August 2010. Wild horse concentrations are currently as high as or higher in this pasture than they were in 2010, causing similar conditions. (Refer to photos in figure 3-3.) Photos taken in August 2017 show conditions during a livestock rest year, meaning there has been no livestock use, only horses and wildlife. Because of the current use, the riparian vegetative characteristics are not adequate to dissipate stream energy, filter sediment, aid in groundwater recharge, or maintain channel characteristics. Because vegetation that is capable of withstanding high stream flow events is not present in these areas, erosion and excessive sedimentation is a problem in the creek.

Figure 3-2: Privately owned spring adjacent to Stinkingwater Creek in Stinkingwater Pasture, August 2010 (left) and August 2017 (right). The livestock grazing permittee took voluntary non-use in this pasture in 2010 due to the lack of available forage. 2017 was a scheduled rest year for livestock in this pasture. Current conditions in this pasture are similar to those in 2010 due to the amount of year-round horse use.

Figure 3-3: Privately owned spring in Stinkingwater Creek Pasture. Photos taken on August 3, 2017, during a scheduled livestock rest year. All use is from wild horses and wildlife.

Approximately 2.8 miles of Warm Springs Creek and its associated riparian zone flow through the HMA. In June of 1998, an IDT conducted a PFC assessment of Warm Springs Creek. The team considered most of the creek to be in PFC with the exception of a 0.4-mile segment that was considered to be functioning at risk, trend not apparent. There is a small group of horses that use Warm Springs Creek as a watering source but do not seem to congregate or influence riparian condition at this time.

Approximately 5 miles of Clear Creek flows through the HMA. In June of 1998 an IDT conducted a PFC assessment of Clear Creek. The team considered 1.7 miles of Clear Creek to be in PFC and 1.7 miles of the creek to be functioning at risk with a downward trend. Excessive erosion, a lack of adequate vegetation to dissipate stream energy, and little to no woody vegetation were the foremost

reasons for this classification; this is due to wild horse and livestock use. In 2006, a fence was constructed around Clear Creek in the Stinkingwater Pass Pasture, creating the Conley Basin riparian pasture. The 2010 Stinkingwater AMP then authorized an early season/rest rotation for livestock in Conley Basin Pasture.

Stinkingwater, Clear, and Warm Springs Creeks all support Great Basin redband trout. This is a native rainbow trout found east of the Cascades commonly called "redband trout" (*Oncorhynchus mykiss ssp.*). Redband trout are a primitive form of rainbow trout and are an evolutionary intermediate between ancestral "cutthroat"-like species and coastal rainbow trout. Redband trout is a BLM tracking species, and is considered sensitive by the USFWS, representing a unique natural history and ancient connection between lake basins of eastern Oregon and Snake and Columbia Rivers. Redband trout are described as inland populations of *O. mykiss*, with few morphological characteristics distinguishing them from coastal rainbow trout.

Redband trout evolved in a variety of habitats from montane forests to high desert stream environments characterized by unpredictable and intermittent flows, high temperatures, and alkalinity, drought, and fire. As a result, redband trout have been subject to naturally high levels of population fluctuation, evolving traits that allow them to survive in conditions inhospitable to other types of trout. Human induced changes to the thermal regime may create temperature conditions that limit redband trout distribution by making once valuable habitat unusable (Bowers et al. 1979). Degradation and fragmentation of habitat, and the introduction of non-native species, are primary factors that influence the status and distribution of redband trout.

Redband trout prefer clear, cold water; a silt-free rocky substrate in riffle-run areas that include slow, deep water; an abundant in-stream and stable streambank cover; and relatively stable water flows and temperatures (Behnke 1992, Underwood and Bennett 1992). Stream dwelling adult rainbow trout typically inhabit water depths of less than 1 foot in areas with some type of cover and where slow (0 to 0.5 foot/second) water is adjacent to faster water that may carry food (Behnke 1992). Sexual maturity is reached within 2 to 3 years. Spawning usually occurs when daily maximum water temperatures range from 50 to 60°F. Eggs hatch within 4 to 7 weeks with fry emergence from the gravel after approximately 2 weeks (Wydoski and Whitney 1979, as cited by the U.S. Environmental Protection Agency 2002).

The role of BLM in management of fish and other aquatic resources is to provide habitat that supports these resources. Aquatic habitat values are products of attributes and processes of properly functioning riparian and aquatic systems at a desired ecological status. Maintenance, restoration, or improvement of aquatic habitat is carried out by the BLM and supported by the management direction provided for in BLM planning documents for Three Rivers Resource Area (RA).

Fish habitat monitoring focuses on water quality, riparian vegetation, and upland condition as they relate to inputs into stream channels. Species monitoring and manipulation is under authority of the ODFW and the USFWS. Additionally, the BLM, independently or in coordination with the ODFW or USFWS or both, periodically assesses fish and aquatic habitat using established inventory and monitoring protocols and coordinates with these agencies relative to monitoring habitat.

To meet obligations in the Clean Water Act (1972), the 2012 Upper Malheur Water Quality Restoration Plan (WQRP) was developed and approved by Oregon Department of Environmental Quality (ODEQ) to address water quality limited streams. All of the perennial streams in the Stinkingwater HMA lie within the Upper Malheur Subbasin. In the WQRP, the BLM committed to continue periodic horse gathers as horse numbers reach the high end of AML and as funding allowed.

b. Environmental Consequences - Riparian Zones, Wetlands, Water Quality, Fish, and Special Status Species

Effects Common to all Alternatives

The CEAA for all alternatives for riparian zones, wetlands, water quality, fish, and SSS is the six watersheds that overlap the HMA boundary. The six watersheds are Malheur Slough, Stinkingwater Creek, Crane Creek, Lower South Fork Malheur River, Warm Springs Reservoir-Upper Malheur River, and Pine Creek. No cumulative effects under any of the alternatives to the Crane Creek and Pine Creek watersheds are expected because so little of these watersheds fall within the HMA.

Past and present actions, such as those described in the affected environment above, have influenced the existing environment within the CEAA. The RFFAs in the CEAA that may contribute to cumulative effects to riparian zones, wetlands, water quality, fish, and SSS include recreation, maintenance of existing range improvements, fire rehabilitation actions, and noxious weed treatments.

Alternative A - No Action - Defer Gather and Removal

<u>Riparian Zones/Wetlands/Water Quality</u>
Increasing numbers of wild horses in the HMAs would result in greater use and degradation of riparian areas. This would result in an unacceptable decline in water quality through increased sedimentation and water temperatures. Riparian area vegetation would be degraded, as additional horse use would decrease vegetation recruitment, reproduction, and survivability. In addition, riparian vegetation community types and distribution would be changed, root density lessened, and canopy cover reduced. This would lead to reduced stream channel and spring/seep dynamics and further deterioration of these systems. The year-

round grazing by wild horses within riparian zones prevents regeneration of deciduous woody species and favors the increase of xeric species within the plant communities. The removal of riparian herbaceous and woody species cover due to heavy grazing from horse populations exceeding AML would also affect the function of this vegetation for the retention of sediment during high water events. The no action alternative does not comply with the 2012 Upper Malheur WQRP.

Fish

Heavy utilization of riparian zones by wild horses would continue to remove and prevent establishment of deciduous woody species that provide shading of streams. This causes increased water temperatures that negatively affect the water quality for redband trout and macroinvertebrates. This heavy utilization would contribute additional sediment to these streams that also affects fish and other aquatic organisms.

Special Status Species

The increased utilization levels and yearlong grazing from wild horses in Stinkingwater Creek, Clear Creek, and Warm Springs Creek would continue to inhibit the development of deciduous woody species, remove shading cover, and increase soil compaction and streambank shearing. This would result in a decrease in shade and thermal cover over streams and potentially an increase in stream width to depth ratio (i.e., wider and shallower), which would increase maximum water temperature and temperature variability and reduce the quality and quantity of habitat for redband trout.

Cumulative Effects

Although BLM is unable to quantify cumulative effects under the no action alternative, the effects of this alternative on past, present, and RFFAs on riparian zones, wetlands, water quality, fish, and special status aquatic species would be detrimental. The no action alternative would negatively affect the resources listed above. Riparian zones, wetlands, water quality, and fish would see increased impact due directly to increased numbers in wild horses. The population increase would strain the above resources causing degradation that could become detrimental.

Alternative B - Proposed Action - Selective Removal Gather to Low AML and Apply Available Temporary Fertility Treatment

Riparian Zones/Wetlands/Water Quality

The proposed action would reduce the number of horses in and near riparian zones and wetlands. The gather activities and redistribution of 40 horses across the HMA would disrupt the existing use patterns and reduce grazing intensity along riparian areas. As a result, riparian zones and wetlands would continue to make progress toward achieving rangeland health standards. Further, the fertility control, if applied and effective, would allow for a longer period of time before wild horses would exceed the AML and would need to be gathered. This would

allow for increased recovery time following the annual livestock grazing period and overall improved riparian and wetland habitat conditions over a longer period of time.

Reduction of yearlong grazing and late season grazing from horses would result in an increase in the amount and vigor of herbaceous and deciduous woody riparian species, and allow progression of the riparian plant communities toward later seral stages. Improved riparian and wetland conditions would result in more cover and shading along streams, narrowing of stream channels, and potentially a reduction in water temperature. Lower numbers of animals may result in less compaction of moist riparian soils and less shearing of streambanks, leading to improved riparian vegetation, narrowing of stream channels, and reduction of sediment into the streams.

Regulating the number of wild horses in the HMA would reduce use near water sources, minimizing degradation to riparian areas. Improved shading, bank stability, and flood plain development of these streams by deciduous woody and desired herbaceous species would help to improve water temperatures and overall water quality. Achieving AML for wild horses would also accelerate improvements of upland plant communities and increase capture and infiltration capability of the riparian zone.

Fish

Wild horses are grazing yearlong on many riparian areas, decreasing shading cover along these streams. If the horses are managed within the AML this negative effect on riparian vegetation and the associated effects to water temperatures would be expected to decrease. Reducing the numbers of wild horses grazing on Stinkingwater, Warm Springs, and Clear Creeks would also reduce the loss of streamside riparian vegetation, which is critical to maintain cooler water temperatures for redband trout survival. The retention of streamside vegetation retains and catches sediments, decreasing sediment deposited within these streams.

Special Status Species

Reduction of yearlong grazing and late season grazing would result in an increase in the amount and vigor of herbaceous and deciduous woody riparian species, and allow progression of the riparian plant communities toward later seral stages. Improved riparian conditions would result in more cover and shading along streams, narrowing of stream channels, and potentially a reduction in water temperature. Lower numbers of animals may result in less compaction of moist riparian soils and less shearing of streambanks, leading to improved riparian vegetation, narrowing of stream channels, and reduction of sediment into the streams. This would result in improved habitat for redband trout and other aquatic organisms.

Cumulative Effects
Although BLM is unable to quantify cumulative effects under the proposed action, the effects of past, present, and RFFAs would benefit riparian zones, wetlands, water quality, fish, and special status aquatic species.

Alternative C - Selective Gather and Removal to Low AML without Applying Temporary Fertility Treatment

Riparian Zones/Wetlands/Water Quality
This alternative would be similar to the proposed action except the benefits to riparian zones, wetlands, and water quality would be reduced as the herd size increases faster than with the proposed action that includes fertility control to slow the population growth rate.

Fish
Affects to fish and wildlife would be similar to the proposed action except wild horse numbers would exceed AML more quickly than in the proposed action. Habitat conditions for fish species would have a shorter time to recover from current overuse by wild horses. This could affect abundance of fish species in the HMA.

Special Status Species
Same as the above Fish section.

Cumulative Effects
Cumulative effects on riparian zones, wetlands, water quality, fish, and special status aquatic species for this alternative would be similar to those described in alternative B.

Alternative D - Gate Cut Removal Gather to Low AML

Riparian Zones/Wetlands/Water Quality
Under this alternative, effects to water quality, wetlands, and riparian zones would be the same as under alternative C; no additional measureable effects to riparian, wetlands, or water quality would be expected under this alternative.

Fish
Similar to discussion in the proposed action.

Special Status Species
Same as Fish section above.

Cumulative Effects
Cumulative effects on riparian zones, wetlands, water quality, fish, and special status aquatic species for this alternative would be similar to those described in alternative B.

Alternative E – Gather, Slow Population Growth by Spaying a Portion of the Current Mare Population, and Remove as Holding Space Becomes Available

Riparian Zones/Wetlands/Water Quality
Under this alternative, the effects to water quality, wetlands, and riparian areas would initially be similar to the first year of the no action alternative. Limited removals would occur but the population growth rate would be the same as under alternative C with no fertility vaccine given to the remaining 20 reproducing mares. There would still be excess horses within the HMA and negative effects to riparian/aquatic resources would continue to be seen until horse removals took place.

Fish
The effects to fish would be similar to the first year of the no action alternative but would increase at a similar rate to alternatives C and D.

Special Status Species
Same as the above Fish section.

Cumulative Effects
Cumulative effects on riparian zones, wetlands, water quality, fish, and special status aquatic species for this alternative would be similar to those described in alternative B.

6. Livestock Grazing Management and Rangelands

The following issue is addressed in this section.

- *What would be the effects of the alternatives on livestock grazing management and associated ranch operations?*

a. Affected Environment – Livestock Grazing Management and Rangelands

Within the Stinkingwater HMA, there are three grazing allotments with seventeen pastures. All of the allotments and pastures are entirely inside the HMA boundaries. There are a total of seven livestock operators currently authorized to graze livestock in the HMA. The operators are authorized to use a total of 8,455 active use AUMs of forage each year within these allotments. These allocations were based on the analysis of monitoring data that included actual use, utilization, climate data, long-term trend studies, and professional observations. Grazing management varies by allotment and pasture. In general, pastures within these allotments are managed in a graze/defer rotation for upland pastures, every other year early season use for riparian pastures, and season-long rest implemented when monitoring data shows a need. The BLM allocated forage for livestock use through the Three Rivers RMP/ROD (1992) and the GRSG ARMPA/ROD (2015). Table 3-4, following, summarizes the livestock use information for the allotments in the HMA. Actual livestock use across the HMA since 2005 has

varied due to wild fires causing periods of rest from grazing; however, average actual use since 2005 for the allotments are as follows: Texaco Basin - 1,533 AUMs, Stinkingwater - 2,102, and Mountain - 2,053.

Table 3-4: Authorized Livestock Use Within the Stinkingwater HMA.

Allotment	Total Allotment Acres (Including Private)	% of Allotment in HMA	Permittees	Permitted Season of Use	Permitted Active Use AUMs	Permitted Exchange of Use AUMs	Authorized Livestock Grazing Treatments[1] Per Pasture Type
Texaco Basin							Uplands - Early/Graze/Defer
	14,558	100%	1	03/01-09/30	2,350	21	Riparian - N/A
Stinkingwater							Uplands - Graze/Defer/Rest
	24,826	100%	3	12/01-09/20	2,857	38	Riparian - Prior to July 1/Rest
Mountain							Uplands - Graze/Defer
	43,297	100%	4	04/15-09/15	3,248	309	Riparian - Prior to July 1/Rest

[1] Grazing Treatments for Harney County can be defined by general use dates based upon the normal growing season for desirable forage species. *Graze* (approximately 05/01 to 07/01–15) is during the critical growth period of most plants, *Defer* (approximately 07/01–15 to 10/31) is typically after seed ripe on most plants and after adequate carbohydrate reserves have been stored, *Rest* is when plants are provided a full year of growth in the absence of grazing.

The AMPs associated with these three allotments establish objectives to maintain or improve upland and riparian conditions in the respective allotments. These AMPs provide grazing prescriptions that allow for periodic growing season rest for key forage species to aid in maintaining plant vigor and reproduction. Most of the AMPs also set target utilization levels of a maximum of 50 percent on native species and 60 percent on non-native species (e.g. crested wheatgrass). It is practice at Burns District BLM to monitor annual utilization levels on key forage species by all uses (i.e. livestock, horses, and wildlife). The method most commonly used on Burns District to monitor utilization levels is the Landscape Appearance Method. These target levels aid in determining the need for action or adjustments if utilization levels exceed 50 or 60 percent. Recent utilization monitoring in known horse use areas indicates that by mid-June 2016, prior to livestock entering the pasture, horse use in the Stinkingwater Pass Pasture averaged 19 percent, but with moderate (41–60 percent) use in several monitoring areas. In addition, Stinkingwater Creek in the Stinkingwater Pasture receives heavy to severe use on riparian vegetation. These two pastures have the highest concentrations of wild horses in the HMA during the growing season.

A helicopter inventory using the simultaneous double count method was conducted on September 28, 2016, and estimated a total of 251 horses (213 adults and 38 foals). Assuming a 20 percent population growth rate from September 2016 through fall 2017, the estimated wild horse population would be 251 adult

wild horses (plus 50 foals). Use by wild horses would exceed the forage allocated to their use (960 AUMs at high AML) by approximately 2,112 AUMs. Upland forage utilization monitoring documents moderate utilization levels in portions of the HMA experiencing concentrated wild horse use, prior to livestock entering the pasture.

Some horse herds make a substantial part of their use in areas not used by cattle. However, in this HMA all the areas of major horse use are also concentration use areas for cattle (HMAP 1977, p.7). Stinkingwater Pass Pasture of Stinkingwater Allotment and Stinkingwater Pasture of Mountain Allotment are the main home range and concentration areas for wild horses. The Stinkingwater Pass Pasture has the higher elevation, and there are no perennial streams on the pasture. It is the last pasture in the grazing rotation, making it a deferred pasture with typical use being from July through September. Temperatures are high even with the elevation, and cows and horses travel less than in other months. The water sources in this pasture are constructed stock ponds and spring developments. During the late summer grazing period water becomes limited through evaporation and use. There is one stock pond that reliably lasts throughout the fall. Because it is so reliable, the livestock and horses tend to congregate at this site causing heavier use in this area of the pasture.

Stinkingwater Pasture in Mountain Allotment also has areas of concentration. The main water source is Stinkingwater Creek in the middle of the pasture. Horses use this year round and cattle typically have an every other year, early use rotation, April through May, in this pasture to enable regrowth in the summer months. Over the past 10 years, there have been occasions when the livestock grazing permittees have voluntarily taken non-use in this pasture due to the high numbers of horses and lack of available forage. The riparian area is the main water source and runs the length of the pasture. Horse sign is prevalent throughout the pasture, and utilization tends to be high by the end of the season, especially on the downstream portions of the stream that cross private lands within the pasture. This pasture is designed to have a graze then rest rotation but with the concentrated horse use that rest is not occurring.

There are other areas where heavier use and concentration areas are starting to occur. Conly Basin in the Stinkingwater Allotment and Warms Springs Creek in the Texaco Basin Allotment are starting to become areas where the horses congregate. As of now, it's not to the extent of Stinkingwater Pass and Stinkingwater Creek, but without any action taken in the near future, the outcome of rangeland deterioration and increased competition between livestock and wild horses is unavoidable.

b. Environmental Consequences – Livestock Grazing Management and Rangelands

Effects Common to All Alternatives

There are many similarities between livestock use and wild horse use. The main difference is in the Stinkingwater HMA, as shown in table 3-4 (p. 75). Livestock use in the pastures in the HMA is managed to provide periodic growing season rest to desirable forage species and/or early season use on hydric herbaceous species in riparian areas to help maintain or achieve riparian area function. This is achieved through management of timing, duration, and intensity of livestock use. These tools are not available for wild horse management. One result is dominant horses will spend much of the year in their preferred area. In the Stinkingwater HMA this includes certain parts of creeks as described under Riparian and Fish earlier in this EA.

While the present livestock grazing systems and efforts to manage the wild horse population within AML have reduced historic impacts, the current overpopulation of wild horses is continuing to contribute to areas of heavy vegetation utilization and trailing and trampling damage. The overpopulation is preventing the BLM from managing for rangeland health and a thriving natural ecological balance and multiple-use relationships on the public lands in the area.

For the purposes of this analysis, the CEAA for livestock grazing management consists of the pastures within the HMA. Past and present actions, such as those described in Affected Environment, have influenced the existing environment within the CEAA. Past and RFFAs that have and would affect livestock grazing management and would contribute to cumulative effects are fence and water developments and maintenance, wildfires, prescribed burns, juniper treatments, wild horse utilization, periodic wild horse gathers, wildlife use, hunting and other recreational pursuits, ongoing noxious weed treatments, and road maintenance. Maintaining existing water developments, constructing new water sources, and reducing juniper encroachment would allow for more reliable water for horses throughout the year and disperse their use more evenly across the HMA into areas previously not available for use due to the lack of water. Increasing the composition of perennial grasses, forbs, and shrubs in these communities inherently increases herbaceous forage production for all grazers. Reducing juniper dominance will also increase water infiltration into the soil profile and improve ground water recharge (Deboodt et al. 2008). More available ground water leads to more water in streams, springs, and waterholes that would be provided to wild horses, livestock, and wildlife. Historically less reliable water sources are expected to become more reliable following juniper management.

Livestock grazing would be expected to continue to occur in a manner that achieves the standards for rangeland health and conforms to the GRSG ARMPA. Utilization of the available vegetation (forage) would also be expected to continue

at similar levels (up to 50 percent). Grazing management that provides for periodic grazing deferral and forage recovery would continue. In some years, this may result in livestock being removed from the area prior to utilizing all of their permitted AUMs. Continuing to graze livestock in a manner consistent with grazing permit terms and conditions would be expected to achieve or make significant progress toward achieving rangeland health standards.

Effects Common to All Action Alternatives (B–E)

Gather activities could result in direct effects by disturbing and dispersing the livestock present for a period of 5 to 7 days. Trapping activities would be scheduled in coordination with the rangeland management specialist to avoid conflicts with the authorized grazing rotations. Any removal of wild horses would result in some level of reduced competition between livestock and wild horses for available forage and water. Indirect effects would include an increase in the quality and quantity of the available forage for the remainder of the grazing year. This benefit would decrease as wild horse numbers increased until the next gather.

Alternative A - No Action - Defer Gather and Removal

Under this alternative, no action would be taken to manage the wild horse population. The Stinkingwater herd would continue to be outside of the allocated AML of 40–80 horses. Utilization of native perennial forage species by authorized livestock has been directly affected due to the current excess of wild horses. Wild horse numbers above the AML result in utilization of more AUMs than horses were allocated. In order to meet annual utilization targets and continue to achieve rangeland health standards, permitted livestock grazing would continue to be reduced below full permitted use, as wild horse numbers continue to exceed AML. Heavy utilization is occurring in areas used by livestock, wild horses, and wildlife, specifically around water sources. Some of these areas are currently receiving moderate use even when livestock are not present. The indirect effects of the no action (defer gather and removal) alternative would be continued damage to the range, as would be seen in rangeland health standards not being achieved in the future; continued competition between livestock, wild horses, and wildlife for the available forage and water; reduced quantity and quality of forage and water; and undue hardship on the livestock operators who would continue to be unable to fully use the forage they are authorized.

The cumulative effects of the no action with past, present, and RFFAs would be detrimental to the outcome and efforts put toward completing successful projects such as juniper control, noxious weed treatments, wildfire rehabilitation, and livestock grazing management actions to maintain or improve rangeland conditions.

Alternative B - Proposed Action - Selective Removal Gather to Low AML and Apply Available Temporary Fertility Treatment

Under this alternative, the wild horse herd size would be decreased and reestablished at the low end of AML (40 animals). The animals would be returned with an approximate 50/50 sex ratio, and 75 percent of the females returned to the HMA would receive available and approved fertility treatment. The combination of these design elements would result in a slower increase in the wild horse population. This would allow wild horse use to remain within their allocated AUMs for the 10-year timeframe of this analysis, providing the availability of forage for livestock up to their full permitted use (dependent on annual rangeland conditions). The ability to continue gathers, as needed, over the next 10 years would decrease the risk of wild horse numbers interfering with the ability of livestock to utilize permitted AUMs.

The cumulative effect of the proposed action with past, present, and RFFAs would be favorable to the outcome and efforts put toward completing successful projects such as juniper control, noxious weed treatments, wildfire rehabilitation, and livestock grazing management actions to maintain or improve rangeland conditions. Maintaining wild horse populations within AML avoids competition with other uses and impacts on habitat requirements for other species.

Alternative C - Selective Gather and Removal to Low AML <u>without</u> Applying Temporary Fertility Treatment

Under this alternative, the effects would be the same as under alternative B with the exception of the long-term benefits. Under this alternative, without the fertility treatment, wild horse numbers would increase at a quicker rate, resulting in the need for more gathers in the long term or increasing the likelihood that livestock use may have to be reduced prior to future gathers due to wild horse populations exceeding the high end of AML and the associated forage competition.

Cumulative effects under this alternative would be the same as those discussed under alternative B.

Alternative D - Gate Cut Removal Gather to Low AML

Under this alternative, the effects would be similar to those under alternative C. The exception would be that the 50/50 sex ratio would not be enforced. If more males were left than females, the population growth rate would be slower than under alternative B, resulting in a longer period for livestock to fully utilize the permitted AUMs. If more females remained than males, the reproduction rate would be faster than under alternative B.

Cumulative effects under this alternative would be the same as those discussed under alternative B.

Alternative E - Gather, Slow Population Growth by Spaying a Portion of the Current Mare Population, and Remove as Holding Space Becomes Available

Under this alternative, the effects would be similar to alternative C. The population growth rate would virtually remain the same (approximately 20 percent annually) as previous years. The post-gather population would be close to the current on the range population due to the lack of removals. This scenario would not provide any immediate, noticeable relief to livestock permittees grazing in heavy wild horse concentration areas. The only relief would be that in 2018 only 20 mares could reproduce vs. 184 mares as could occur under the no action alternative. If funding allowed and holding space became available during the 10-year timeframe of this alternative, a gather and removal to the low end of AML would have similar results to rangeland conditions as those described in alternatives B–D.

Cumulative effects under this alternative would be the same as those discussed under alternative B.

7. Wildlife, Special Status, Locally Important Species, and Habitat

The following issue is addressed in this section.

- *What would be the effects of the alternatives on Greater sage-grouse habitat?*

a. Affected Environment – Wildlife, Special Status, Locally Important Species, and Habitat

The analysis is focused on GRSG habitat objectives (GRSG ARMPA 2015, Table 2-2). All other sagebrush obligate species and the associated sagebrush steppe habitat would fall under the umbrella of analysis for each alternative.

GRSG use the HMA yearlong and there are 9 occupied or pending leks within the HMA and one new lek discovered March 2017, making 10 the total number of known leks. (For more information contact ODFW.)

Approximately 53 percent of the Stinkingwater HMA is designated as PHMA and 47 percent is General Habitat Management Area (GHMA). Priority sage-grouse habitat are areas that have been identified as having the highest conservation value to maintain sustainable GRSG populations. These areas include breeding, late brood rearing, and winter concentration areas. General sage-grouse habitat is seasonally or year-round occupied habitat outside of priority habitat. The BLM has identified PHMAs and GHMAs in coordination with respective State wildlife agencies.

Table 3-5: Greater Sage-Grouse Habitat Type

Greater Sage-Grouse Habitat	Acres	Percent
PHMA	**45,541**	**53**
GHMA	**39,905**	**47**
TOTAL	**85,446**	**100**

The Oregon GRSG ARMPA describes three general habitat types: breeding (lekking, nesting, and early brood rearing March 1–June 30), brood rearing (summer and autumn July 1–October 31), and winter (November 1–February 28), and the desired vegetative conditions/objectives for each (GRSG ARMPA, Table 2-2). All three habitat types are present or there is the potential based on ecological sites that if restored could support a plant community with these habitat characteristics. Current GRSG use in the HMA is based on annual spring lek counts, 4-mile lek buffers, and in the field observations. There have been no telemetry studies for this area to show sage-grouse behavior/use areas such as nest sites or brood rearing; however, rangeland monitoring shows high concentration areas of wild horses are occurring within 1 mile of six established leks and the newly discovered lek. Habitat suitability is based on (1) Burns District's Modified Pace 180 (MP180) and Assessment Inventory Monitoring (AIM) that both measure percent cover of plants, litter, and soil/bare ground, (2) specialists' local knowledge of the landscape, (3) lek locations and trend data, and (4) grazing utilization using landscape appearance of key forage species.

Most GRSG hens nest during late March to mid-June. (Late May to June nests are typically second attempts.) New growth of perennial herbaceous plants is minimal for early established nests and previous years (residual) vegetation provides cover for those nests. The probability for nest success increases when there are available patches of sagebrush canopy cover greater than 15 percent and grass cover of both residual and current year's perennial grass growth is greater than 10 percent for arid sagebrush steppe and greater than 20 percent for mesic sagebrush steppe. Furthermore, perennial grass and forb height have been measured to be critical for nest success and early brood rearing with ≥ 7 inches for arid sites and ≥ 9 inches for mesic sites (GRSG ARMPA, Table 2-2). Herbaceous cover and height provides horizontal screening at the nest site, which obscures the nest from predators. Shrub and herbaceous cover is also critical during early brood rearing when GRSG chicks are small and vulnerable to predators. Brood-rearing habitat also occurs within the HMA, which includes riparian areas and higher elevation uplands, mesic sagebrush steppe, where herbaceous vegetation is still green and nutritious mid to late summer. During summer months GRSG hens would be predicted to move broods to mesic sagebrush steppe (44 percent of HMA) in the Stinkingwater range that includes the western side and the central south half of the HMA. Other critical locations during this time would be riparian areas that include Stinkingwater Creek, Clear Creek, and Little Stinkingwater Creek, all within the HMA. During winter months GRSG rely heavily on sagebrush leaves for food, especially winters with deep snow and cold weather that limits herbaceous forage availability. Mesic

sagebrush habitat has more available sagebrush where wild fires have not yet significantly reduced its cover, and GRSG will use these areas when winter climatic conditions are mild with little snow. However, in years of harsher winters GRSG will seek out lower elevations, arid sagebrush steppe (46 percent of HMA), where snow is not as deep and sagebrush plants are still exposed and available for foraging. Unfortunately, a significant portion of the sagebrush in arid sagebrush habitat is limited for the different life stages of GRSG due to wild fires (28 percent of arid sagebrush steppe of the HMA) associated with exotic invasive annual grasses such as medusahead rye and cheatgrass.

Anderson and McCuistion (2008) found grazing management (including horses) when upland birds are present should be flexible but limited to a light to moderate use (30–50 percent utilization), and to use deferred or rest-rotational grazing to limit grazing disturbances during critical bird life stages such as nesting. They concluded light to moderate use can increase forb quality and quantity since it can delay plant maturation, which can extend the nutritional value throughout the growing season for GRSG. Adams and others (2004) suggest that light to moderate grazing encourages the height and cover of sagebrush and other native species during nesting seasons, and light grazing is used to create patches in the vegetation that can increase the herbage production of plant species preferred by GRSG, especially during nesting and brood rearing. The GRSG often prefer the lightly grazed areas and desired grazing intensity should be managed for a light to moderate utilization to meet GRSG herbaceous cover needs. While GRSG prefer some patchiness as a result from forage conditioning by livestock that can increase forb production and the regrowth of tender green blades of grass, there are also potential impacts to habitat caused by livestock or wild horse concentration areas.

Concentration areas at a small scale such as livestock reservoirs and/or troughs have minimal to no measureable impact to GRSG habitat, < 5 acres, obtained by proper stocking rates and pasture rotations. However, if concentration areas cannot be managed properly and begin to increase in size, number, and the amount of time spent, such as yearlong grazing, the impacts to GRSG habitat can become detrimental as utilization levels exceed moderate use. Riparian areas are often at risk of exceeding the utilization target, especially with wild horses where there is limited ability to adjust timing or intensity of use. Furthermore, continuous grazing of key forage species in both riparian and upland plant communities can lead to plant mortality and degradation of GRSG habitat, which makes these systems vulnerable to invasion by exotic plants. These negative impacts associated with wild horse concentration areas have been identified in three locations/pastures, which are Clear Creek Seeding, Stinkingwater Creek, and Conly Basin.

Arid sagebrush trend data does not meet GRSG habitat objectives and habitat suitability ranges between marginal to unsuitable for all general habitat types. Habitat measures in Clear Creek Pasture of shrub cover is <10 percent, perennial

grass cover is ≤10 percent, and invasive exotic annual grass cover is >70 percent. This pasture contains four trend leks with only one still occupied but in decline. Overall, this lek complex has seen a reduction in population over the years. Causal factors to habitat degradation are a 1970 herbicide treatment to remove sagebrush associated with a failed crested seeding, wildfires, invasive exotic annual grasses, and possibly yearlong grazing by wild horses on key perennial grass species. Stinkingwater Creek Seeding Pasture is in similar vegetative states and lek trend with the same historical and current threats to GRSG. There is one lek in this pasture that is part of the Clear Creek lek complex and no GRSG have been observed on this lek since 2011. Invasive exotic annual grasses are an issue in this pasture as well with ≥15 percent cover, but perennial grasses meet the habitat objectives of >10 percent (30–50 percent) which provides more cover. However, sagebrush cover is limited and <10 percent. Conly Basin Pasture, where one lek was discovered in 2004 with just a few birds (5 males), was not counted again until 2015 and 2016 with no birds seen. This lek may have been temporary with young males, but limited lek trend data makes it difficult for a probable conclusion. Areas of this pasture meet the habitat objectives with sagebrush cover of >10 percent, perennial grass cover of >20 percent, and perennial forb cover of ≥6 percent based on two trend plots. However, there is a 500 KV transmission line, degraded riparian area along Clear Creek caused by grazing from both wild horses and cattle, juniper encroachment, and large acreages of invasive exotic annual grasses that spread throughout the pasture that limit the potential for suitable habitat. The other two occupied and occupied pending leks are located on the southeast quarter of the HMA that was burned over in 2014 by a 400,000-acre wildfire. This area does not meet habitat objectives and is marginal at best for herbaceous cover, but much of the area has exotic invasive annuals throughout the landscape and is unsuitable for all general habitat types. The multitude of threats present in each pasture have led to habitat degradation and are the probable causal factors to lek abandonment or decline in population trend.

A new wild horse congregation area (89 adults and 9 foals on May 17, 2017) has been identified in the Stinkingwater Pass Pasture and is of concern in maintaining current GRSG mesic sagebrush habitat that currently meets the habitat objectives (GRSG ARMPA, Table 2-2) and the general habitat types. Monitoring across three MP180 trend plots and one AIM plot, livestock and wild horse utilization, and BLM specialist observations indicate that sagebrush habitat is currently suitable for GRSG. Vegetative measures of Burns District trend monitoring show shrub cover is >15 percent, perennial grass cover is >20 percent, perennial forb cover is >6 percent, and exotic invasive annual grass is <5 percent. This area has been identified by both BLM range management specialists and a wildlife biologist as critical habitat for GRSG not only because it meets habitat objectives; but because of one occupied pending lek and the new lek discovered in 2017, along with numerous GRSG observations throughout the summers from 2010 to 2016. In some observations, there have been approximately 10 birds per group observed in the Stinkingwater Pass area. This large group of horses have

established this area as year-round habitat, and the potential future impacts to GRSG habitat are concerning to BLM specialists. The concern is continuous season-long use by wild horses on key grass species such as Idaho fescue, blue bunch wheatgrass, and bottle brush squirrel tail that would eventually lead to plant mortality, which reduces protective cover and creates the opportunity for invasive exotic grasses. The other threat to GRSG in this mesic sagebrush habitat is the presence of western juniper and its continued encroachment across the landscape. Areas in this habitat have become unsuitable because of juniper cover exceeding 4 percent.

In general, GRSG persist in desirable grazing regimes managed to provide residual vegetation and seasonal rest for key forage species. Grazing animals that are well distributed across the landscape and managed to reduce the scale and duration of concentration areas will not impact GRSG habitat; but poor grazing management would result in increased areas of heavy and even severe utilization that not only reduces available cover but in time can cause mortality of targeted forage plant species. When the resistance and resilience of an ecosystem/plant community is breached, degradation is eminent. In examples observed in arid sagebrush habitat, invasion by exotic annual grasses such as medusahead rye is irreversible.

The Greater Sage-grouse Conservation Assessment and Strategy for Oregon, Hagen 2011, hereafter referred to as the Strategy, and the GRSG ARMPA contain guidelines for wild horse management as it relates to sagebrush habitat management (Strategy, p. 104 and GRSG ARMPA, p. 2-21).

The recommended conservation guidelines for wild horses from the Strategy are incorporated into the recommended objectives for WHB from the GRSG ARMPA that are defined in Section A – Purpose and Need for Action.

b. Environmental Consequences – Wildlife, Special Status, Locally Important Species, and Habitat

Effects Common to All Alternatives

For the purposes of this analysis, the CEAA for SSS extends up to 10 miles beyond the HMA boundary to encompass possible movements/home range of sage-grouse that may be using the HMA. The total acreage of the HMA plus the CEAA is approximately 666,654 acres. Ecological sites in the HMA are diverse but representative of those across the CEAA. Examples of common ecological sites are Claypan 12-16 PZ, Clayey 9-12 PZ, and Mt. Clayey 12-16, all of which are potential sagebrush plant communities if alterations have not yet changed the vegetative reference plant community such as conversion to juniper woodlands or to exotic annual grasses.

Table 3-6: Special Status Species – Sage-grouse & Locally Important Wildlife Past and RFFAs 10 miles from the HMA on BLM Managed Lands.

Action	Past Actions			Future Actions		
	Acres	Miles	Number	Acres	Miles	Number
Wildfires	148,350		84	Unknown		Unknown
ML 2 Roads		1,476				
ML 3 Roads		73				
Highways/Paved		94				
Fences		951				
Water Developments			475			32
Gravel Pits			32			
Juniper Treatments	14,294		423	4,893		103
Crested or Rehabilitation Seedings	26,146		21	21,155		19

The RFFAs and current actions in the CEAA that may contribute to cumulative effects to GRSG and sagebrush habitat include management activities associated with livestock grazing, recreational activities, western juniper removal, herbicide treatment of invasive weeds (in particular exotic annual grasses), wildland fire, seeding treatments, and other disturbed areas. Large acreages, >100,000, of the CEAA on both private and public (BLM and State) managed lands have proposals to treat exotic annual grasses and encroaching juniper. Both completed and future treatments are to improve sagebrush habitat for species such as GRSG, migratory birds, and other sagebrush obligates. Past and RFFAs that have affected or may affect SSS or their habitat in the CEAA are found in table 3-6.

Actions to restore sagebrush steppe habitat are being implemented in the Otis Mountain/Moffet Fuels Management Project, Merlie Table DNA, Bartlett Mountain/Stinkingwater and Buzzard Complex ESR project weed treatments, and the Natural Resource Conservation Service's Sage-grouse Initiative (private lands). These projects are expected to improve sagebrush steppe habitat and increase the amount of forage available for wildlife, livestock, and wild horses.

This will leave more residual nesting cover in the long term (10–15 years) for GRSG. Cutting, piling, and burning of juniper within 4 miles of the lek sites will retain much of the shrub cover and increase nest habitat near leks. Removing juniper may also increase the amount of water available in seasonally wet areas (Deboodt et al. 2008), which will improve GRSG brood-rearing habitat. Herbicide treatment of exotic annual grasses will reduce the threat of wildland fire and provide opportunities for native vegetation such as sagebrush to re-establish in the plant community.

The Bartlett Mountain 2007 (≈30,000 acres) and Buzzard Complex 2014 (≈400,000 acres) wildland fires burned large portions of the eastern half of the HMA and southeast quarter of the CEAA. Lands burned include BLM, private, and State. Ecological sites burned support sagebrush steppe communities of which 34 percent is identified as PHMA and 54 percent GHMA. While there are some unburned areas within the fire perimeter, they are generally small and scattered, with the fire removing most of the sagebrush in each fire's interior. Due to limited cover and habitat currently found within the burned areas, GRSG are expected to avoid these areas until marginal to suitable habitat is restored. The declined lek trend data indicate this relationship with wildland fire impacts to sagebrush steppe habitat. It is probable that GRSG populations in the degraded habitat areas may move to unburned areas near the fire, which would include the west side of the HMA such as Stinkingwater Pass Pasture where the highest wild horse concentrations are located. Projects associated with the ESR plans are seedings and weed treatments.

The sagebrush plant communities that support GRSG are very complex spatially and successionally as are the effects of livestock grazing within these communities, often making it difficult to form large-scale conclusions about the impacts of current livestock grazing practices on GRSG populations (Crawford et al. 2004). However, research suggests it is possible for grazing to be managed in a way that promotes forage quality for GRSG since grazing can set back succession, which may result in increased forb production (Vavra 2005). When grazing management is periodic and allows forbs to regrow or prevents utilization by livestock such as season of use, the number of forbs available to GRSG may increase (Vavra 2005). Anderson and McCuistion (2008) found grazing management, when upland birds are present, should be flexible but limited to a light to moderate use (30–50 percent utilization), using deferred or rest-rotation grazing disturbance during critical GRSG life stages such as nesting. Anderson and McCuistion also acknowledged the complexity of managing grazing within GRSG habitat and determined no one grazing system is best suited in all cases, but should be site specific such as the allotment and pasture scale. While these references specifically refer to livestock, it is concluded that they apply to wild

horses as well, since they are both large grazing animals. The differences between wild horse and livestock management are clear; wild horses are free roaming and develop territories/congregation areas year round where impacts are mitigated by keeping populations within AML, whereas livestock are moved from pasture to pasture in a designed rotation each year to prevent congregation areas and impacts to key forage plant species.

Alternative A - No Action - Defer Gather and Removal

The primary effect under this alternative would be the increase in horse numbers, resulting in increased congregation area size and occurrence within the HMA. This would result in an exponential increase in herbaceous utilization of key grass and forb species in current congregation areas, and as the wild horse population grows, new congregation areas would be established. This would have direct detrimental impacts to the 10 leks since increased use would occur within the 4-mile lek buffer, which is the most critical habitat use area. Of course the 10-mile buffer of the analysis area would not be impacted by wild horses; however, continued habitat degradation by juniper encroachment, wildfires, and invasive annual grasses would compound the impacts not only in the HMA but also outside.

Cumulative effects by wild horses would be continuous yearlong grazing and moderate to high utilization levels that would reduce horizontal nesting cover for GRSG nests and chicks. Utilization studies in the HMA are currently measuring moderate to heavy (41–60 percent to 61–80 percent) use in use areas around wild horse congregation areas. Utilization in riparian areas have measured heavy to severe (61–80 percent to 81–100 percent) use where there are wild horse concentration areas. This is concerning for GRSG populations where critical late brood-rearing habitat is being degraded at this level of disturbance. This alternative would likely expand those heavy to severe use areas with an indefinite increase in wild horse numbers. Findings from France and others (2008) suggest cattle initially concentrate grazing on plants between shrubs, and begin foraging on perennial grasses beneath shrubs as interspace plants are depleted. It can be assumed wild horse use would mimic cattle use of perennial grasses, as the more easily accessible plants would be grazed first. France and others (2008) found cattle use of the under-canopy perennial grass was minimal until standing crop utilization reached about 40 percent, although this utilization level would likely vary depending on sagebrush density, sagebrush arrangement (e.g. patchy vs. uniform distribution), bunchgrass structure, and accompanying forage production levels. As utilization levels increase across the HMA with increased wild horse numbers, it is expected that horizontal screening cover of GRSG nests would decline. An increase in wild horse numbers would also decrease the likelihood that individual perennial plants could receive a full growing season of rest from

grazing use. When perennial plants lack adequate growing season rest periods where they are able to complete a full reproductive cycle, the plant community composition, age class distribution, and productivity of healthy habitats is negatively affected thus influencing the ability to achieve Rangeland Health Standards 1 (watershed function – uplands) and 5 (native, threatened and endangered, and locally important species). Increases in wild horse numbers beyond AML could also lead to indirect effects on GRSG from wild horses (e.g. grazing of nesting cover, reduction of available forbs for chicks and hens, disturbance of nests, etc.) during critical stages of the GRSG life cycle (nesting and brood rearing). This alternative would be expected to compound the cumulative effects to GRSG habitat across these populations' home range, and result in lower habitat quality for GRSG and contribute to the further reduction of GRSG habitat and population numbers.

Alternative B - Proposed Action - Selective Removal Gather to Low AML and Apply Available Temporary Fertility Treatment

In this alternative, GRSG would have similar or improved resources available as are currently present within the HMA. Habitat degradation would continue across the analysis area, caused by the primary threats to sagebrush habitat such as juniper encroachment, wildfire, and exotic invasive annual grasses; however, maintaining good grazing practices and maintaining AML would be two less threats to habitat degradation. Horse numbers within AML would reduce the occurrence of areas of critical GRSG habitat receiving continuous utilization at heavy intensities on a year-round basis. Areas within the HMA near water sources such as Clear and Stinkingwater Creeks would continue to be affected by concentrated grazing uses. Portions of the HMA away from existing waterholes and springs would have non-grazed areas, which would be expected to provide more suitable nesting sites for GRSG due to more residual grass cover. This would be expected to be highest in areas outside of the current use area during drought years and lowest in these areas during wet years, since in those years it would be expected that all water sources would have water and attract livestock and wild horses while dispersing their use. Residual grass cover provides horizontal screening at nest sites, in addition to screening from shrubs, which is believed to reduce predation. Maintaining wild horse numbers within AML would aid BLM land managers in their ability to provide quality GRSG habitat in the quantities needed for their survival and the maintenance of populations. This alternative would maintain achievement of Rangeland Health Standard 5 with the goal of providing habitats that support healthy, productive, and diverse populations and communities of native plants and animals (including SSS and species of local importance) appropriate to soil, climate, and landform. Cumulative effects as a result of wild horse grazing within AML would not contribute to the decline of sagebrush habitat for GRSG or reduction of GRSG populations.

Alternative C - Selective Gather and Removal to Low AML without Applying Temporary Fertility Treatment

Effects under alternative C would be similar to those described in alternative B.

Alternative D - Gate Cut Removal Gather to Low AML

Effects under alternative D would be similar to those described in alternative B.

Alternative E - Gather, Slow Population Growth by Spaying a Portion of the Current Mare Population, and Remove as Holding Space Becomes Available

Effects under alternative E would be similar to those described in alternative B, once a gather to remove excess horses is implemented.

8. Noxious Weeds

The following issue is addressed in this section.

- *What would be the effects of the alternatives on noxious weeds?*

a. Affected Environment – Noxious Weeds

Noxious weeds have been documented within the Stinkingwater HMA. The following table 3-7 lists the details:

Table 3-7: Noxious Weeds

Weed Species	Number of Sites	Acres
Whitetop	23	200.84
Canada Thistle	120	178.86
Bull Thistle	104	312.53
Halogeton	2	9.49
St. John's Wort	2	0.09
Perennial Pepperweed	2	199.81
Dalmation Toadflax	7	4.68
Purple Loosestrife	27	161.60
Scotch Thistle	85	239.47
Medusahead Rye	183	26,439.34
Salt Cedar	2	0.02
Totals	**557**	**27,746.74**

Most of the weed sites are receiving ongoing treatments and are monitored on an annual basis. Each site is kept in the National Invasive Species Information Management System (NISIMS), monitored as a site, and treated where weeds still occur. Noxious weeds are treated using the most appropriate methods as analyzed in the district's current Integrated Invasive Plant Management EA (DOI-BLM-OR-B000-2011-0041-EA) or subsequent NEPA.

Medusahead rye is prevalent throughout the HMA and probably the most problematic noxious weed to manage. Medusahead contributes to fire spread and can become a component of an invasive annual grass – fire cycle vegetation state. This threat is one of the three primary threats to sage-grouse and sagebrush habitats in the project area as well as the Stinkingwater Mountains and Drewsey area in general. Continued surveys and weed treatments are ongoing to reduce the opportunities of spread to further acres of the area. Canada thistle occurs in many of the riparian areas. Improving desirable riparian vegetation, along with aggressive weed treatments, will reduce the dominance of this noxious weed and allow the riparian areas to recover and function properly. Whitetop occurs primarily along roads and on dams. Aggressive weed treatments along roads and other disturbed areas will reduce the opportunities for spread. Scotch thistle has historically infested most of the disturbed areas (waterholes and animal congregation areas). It is still present but reduced due to aggressive monitoring and treatments. Unfortunately, the longevity of the seed lends itself to reappearing when conditions are right. Monitoring of known sites occurs on an annual basis and treatment occurs wherever the weeds occur.

b. Environmental Consequences – Noxious Weeds

For the purpose of this analysis, the CEAA for noxious weeds encompasses the Stinkingwater HMA.

Past actions affecting noxious weeds in the Stinkingwater HMA include aerial treatments for medusahead rye and ground treatments for other noxious weed species throughout the HMA. Present actions include ongoing aerial treatments, ground treatments, and surveys for noxious weeds. Future actions include treatments that are deemed necessary to control the spread of noxious weeds within the HMA. Noxious weeds are treated using the most appropriate methods as analyzed in the district's current Integrated Invasive Plant Management EA (DOI-BLM-OR-B000-2011-0041-EA) or subsequent NEPA.

Effects common to all action alternatives

Areas of high horse concentration lead to heavy grazing and disturbance. Reductions in plant vigor and increased disturbance open up opportunities for noxious weed establishment and spread. By maintaining horse numbers at or below AML, the opportunities for noxious weed spread would be reduced. Limiting vehicle travel to existing roads and ways and timing gather events to avoid times of high spread potential (seed shatter, muddy conditions, etc.), combined with aggressive weed treatment during the year pre-gather and avoiding noxious weed infested areas when selecting trap sites, would limit the potential of noxious weed spread during gathering operations. BLM staff will monitor gather sites and, should weeds become evident, those details will be reported to district weed personnel for treatment and monitoring.

Alternative A - No Action - Defer Gather and Removal

The continued increase in horse numbers above the AML will lead to areas of higher horse concentrations causing more severe impacts to the vegetation due to overgrazing. This opens up more niches for noxious weeds to establish and spread. Areas of horse concentration and consequent heavy use typically are highest in riparian areas, springs, and reservoirs. This will exacerbate the recovery of the riparian areas and lead to increases in Canada thistle and other riparian weeds such as perennial pepperweed and whitetop. Heavier use around already disturbed areas such as water holes and congregation areas will lead to increased disturbance and consequent increases in noxious weed establishment. Heavy use in uplands adjacent to water and other concentration areas during the spring active growth period of native perennial bunchgrasses gives a competitive advantage to medusahead and cheatgrass. During this growth stage, the native perennials are more palatable and usually larger than the annual grasses. As a result, horses eat the perennial bunchgrasses and leave the invasive annual grasses.

The no action alternative will adversely affect the current and future planned treatments within the HMA. Treatments will be less effective, with increased disturbed areas and a decrease in competitive vegetation allowing for the reintroduction of noxious weeds that were previously treated. The desirable grass species are competitive vegetation that the high concentration of horses use as feed and trample. These plants are essential for the success of invasive annual grass treatments.

Alternative B - Proposed Action - Selective Removal Gather to Low AML and Apply Available Temporary Fertility Treatment

By reducing horse populations, vegetation in areas of horse usage within the HMA would be less heavily grazed, allowing the desirable vegetation to be more vigorous and competitive and providing fewer opportunities for new weed infestations. The fertility treatments may lengthen the time before horse numbers return to high AML, which will allow the vegetation a longer period in which to recover.

The timing of helicopter gathers would minimize the opportunities for noxious weed introduction and spread. Trap sites will be highly disturbed and will need to be monitored at least 2 years post gather. Any weeds found need to be treated in a timely manner using the most appropriate methods as analyzed in the district's current Integrated Invasive Plant Management EA (DOI-BLM-OR-B000-2011-0041-EA) or subsequent NEPA.

The proposed action will be beneficial for past, current, and future treatments. Decreasing horse populations to low AML would reduce disturbed areas and increase desirable competitive vegetation, which are essential factors for the

success of weed treatments. The increase in desirable competitive vegetation is key to invasive annual grass treatments that were done in the past, are currently happening, and are planned for the future within the HMA.

Alternative C - Selective Gather and Removal to Low AML <u>without</u> Applying Temporary Fertility Treatment

Impacts will be essentially the same as the proposed action but with a quicker return to high numbers of horses that will more rapidly lead to increased disturbance and the likelihood of additional weed introduction and spread.

Cumulative effects remain the same as the proposed action.

Alternative D - Gate Cut Removal Gather to Low AML

Impacts to weeds will be the same as alternative C.

Cumulative effects remain the same as the proposed action.

Alternative E - Gather, Slow Population Growth by Spaying a Portion of the Current Mare Population, and Remove as Holding Space Becomes Available

The population growth rate under alternative E would be essentially the same as under alternatives C and D. The population following the initial gather would remain far above AML but with a large portion of the herd being non-reproducing. Long-term impacts will be essentially the same as alternative C but with no lull for recovery as the AML is reduced to the low end. No recovery period for high horse concentrations would open up more niches for noxious weeds to establish and spread.

Cumulative effects remain the same as the proposed action.

9. Recreation and Off Highway Vehicles (OHV)

The following issue is addressed in this section.

- *What would be the effects of the alternatives on recreation?*

a. Affected Environment – Recreation and OHV

The primary recreation activities in the Stinkingwater area include hunting (mule deer, elk, and pronghorn antelope), fishing (Warm Springs Reservoir), wildlife viewing, driving for pleasure, dispersed camping, sightseeing, horseback riding, photography, and rockhounding. There are primitive campsites scattered throughout the Stinkingwater HMA. Recreational activities related to hunting typically occur during late summer–fall, from August through November. Warm Springs Reservoir includes two developed recreation sites complete with a vault toilet and boat ramp at each site (north and south boat ramps). The sites are maintained regularly starting in late spring when the road is passable through fall

and winter when the road again becomes impassable due to mud or snow. Most of the concentrated recreation occurs at the Warm Springs Reservoir recreation sites. Some dispersed recreation occurs throughout the entire HMA. The Three Rivers RMP, ROD, and RPS (September 1992) designated ORV areas as open, closed, or limited. The majority of the Stinkingwater HMA was designated as open with an exception of 4,121 acres (which include 1,160 Bureau of Reclamation acres) for Warm Springs Reservoir. In September of 2015, the Oregon GRSG ARMPA was released, which changed the designation to "limited to existing roads, primitive roads and trails" in all areas within PHMA and GHMA, which encompasses the Stinkingwater HMA. Motor vehicle use is allowed on open roads and trails and all-terrain (ATV) and utility terrain vehicles (UTV) are commonly seen traveling the road systems**.**

The Stinkingwater HMA is within ODFW's Malheur River hunt unit. In 2016 there were 1,870 mule deer tags; 1,138 elk tags (for South Malheur River); and 249 antelope tags issued.

b. Environmental Consequences – Recreation and OHV

For the purpose of this analysis, the CEAA for recreation encompasses the Stinkingwater HMA.

Past actions affecting recreation in the Stinkingwater HMA include the installation of vault toilets and boat ramps at Warm Springs Reservoir. The lack of water over the past several years has affected the fisheries in the reservoir and the ability to use the boat ramps. Present actions include maintenance on the Warm Springs and Stinkingwater Access Roads and ongoing hunting tags issued for the Malheur River hunt unit. Water levels read 96 percent full at Warm Springs Reservoir in May of 2017 (https://www.usbr.gov/pn/hydromet/owytea.html). Future actions include the ongoing maintenance of the recreation sites, issuance of hunting tags, and future grazing administration actions.

None of the alternatives would affect OHV designations or the ability to use the road systems.

Alternative A - No Action - Defer Gather and Removal

No changes to recreational uses in the area would occur from this alternative. Recreational users could use the area as they currently do. However, if no wild horse removals occurred in the Stinkingwater HMA and the numbers were allowed to increase at will, this could impact water sources, food, and other resources for wildlife, therefore affecting hunting, wildlife viewing, and photography in the area. More horses would make them more visible to recreation and other casual users of the HMA area.

Alternative B - Proposed Action - Selective Removal Gather to Low AML and Apply Available Temporary Fertility Treatment

Recreationists in the immediate area could temporarily be disturbed while the gather activities were occurring. Depending on the time of year the gather activities occurred, hunters would be affected by low level helicopter flights, increased traffic, and human presence but this would only last as long as the gather activities. By allowing temporary fertility treatment, the population could be managed, reducing the need for frequent trapping (including helicopter drive-trapping) activities in the area.

Alternative C - Selective Gather and Removal to Low AML without Applying Temporary Fertility Treatment

Affects to recreation would be the same as alternative B except the lack of temporary fertility treatment could cause the need for more frequent trapping. This would increase the disturbance to recreationists in the immediate area while the activities were occurring.

Alternative D - Gate Cut Removal Gather to Low AML

Affects to recreation under alternative D would be the same as alternative B.

Alternative E - Gather, Slow Population Growth by Spaying a Portion of the Current Mare Population, and Remove as Holding Space Becomes Available

Affects to recreation under alternative E would be the same as alternative B, temporary disturbance while gather activities were occurring.

10. Social and Economic Values

The following issue is addressed in this section.

- *What would be the costs associated with the various population management actions?*

a. Affected Environment – Social and Economic Values

As stated in an Office of Inspector General report (2010), fiercely competing interests and highly charged differences of opinion currently exist between BLM and private individuals and organizations concerning the need for wild horse gathers, the methods used to gather, and whether horses are treated humanely by BLM and its contractors during and after the gathers. Scoping comments received on this EA and previous NEPA documents proposing wild horse population management activities include a wide range of both support and opposition to various methods of population management.

During the scoping period for this EA, Burns District BLM received five comments, and all were in support of immediate population management

techniques that help maintain wild horses within the AML for Stinkingwater HMA. These commenters express their desire to continue to manage wild horses within AML but have concern about the current wild horse population and consequent adverse impacts on other resources such as GRSG habitat, available forage for all species using the area, riparian conditions, etc. There was also concern for the horses themselves as they also suffer when populations increase to excess, extreme climatic fluctuation tests their survivability, and there is a lack of human intervention on their behalf.

For the purposes of the Social and Economic Values portion of this analysis, it is important to recognize the number of horses the BLM manages across the United States in order to fully understand the effects analysis area of social and economic costs of the decision to be made. The national AML is 26,715 wild horses and burros. Currently there are an estimated 74,000 horses and burros on the range with nearly 50,000 animals in short- and long-term holding facilities. These numbers made it simple for the Office of Inspector General of the U.S. Department of the Interior (2016) to find that, "*BLM does not have a strategic plan in place to manage the wild horse and burro populations. The consistent on-range population growth drives the constant need for additional off-range holding and increased spending. If no plan is in place to control the on-range population source, the off-range holding and financial need will continue in this unsustainable pattern."* In fiscal year (FY) 2016, $49,428,000 (63.1 percent of the WHB Program budget) were allocated to off-range holding costs (BLM, WHB Quick Facts).

The BLM has placed more than 230,000 wild horses and burros into private care since 1971. The BLM placed 2,631 removed animals into private care through adoption in FY 2015—less than half as many as in FY 2005 when 5,701 were adopted (BLM, WHB Quick Facts). The adoption demand is down for many reasons including, but not limited to; the cost of caring for a horse is continuously increasing as hay prices and veterinary care costs increase, the national economy is down, there is no outlet for unwanted horses available in the United States, and the market is flooded with domestic and wild horses.

Despite the dismal national adoption rate, horses from Burns District HMAs remain in demand as demonstrated by recent adoption statistics. Of the horses available for adoption following the 2010 Stinkingwater HMA gather, 76 percent were placed in private care. The 2009 Palomino Buttes gather had a 92 percent placement in private care and 94 percent following the 2014 emergency gather. The horses from the Kiger and Riddle Mountain HMAs have had a near 100 percent adoption rate since 1986, with 100 percent of the horses adopted following the 2011 and 2015 gathers. Following the 2009 South Steens gather, approximately 71 percent were placed in private care. In 2016, horses were removed from the South Steens HMA with 110 offered for adoption online. This adoption received record bidder registrations, high successful bids (top adoption price was $4,265), and 93 horses were adopted (85 percent).

The costs associated with certain activities included in the range of alternatives are described below. Not all activities are included in the list as it is extremely difficult to put a numerical value on such things as vegetative resource damage or decreased recreational opportunities, yet there are certainly social and economic values associated with their improvement, maintenance, or loss. The costs associated with holding, gathering, bait/water/horseback drive trapping, PZP fertility treatment, and spaying (specifically, ovariectomy via colpotomy) are listed below.

- Holding horses at Oregon Wild Horse Corrals Facility costs approximately $5 per day per horse. This includes the costs of hay, BLM staff, and equipment to operate the facility. Currently there are an average of 700 horses being held at the Oregon Corrals. This cost per day per horse calculates to $3,500 per day to run the facility or approximately $108,500 per month.
- Long-term holding costs average about $1.89 per day per horse. Unadopted animals receive an estimated 25 years of care, which adds up to approximately $46,000 per horse for the remainder of their life.
- Helicopter-drive gather operations are currently costing around $600 per horse captured.
- Bait, water, and horseback-drive trap gathers are currently averaging $1,100 per horse captured.
- PZP-22 fertility treatment costs approximately $350 per mare treated. This includes the costs of one dose liquid primer (similar to ZonaStat-H used for remote darting) - approximately $35; one dose time-release pellets - approximately $250; plus holding and application costs - approximately $5 per day per horse.
- Ovariectomy via colpotomy costs approximately $250–$300 per mare. The cost includes the costs of the antibiotic ($30 per dose), the sedation drugs, and the veterinarian's labor and travel.

b. Environmental Consequences – Social and Economic Values

Effects Common to All Alternatives

Given the complexity of issues surrounding free-roaming horses and burros, it is not surprising that Nimmo and Miller (2007) refer to them as having a pluralistic status: their bodies and behavior are sites of conflict (NAS 2013). As noted by studies in Australia, where the highest population of feral horses exists, control methods for feral horses vary in their social acceptability (Ballard 2005), which must be weighed against logistic and economic constraints (Nimmo and Miller 2007). Some methods, while economically and ecologically viable, may be politically tenuous and vice versa (Nimmo and Miller 2007). The BLM has the challenging task of choosing wild horse population control methods that are ecologically and financially viable.

For a segment of the public, neither capturing and removing horses nor letting horses perish on the range as a result of limited resources is acceptable (Collins and Kasbohm 2016). Removing and holding horses has become a major expense to the American taxpayers as described above in the discussion on holding costs. Methods to control population growth (e.g., fertility control or contraception) may reduce the need for intensive and controversial removals while ensuring that free-roaming horse populations do not become self-limited (NAS 2013, Collins and Kasbohm 2016). Controlling population growth would also provide significant cost savings to the American taxpayer (Bartholow 2007, De Seve and Griffin 2013, Collins and Kasbohm 2016) by affecting the ability to attain free-roaming horse management goals (NAS 2013).

For the purposes of this analysis, the CEAA for social and economic values is the extent of Harney County. Past actions such as wild horse gathers to maintain AML have influenced the existing environment within the CEAA. Present and foreseeable future actions associated with range improvement projects, invasive annual grass, and juniper treatments have the potential to improve rangeland health, protect and improve sage-grouse habitat, and increase forage production for wildlife, wild horses, and livestock, thereby, maintaining or possibly increasing economic opportunities and fostering more desirable recreation opportunities (e.g., hiking, hunting, wild horse viewing, and photography) with associated economic benefits to the local economy. Allotment management plans have been developed to provide periodic growing season rest for key forage species and design range improvements that improve livestock distribution, all in order to improve range conditions for sustainable operations. In addition to sustaining livestock operations, rangeland improvement would also bring about increased sustainability for wild horse management, further improving the local economy and supporting a well-established, local, rural-oriented social fabric.

Alternative A - No Action - Defer Gather and Removal

Under the no action alternative there would be no initial monetary cost as no gather would be conducted and no fertility treatments would be applied to slow wild horse population growth. All the costs associated with capture, processing, adoption, and possible long-term holding would be avoided during the 10-year timeframe of this alternative.

Wild horse numbers over the next 4–5 years, the normal gather cycle, would be up to approximately 550 horses (almost 6 times over high AML) given a 20 percent annual population growth, over double the estimated population currently in the HMA. Competition for forage between wild horses, livestock, and wildlife would become even more evident in the existing congregation areas and expand into other areas of the HMA. It is anticipated that in 5 years portions of the range would be deteriorated enough to create a situation where livestock active preference would be reduced accordingly to prevent further degradation to range conditions under authority of CFR 43 Ch. II, Subpart 4110.3, Changes in grazing

preference (2005). Livestock permittees would have to find feed elsewhere, probably at the private land lease rate, which is significantly higher than the BLM lease rate, or sell their cattle. The BLM's rate per AUM in 2017 is $1.87 while the private land lease rate is around $15.00 per AUM, or more, in Oregon. The existing grazing permits may become ineffective toward the sustainability of the livestock operations associated with this HMA if livestock are not turned out because the AUMs allocated to livestock are being utilized by wild horses. The permits associated with the allotments in this HMA are held by small, family businesses. The no action alternative would have the potential of putting at least seven families out of business. A livestock operation in Harney County that is not sustainable economically would further burden the struggling economy of Harney County.

The cost of the no action alternative would eventually become higher than any of the costs associated with alternatives B and E that propose to use fertility control methods to slow the population growth rate. Should a gather take place after the 10-year timeframe of this plan, there would be a higher initial cost to BLM to capture and remove horses as there would need to be more horses removed from the HMA and an expected higher number of wild horses sent to long-term holding facilities. In addition, the cost associated with rehabilitation of rangeland resources could total millions of dollars in noxious weed treatments, seeding treatments, and riparian rehabilitation efforts if the population of wild horses in Stinkingwater HMA continues to grow unchecked. Past research has elaborated that free-roaming horses can exert notable direct influences in sagebrush communities on structure and composition of vegetation and soils, as well as indirect influences on numerous animal groups whose abundance collectively may indicate the ecological integrity of such communities (Beever and Aldridge 2011). In a study to better understand feral horse effects on semi-arid rangeland ecosystems, Davies and others (2014) conclude that feral horse effects likely vary by intensity and frequency of use and that feral horses have some ecological impacts on semi-arid rangelands. Despite their conclusions that wild equids could cause ecosystem alterations that may increase the vulnerability of other species, Beever and Aldridge (2011) recognize free-roaming horses are undeniably charismatic and enigmatic, and have been used to symbolize power, freedom, wildness, and toughness. The BLM's mission is to sustain the health, diversity, and productivity of America's public lands for the use and enjoyment of present and future generations. Therefore, the benefits of wild horses to provide for various publics within society must be weighed against actual and potential ecological costs (Beever and Aldridge 2011).

Alternative B - Proposed Action - Selective Removal Gather to Low AML and Apply Available Temporary Fertility Treatment

Comments received from the public for BLM gathers over the past several years have emphasized the desire for BLM to increase the use of fertility control in order to reduce the number of wild horses to be removed from the range or

maintained in long-term holding. This alternative, the proposed action, includes the use of available fertility control vaccines, likely PZP-22, in those mares that would be released back to the HMA following a gather to low AML. This management technique is intended to slow population growth and extend the gather cycle beyond the typical 4–5 years.

The following is a message from the former BLM Director, Bob Abbey: *"The BLM finds itself in the predicament of needing to gather overpopulated herds from the Western range each year while its holding costs keep rising –with no end in sight. Recognizing this unsustainable situation, the Government Accountability Office, in a report issued in October 2008, found the Bureau to be at a 'critical crossroads' because of spiraling off-the-range holding costs and its limited management options concerning unadopted horses. In response, [former] Secretary of the Interior Ken Salazar and I announced on October 7, 2009, a new and sustainable way forward for managing our nation's wild horses and burros. … We recommended* ***applying new strategies aimed at balancing wild horse and burro population growth rates with public adoption demand to control holding costs*** *[emphasis in original]. This effort would involve slowing population growth rates of wild horses on Western public rangelands through the aggressive use of fertility control, the active management of sex ratios on the range, and perhaps even the introduction of non-reproducing herds in some of the BLM's existing Herd Management Areas in 10 Western states."*

The Humane Society of the United States (HSUS) "strongly supports efforts to increase the use of fertility control [vaccine, particularly PZP] and improve gather efficiency as we believe these are the most critical improvements that the agency can make to its current on-the-range management program. High gather efficiency is essential in order to conduct successful fertility control programs, and thus, reduce population growth rates, the need and frequency of removals, and ultimately, long-term reductions in off-the-range management costs… We recommend that BLM increase the number of mares treated with fertility [vaccine] control and consider other population growth suppression methods…" (2011).

"Immunocontraception has been deemed the most humane and socially acceptable method of population control, and studies have proliferated in recent years to fine-tune this technique for management (e.g., Turner et al. 1997, Powell and Monfort 2001)" (Beever 2003). The BLM has been applying PZP-22 in free-ranging horses since the late 2000s, following guidelines set forth in IM 2009-090 – Population-Level Fertility Control Field Trials: Herd Management Area Selection, Vaccine Application, Monitoring and Reporting Requirements. In Oregon, application of PZP-22 has shown that there has been little to no reduction in population growth or extension of the gather cycle. Recent studies have shown that current formulations of PZP-22 lead to only 1 year of contraception, not 2 (Turner 2014, Progress Report to BLM). Duration of fertility inhibition has major practical importance, and therefore longer-acting methods are preferable to

minimize requirements for personnel and financial resources and to decrease the frequency of animal handling (NAS 2013).

Costs associated with the proposed gather and implementation of fertility control vaccine PZP would be incurred under the proposed action. If approximately 270 to 301 horses were captured (90 to 100 percent of the estimated herd) during the initial gather and up to 18 return mares were treated with PZP-22, the costs associated with management actions in the first year of the proposed action would be approximately $162,000 to $180,600 and $6,300, respectively. To reestablish the on-the-range herd at the low end of AML (40 horses), approximately 9 to 40 of the captured horses would be returned to the HMA. Two hundred and sixty-one excess horses would be permanently removed from the HMA and held at the Oregon Wild Horse Corrals Facility and made available for adoption. There would also be costs associated with both short- and long-term holding facilities incurred once the gather is complete but the percentages that would be adopted or sent to long-term holding are unknown at this time. The magnitude of these costs is uncertain as are any long-term costs of maintaining wild horses either within AML on the range or in holding facilities.

The proposed action encompasses a 10-year timeframe that would include 1 to 2 additional gathers following the initial gather that would return horse numbers down to low AML. The possible 1 to 2 gathers are based upon the normal 20 percent reproductive rate observed across most HMAs and when populations would normally reach high AML. However, the cost and frequency of gathers would decrease if PZP formulation became longer lasting.

Under the proposed action, wild horses would be gathered to the low end of AML. Over time, the vegetation and hydrologic resources in the area would be allowed to recover due to the reduction in utilization and forage competition by livestock and wildlife. Livestock permittees would be able to continue grazing their livestock at permitted levels in these areas, further securing the possibility of economic benefits (e.g. income) for those permittees. This would contribute to the local economies through taxes, the purchase of supplies, and other contributions to the local communities.

Habitat quality for wildlife, livestock, and wild horses would be maintained or improved with management of wild horse populations within AML. When horse numbers are kept within AML, BLM is able to maintain healthy herds even during periods of extreme climatic fluctuation (e.g. drought or winters with heavy snow pack). This means horses would have enough forage to maintain a healthy body condition throughout the year. Horses in good health are what range users and the public want to see, no matter if they are opposed to or proponents to gathers.

Maintaining wild horse populations within AML and contributing to a thriving natural ecological balance for the 10-year period of this proposed action would allow the benefits of rangeland improvements and livestock rotations associated with the AMPs of those allotments within the Stinkingwater HMA to be more readily recognized and achieved.

Alternative C - Selective Gather and Removal to Low AML without Applying Temporary Fertility Treatment

The BLM, organizations such as the HSUS, and sectors of the public support some sort of fertility treatment applied for the management of wild horse population growth within AML and possibly to decrease the frequency of wild horse gathers. Under this alternative with no application of fertility control, the status quo of 20 percent, or more, annual population growth would continue. This alternative would ensure in the 10-year timeframe of this analysis 3 more gathers would be required, as nothing beyond gathering wild horses would be done to slow the population growth.

Under this alternative, the public perception of BLM's management of wild horses would likely decline if no efforts are made to address the current issues associated with growing wild horse populations.

The effects on habitat conditions, overall animal and herd health, and the permittees and economy associated with livestock grazing permits would be similar under this alternative to those described in alternative B.

Alternative D - Gate Cut Removal Gather to Low AML

Under alternative D, there would be a small cost savings to the BLM during the initial gather as there would be fewer horses captured, only 261 vs. 270 to 301 under the proposed action, and no cost associated with fertility control vaccine. However, the every-4-year gather cycle would continue with a 20 percent, or more, annual population growth rate under the absence of fertility control treatments. A gate cut removal would be expected every 4 years at the same or increased cost as the initial gather.

Under this alternative, BLM would not take any steps toward slowing population growth to lengthen the gather cycle and reduce the amount of horses captured and sent to long-term holding facilities. In addition, BLM would not be managing for the unique characteristics the public has grown to expect from the Stinkingwater horses. This herd has become more popular with photographers over the past 10 years. Their photographs on display and for sale in local businesses have helped to make the characteristics of the large, roan Stinkingwater horses more distinguishable from other herds. It is unknown what the economic loss would be if the herd were not managed for their distinct type.

Under this alternative, the public perception of BLM's management of wild horses would likely decline if no efforts are made to address the current issues associated with growing wild horse populations.

The effects on habitat conditions, overall animal and herd health, and the permittees and economy associated with livestock grazing permits would be similar under this alternative to those described in alternative B.

Alternative E - Gather, Slow Population Growth by Spaying a Portion of the Current Mare Population, and Remove as Holding Space Becomes Available

Duration of fertility inhibition has major practical importance and therefore longer-acting methods are preferable to minimize requirements for personnel and financial resources and to decrease the frequency of animal handling (NAS 2013). The lack of available fertility control vaccines with effectiveness longer than 1 year, along with a dwindling adoption demand, has led to a seemingly endless cycle of allowing horse populations to grow at a rapid rate, gathering excess horses, and sending removed horses to off-range holding facilities. Long-term holding of horses creates exorbitant costs to the American taxpayer, $49,428,000 in FY 2016 (BLM, WHB Quick Facts, accessed March 8, 2017). The inability to remove excess horses from the range due to the lack of available holding space has led to a snowball effect of consequences to rangeland resources.

A portion of the public believes it is socially and financially irresponsible for the BLM to fail to pursue new methods of population growth suppression with some of the current populations of wild horses causing a decline in rangeland conditions and self-limitation, causing conflict with other land uses, and creating the exponential costs to tax payers of maintaining horses in holding facilities. These concerns are evidenced by public comment observed during National Wild Horse and Burro Advisory Board meetings, during scoping for population control projects, and in various types of media. The Horse Act (§1333(b)(1)) allows the opportunity to pursue multiple options, including sterilization, to achieve AML. The Horse Act advises the Secretary to consult with the USFWS, wildlife agencies of the State or States wherein wild free-roaming horses and burros are located, and such individuals independent of Federal and State government as have been recommended by the National Academy of Sciences (§1333(b)(1)). This proposed action has followed the guidance of the Horse Act.

Without consideration for the actual potential for a major complication rate associated with ovariectomy via colpotomy, the NAS (2013) did not recommend ovariectomy for field application due to the possibility of prolonged bleeding or peritoneal infection. However, in reviewing a proposal by Oregon State University (OSU) titled Functional assessment of ovariectomy (spaying) via colpotomy of wild mares as an acceptable method of contraception and wild horse population control, a separate National Research Committee (2015) of the National Academies believed that this procedure could be operationalized

immediately to sterilize free-ranging mares, but there could be less invasive techniques developed in the future. In September of 2015, the BLM solicited the USGS to convene a panel of veterinary experts to assess the relative merits and drawbacks of several surgical ovariectomy techniques that are commonly used on domestic horses for application in wild horses (Bowen 2015). Of the techniques reviewed, ovariectomy via colpotomy appears to be relatively safe when practiced by an experienced surgeon and is associated with the shortest duration of potential complications after the operations. In marked contrast to a suggestion by the NAS (2013), this panel of experts identified evisceration as not being a risk associated with ovariectomy via colpotomy. In August 2016, Collins and Kasbohm of the U.S. Fish and Wildlife Service, Sheldon-Hart National Wildlife Refuge Complex, published their research using the same ovariectomy via colpotomy technique as described in this alternative on 114 feral mares that they treated and released.

Main concerns related to ovariectomy via colpotomy are the major complication rate associated with the procedure if conducted on wild horse mares and the effects on the mare once released back on the range with untreated horses. The Sheldon study (Collins and Kasbohm 2016) addressed both of these concerns. First, the losses attributed to treatment complications were 2 percent. Adjustments were made to the procedure to remove any mare from being treated if her internal structure appeared or felt abnormal and to provide each mare with Banamine as an anti-inflammatory that would help reduce signs of colic post-surgery. The Sheldon study also showed that all treated individuals appeared to maintain group associations, and there were no groups consisting only of treated females. In addition, it was found that the fertility control treatments applied did not affect the survival of horses post-release (Collins and Kasbohm 2016).

Gather costs of alternative E would be similar to the other action alternatives with costs varying slightly due to the need for less transportation; stallions would not need to be transported to the Oregon Wild Horse Corrals Facility. All stallions could be returned from the temporary holding facility, selections for the reproducing mares could also occur at the temporary holding facility, and all the remaining mares would be transported to the Oregon Wild Horse Corals Facility in Hines, Oregon to receive an ovariectomy, recover, and then be returned to the range.

If this initial gather occurred in Fall 2017 it would cost approximately $162,000 to $180,000 to capture approximately 90 to 100 percent of the population (270 to 301 horses), similar to alternatives B and C. Of the captured horses, around 50 percent would be mares. Twenty of these mares would be selected as the reproducing herd and the remaining mares, less foals and any mares adopted, would receive an ovariectomy via colpotomy. Since it is unknown at this time how many mares may be adopted, it is estimated that the total costs for ovariectomizing approximately 100 mares would be approximately $30,000. These mares would never need handling again for any type of fertility control treatments, a costs savings to the American taxpayer as compared to repeat

fertility vaccine applications and additional offspring being gathered and placed in holding facilities. Some would consider permanent sterilization more humane than short-duration fertility control vaccinations insofar as the mare would only require capture one time as compared to multiple captures or human interactions for fertility control inoculation. The BLM acknowledges that sterilized mares would likely be captured again if running in a band, but they would not receive the additional handling associated with application of fertility control and identification. Under this alternative the wildlife and livestock permittees within the Stinkingwater HMA would see little initial change in forage and/or water competition. Following an initial gather without removals there would continue to be approximately 301 horses in the HMA but with the potential of 20 new foals in 2018 vs. 60+ under the no action alternative. Removals would still need to occur, eventually, under this alternative to be in conformance with BLM's multiple-use mandate.

11. Soils and Biological Crusts

The following issue is addressed in this section.

- *What would be the effects of the alternatives on soils?*

Current discussion and analysis of potential effects to soils are tiered to the 1991 Three Rivers Proposed Resource Management Plan (PRMP)/Final Environmental Impact Statement (FEIS) and relevant information contained in the following sections is incorporated by reference: Three Rivers - Chapter 2, p. 2-15 and Chapter 3, p. 3-3.

a. Affected Environment – Soils and Biological Crusts

Soils within the Stinkingwater HMA are composed mainly of the Merlin-Observation-Lambring and Gumble-Risley-Mahoon soil associations (greater than 75 percent combined). Additionally, trace amounts of the Fury-Skunkfarm-Housefield and Spangenburg-Enko-Catlow associations are also present.

The Merlin-Observation-Lambring soil association consists of shallow to very deep soils with textures varying from very cobbly loam to extremely stony clay loams. They can be found on lava plateaus and hills, mountains, and mountain back slopes with slopes of 0 to 70 percent and are the result of volcanic colluvium and residuum. These soil associations are well drained with very slow to moderate permeability that can lead to slight to moderate erosion due to water and slight erosion due to wind. The native vegetation associated with this soil association consists of low sagebrush (*Artemisia arbuscula*), big sagebrush (*Artemisia tridentata ssp.*), antelope bitterbrush (*Purshia tridentate*), buckwheat (*Eriogonum ssp.*), bluebunch wheatgrass (*Pseudoroegneria spicatum*), Idaho fescue (*Festuca idahoensis*), and Sandberg bluegrass (*Poa sandbergii*). In areas where rock outcrop and extremely stony surfaces are present, curl leaf mountain mahogany is the dominant plant.

The Gumble-Risley-Mahoon soil association consists of shallow to moderately deep, well-drained soils that range from very gravely and cobbly loams to very gravelly sandy loams. They are formed as a result of residuum and colluvium from tuffaceous siltstone and sedimentary rocks as well as from andesite, shale, sandstone, and diatomaceous earth and are found on rock pediments, hills, and tablelands. Slopes range from 2 to 50 percent. These soils have slow permeability with moderately low saturated hydraulic conductivity leading to moderate to very high surface runoff making them highly susceptible to water erosion. Native vegetation associated with this soil series includes Wyoming big sagebrush (*Artemisia tridentate ssp. Wyomingensis*), bluebunch wheatgrass (*Pseudoroegneria spicatum*), Thurber's needlegrass (*Achnatherum thurberiana*), Sandberg's bluegrass (*Poa sandbergii*), squirreltail (*Elymus elymoides*), and basin wild rye (*Leymus cinereus*).

The Fury-Skunkfarm-Housefield soil association consists of very deep, somewhat poorly to very poorly drained soils that are formed in alluvium. They consist of fine silty to fine loamy soils and are found in lake basins, floodplains, floodplain steps, depressions on stream terraces, and along drainage ways. Slopes are generally 0 to 4 percent. Ponding in this soil series is frequent with occasional flooding. Native vegetation associated with Fury-Skunkfarm-Housefield soils includes hardstem bulrush (*Schoenoplectus acutus)*, sedges (*Carex ssp*), tufted hairgrass (*Deschampsia cespitosa)*, rushes (*Juncus ssp*), quackgrass (*Elymus repens)*, Sandberg bluegrass (*Poa secunda*), saltgrass (*Distichlis spicata)*, yarrow (*Achillea ssp)*, lupine (*Lupinus ssp)*, three-tip sagebrush (*Artemisia tripartite*), silver sagebrush (*Artemisia cana*), shrubby cinquefoil (*Dasiphora ssp)*, willow (*Salix ssp*), wildrye (*Leymus cinereus)*, creeping wildrye (*Leymus triticoides),* and wild rose (*Rosa woodsii*).

The Spangenburg-Enko-Catlow soil association consists of very deep, well-drained and moderately well-drained soils that formed in lacustrine sediments and deposits and alluvium derived from volcanic rocks and is generally found on lake terraces and alluvial fans and swales. Textures range from silty clay loam to very stony loams and can be found on slopes of 0 to 30 percent at elevations of 4,200 to 5,500 feet. There is a high potential for wind erosion. Dominant vegetation for this soil series includes Basin big sagebrush (Artemisia tridentata tridentata), Wyoming big sagebrush (Artemisia tridentata wyomingensis), beardless wildrye (*Leymus triticoides)*, bluebunch wheatgrass (*Pseudoroegneria spicata)*, Thurber needlegrass (*Achnatherum thurberianum)*, basin wildrye (*Leymus cinereus)*, Indian ricegrass (*Achnatherum hymenoides),* and needle-and-thread (*Hesperostipa comate).*

Identification of biological soil crusts (BSC) at the species level is often not practical for fieldwork. The use of some basic morphological groups simplifies the situation. Morphological groups are also useful because they are representative of the ecological function of the organisms (BLM Technical Reference (TR) 1730-2, p. 6). Using a classification scheme proposed in 1994 we can divide microbiota such as BSCs into three groups based on their physical location in relation to the soil: hypermorphic (above ground), perimorphic (at ground), and cryptomorphic (below ground).

The morphological groups are:

1. Cyanobacteria - Perimorphic/cryptomorphic
2. Algae - Perimorphic/cryptomorphic
3. Micro-fungi - Cryptomorphic/perimorphic
4. Short moss (under 10mm) - Hypermorphic
5. Tall moss (over 10mm) - Hypermorphic
6. Liverwort - Hypermorphic
7. Crustose lichen - Perimorphic
8. Gelatinous lichen - Perimorphic
9. Squamulose lichen - Perimorphic
10. Foliose lichen - Perimorphic
11. Fruticose lichen - Perimorphic

Morphological groups 4, 5, 7, 8, and 9 will likely be the dominant groups represented in the project area. Depending on precipitation amounts and microsites, groups 6, 10, and 11 may also be well represented where the site-specific conditions required for their growth exist. Morphological groups 1, 2, and 3 are difficult to discern in the field, as they require specialized tools that are not easily useable in the field. Soil surface microtopography and aggregate stability are important contributions from BSCs, as they increase the residence time of moisture and reduce erosional processes. The influence of BSCs on infiltration rates and hydraulic conductivity varies greatly; generally speaking, infiltration rates increase in pinnacled crusts and decrease in flat crust microtopography. The northern Great Basin has a rolling BSC microtopography, and the infiltration rates are probably intermediate compared to flat or pinnacled crustal systems. Factors influencing distribution of BSCs (TR-1730-2) include, but are not limited to, elevation, soils and topography, percent rock cover, timing of precipitation, and disturbance.

Possible disturbances that have occurred within the HMA include, but are not limited to, effects from livestock grazing, vehicles, wild horse use, and human footprints. The specific contribution of these activities to current BSC condition and cover is not discernable from other historic disturbances.

b. Environmental Consequences – Soils and Biological Crusts

Alternative A - No Action - Defer Gather and Removal

Under the no action alternative, gathers and removals would be deferred until horses reach critical mass or an emergency dictates their removal. The earliest that planned removals would occur would be in 10 years, which could have negative impacts on soils and BSCs. Like livestock, horses tend to congregate in areas where resources, such as watering sites, are plentiful resulting in compacted soils and the permanent removal of complex BSCs. As horse numbers increase, these areas will become larger, compacting more soil and removing more BSCs.

As an example, a 5-acre area of compaction would double in size in 4–5 years to 10 acres based on the reproduction rate of the horses. In another 4–5 years, that acreage would be 20 acres. If left unmanaged by regular gathering to the lowest AML, this number would continue to grow. Once soils have been compacted, they would require active rehabilitation to return them to pre-existing conditions. By not gathering on a regular basis, there would be more rehabilitation required within the HMA. Additionally, BSCs would permanently remain in the early successional stages, cyanobacteria, with continued compaction as per the BLM TR 1730-2, page 21. Additionally, horses outside the HMA would not be gathered, and there would be similar impacts to soils and BSCs outside the HMA, including area where BLM-designated special status plants could be located.

Past, present, and reasonably foreseeable future actions include, but are not limited to: wildfire, livestock grazing, hunting, recreational use, off and on-road vehicle use, and increases in horse numbers. As horse numbers grow, resulting in soil compaction and the loss of BSCs, the possibility of the establishment and increase in noxious and invasive weeds and annual grass could occur. Cumulative effects would be the reduction of intact rangeland, loss of wildlife and plant biodiversity, erosion, and an increase in time and funds spent to rehabilitate the affected areas. In addition to the loss of soils and BSCs, the increase in noxious and invasive weeds and annual grasses could increase the fire return interval in the area requiring emergency removal, loss of wildlife and habitat, and loss of recreational usage due to potential closures after a fire.

Alternative B - Proposed Action - Selective Removal Gather to Low AML and Apply Available Temporary Fertility Treatment

Gathering, whether selective or not, to the low AML and the application of fertility treatments would prevent future impacts to soils and BSCs. Current soil compaction and early successional states of BSCs would remain in high use areas, such as watering sites; however, the areas would not increase in disturbance size and large scale (outside the current disturbance footprint) active rehabilitation would be avoided by not allowing these areas to increase exponentially as a result of not gathering.

Past, present, and reasonably foreseeable future actions include, but are not limited to, wildfire, livestock grazing, hunting, recreational use, off- and on-road vehicle use, and increases in horse numbers. Cumulative effects of keeping horses within the authorized AML and gathering on a regular basis would prevent additional loss of soils and BSCs by maintaining an acceptable level of disturbance instead of continually adding acres of compacted soils resulting in additional acres of lost BSCs. Additionally, current uses would be able to continue into the future without additional impacts stemming from wild horse use.

Alternative C - Selective Gather and Removal to Low AML without Applying Temporary Fertility Treatment

Impacts to soils and BSCs would be similar to Alternative B - Proposed Action.

Alternative D - Gate Cut Removal Gather to Low AML

Impacts to soils and BSCs would be similar to Alternative B - Proposed Action.

Alternative E - Gather, Slow Population Growth by Spaying a Portion of the Current Mare Population, and Remove as Holding Space Becomes Available

Impacts to soils and BSCs would be similar to Alternative B - Proposed Action, once funding and holding space are available and a gather to the low end of AML occurs.

12. Upland Vegetation

The following issue is addressed in this section.

- *What would be the effects of the alternatives on upland vegetation health?*

a. Affected Environment – Upland Vegetation

The dominant vegetation communities throughout the HMA are mountain big sagebrush (*Artemisia tridentata* ssp. *vaseyana*) and low sagebrush (*Artemisia arbuscula*) or stiff sage (*Artemisia rigida*) with Idaho fescue (*Festuca idahoensis*) and bluebunch wheatgrass (*Pseudoroegneria spicata)*. Additional communities include Wyoming big sagebrush (*Artemisia tridentata* spp. *wyomingensis*), bluebunch wheatgrass (*Pseudoroegneria spicata)*, Thurber's needlegrass (*Achnatherum thurberianum)*, Sandberg bluegrass (*Poa secunda*), and onespike danthonia (*Danthonia unispicata*). Crested wheatgrass (*Agropyron cristatum*) was seeded to increase available forage in several pastures during the 1970s and for wildfire rehabilitation purposes across portions of the east and northeast sides of the HMA. The higher elevation portions of the HMA are, generally, in the best condition within the HMA. However, western juniper (*Juniperus occidentalis*) expansion is quite evident across much of the higher elevations. Annual grasses, cheatgrass (*Bromus tectorum*), and especially medusahead (*Taeniatherum caput-medusae*) are rapidly spreading across the lower elevations of the HMA and becoming dominant understory species in several areas. The HMA is beginning to show evidence in certain livestock and wild horse congregation areas of degraded desirable key forage species, where plant vigor is reduced and plant occurrence is declining. These areas include the Clear Creek Seeding Pasture and congregation areas in the higher elevation areas of the Stinkingwater Pass Pasture.

Carrying capacity estimations have been calculated for pastures within the HMA based on local data collection (livestock actual use and utilization levels) and ecological site descriptions that provide ranges for estimated forage production. Refer to appendix I for the estimated calculations per pasture as compared to

average actual livestock use and wild horse allocations per allotment from the Three Rivers RMP/ROD (1992). These calculations are estimates. It should also be kept in mind that not every acre of a pasture is accessible and available for use by wild horses, livestock, or wildlife due to topography and distance from water sources.

Over half of the area of the present juniper forest in eastern Oregon became established between 1850 and 1900 (Gedney et al. 1999). Once established, juniper forests increased in density, with the greatest increase occurring between 1879 and 1918 (Gedney et al. 1999). This rapid increase in juniper stand establishment occurred during a period of favorable climatic conditions and reduced fire frequency and intensity (Gedney et al. 1999). Larger trees are sometimes killed by fire, but many survive; survival is often dependent on fire intensity. The crowns of larger juniper trees often limit grass and other vegetative growth beneath them, thereby, reducing the fuel necessary to carry fire into the tree, fireproofing the crown and stem (Agee 1993).

Up to 10 percent of juniper stands are comprised of older trees (over 130 years) inhabiting rocky ridges or shallow soil areas where fires are not expected to burn. Tree age may exceed 1,000 years in these stands, and at these sites, the rocky surface controls soil infiltration and maintains soil surface stability. In the absence of pre-settlement fire return intervals, western juniper has functioned as an invasive species over the Stinkingwater HMA, generally increasing in frequency to the greatest degree on north slopes and at higher elevations (Johnson and Miller 2006), encroaching into more productive mountain big sagebrush and low sagebrush plant communities. Expansion juniper intercepts precipitation and utilizes soil moisture, well beyond its own crown area, that would otherwise be available to competing native vegetation (Bates et al. 2000). Juniper has assumed control of ecological site processes (soil hydrologic cycle and nutrient transfer through the soil profile) within the HMA. Loss of shrubs, grasses, and forbs has occurred in some areas, and could lead to loss of soil surface stability over the next few decades.

The east and northeast sides of the HMA have received at least seven large-scale wildfires since 1995, several of which have burned the same areas but in different years. Each fire resulted in expansion of medusahead rye and cheatgrass, which are common to dominant across lower elevations of the HMA. Each successive fire increases their ecological impact by providing an abundance of nutrients that medusahead rye and cheatgrass are able to utilize as they germinate in the fall following the fire or earlier the next spring than most native species. Native perennial bunchgrasses cannot recover from repeated fires indefinitely. As a result, repeated burning helps medusahead rye and cheatgrass outcompete native vegetation. Most types of disturbance tend to aid in the expansion of these two invasive annual grasses. Livestock and wild horse congregation areas tend to create niches for medusahead rye and cheatgrass to take hold and expand.

Since congregation areas are not well distributed, visual effects to vegetation from grazing and wild horse use are more obvious in these areas and not easily observed in other portions of the HMA. Bunchgrass vigor is declining, or expected to decline, in locally heavily grazed areas due to utilization in excess of 50 percent over successive years. Annual utilization in these areas during the growing season is being observed and has caused, and is expected to expand, a decline in vigor. Conversely, bunchgrass vigor may also decline in lightly grazed or non-grazed areas, due to plant decadence (growth may be limited by accumulation of old and dead tissue) (Oesterheld and McNaughton 1991), especially where no fire or other event has occurred which would remove accumulations of dead material. Both conditions have been observed in the HMA.

Vigor of bunchgrass plants may be maintained, or even improved, by some disturbance that removes buildup of previous years' growth, either infrequently through large, sudden events such as wildfire (which may kill the plant), or more frequently with less intensity, as with grazing. The effect of defoliation to bunchgrasses, before and after prescribed fire or wildfire, can be directly observed within the HMA. The effect on plant vigor from grazing is more subtle, and involves interplay between a plant's ability to reestablish photosynthetic activity and its ability to retain a competitive position in the plant community (Oesterheld and McNaughton 1991).

Long-term upland trend plots have been revisited approximately every 5 years across the HMA with the most recent for Texaco Basin Allotment in 2008 and 2013, for Mountain Allotment in 2010 and 2015, and for Stinkingwater Allotment in 2006 and 2011. Although assessments have found portions of the HMA are achieving upland rangeland health standards, local areas of declining bunchgrass health have been observed, generally in areas affected by juniper encroachment, around the limited reliable water sources, and within some of the wild horse congregation areas. This suggests without juniper control and maintenance of AML, the allotment is at risk for not meeting standards in the future, despite management of grazing animals. “Unmanaged or poorly managed non-native grazers, including horses, can have substantial impacts on ecosystem integrity, influencing a wide array of native flora (Smith 1986, Levin et al. 2002, Zalba and Cozzani 2004, Beever et al. 2008, Davies et al. 2014), fauna (Beever 2003, Beever and Brussard 2004, Beever and Herrick 2006, Hall et al. 2016, Gooch et al. 2017), and ecosystem processes (Beever and Brussard 2000, Zeigenfuss et al. 2014).” (Collins and Kasbohm 2016).

The Burns Districtwide Fuel Breaks and Green Strip EA would include the vegetation along 31 miles of maintained natural surface roads within the Stinkingwater HMA. Over the next 10 years, these are the areas in the HMA most likely to have fuel breaks implemented, unless there is a fire. If part of this area burns, green strips or fuel breaks are likely to be constructed along roads in the burned area. Approximately 1 mile of the Stinkingwater Access Road in

PHMA has juniper encroachment where a fuel break would be appropriate (36 acres). Approximately 0.5 mile of the Stinkingwater Access Road in GHMA also has juniper encroachment where a fuel break would be appropriate (18 acres). Fuel breaks in juniper encroachment would be 300 feet wide plus the road width. The juniper would be cut, piled, and burned. The rest of these roads are bordered by shrub or grass communities. The 9 miles of the Warm Springs Road and about 4 miles of the Warm Springs Access Road that have burned since 2007 have imazapic sprayed fuel breaks (for control of invasive annual grasses) that are about 40 feet on each side of these roads (126 acres). These fuel breaks were established in 2012, and it is likely they will be resprayed during the 10-year span of the proposed action. This equals 54 acres of new fuel breaks in juniper encroachment areas and 126 acres of retreatment, probably with a helicopter, in areas with medusahead and cheatgrass. The acres listed above are the maximum areas that could be treated during the next 10 years. It is likely that the sprayed fuel breaks will be retreated during this timeframe.

For the purposes of this analysis, the CEAA for vegetation is at the HMA scale. Past activities that had the potential to affect vegetation within the HMA include the construction of range improvement projects, livestock grazing, wild horse use, wildfire, juniper treatments (including cutting and piling), prescribed burning, ESR projects, noxious weed treatments, recreation, and hunting.

b. Environmental Consequences – Upland Vegetation

Alternative A - No Action - Defer Gather and Removal

Under the no action alternative, no removals of wild horses would occur over the next 10 years. The increased number of horses on the range would increase the amount of utilization and decrease the amount of available forage. By fall 2017, the estimated wild horse population would be 251 adults plus 50 foals. Use by wild horses would exceed the forage allocated to their use (960 AUMs at high AML) by approximately 2,122 AUMS. Upland forage utilization monitoring documents moderate utilization levels in portions of the HMA experiencing concentrated wild horse use, prior to livestock entering the pasture. Consistent heavy utilization in wild horse use areas could lead to rangeland health standards not being achieved in the future. Plant communities consisting of tall tussock perennial grasses are critical in preventing medusahead invasion, and increasing tall tussock perennial grass density would reduce the susceptibility of a site to medusahead invasion (Davies 2008). No action to maintain the wild horse population within AML would be expected to reduce the vigor and resiliency of perennial grasses in the HMA as utilization levels increase, therefore increasing the potential for annual grass invasion. Invasive annual grasses can lead to the invasive annual grass fire cycle successional state. This completely transforms the characteristics of the plant community and reduces or eliminates most desirable values. Annual grass communities lack the plant community structure, root occupancy of the soil profile, and ability to provide the amount and distribution of plant litter that native communities provide. Annual grass

communities, as compared to the potential and capability of native perennial communities, lack the ability to protect the soil surface from raindrop impact; to provide detention of overland flow; to provide maintenance of infiltration and permeability; and to protect the soil surface from erosion (Rangeland Health Standards 1997). Under this alternative, increases in annual grasses would occur and the condition of the range would deteriorate. These effects would influence future livestock, wild horse, and wildlife carrying capacity if continued. The loss of native vegetation would lead to soil loss due to exposure to wind and water erosion and would expose previously uninfested areas to noxious and invasive weeds. Increases in erosion directly influence the potential to achieve Rangeland Health Standards 1 - Uplands and 3 - Ecological Processes.

Unless wild horses began congregating in the areas treated under the Burns District Fuel Breaks and Green Strips EA, they would have little to no impact on the potential success of these treatments. With no action taken to control the population of wild horses within the HMA, the potential for impacts on the success of any rangeland improvement project would increase.

Alternative B - Proposed Action - Selective Removal Gather to Low AML and Apply Available Temporary Fertility Treatment

Under the proposed action, wild horse numbers would be reduced to the low AML and fertility vaccine would be administered to mares returned to the HMA. Reducing wild horse numbers to AML would reduce the potential for heavy annual utilization levels in wild horse use areas.

Since a portion of Stinkingwater Pass Pasture in Stinkingwater Allotment and Stinkingwater Pasture of Mountain Allotment are documented wild horse home range, it can be assumed horses would continue to use these areas in future years. Inventory and horse observation data show continuous horse concentrations in the use areas described in Stinkingwater Pass Pasture in Stinkingwater Allotment and around Stinkingwater Pasture in Mountain Allotment. Gathering the horses in these areas and removing excess animals may aid in breaking up the use pattern in these sites. A change in the intensity of use and timing of use (with fewer horses) would lessen the effects to upland vegetation by providing time to complete a full reproductive cycle and consequently increasing plant vigor. Managing duration, intensity, and timing of use on vegetation largely influences maintaining a thriving natural ecological balance and maintaining rangeland health standards, specifically Standard 1 - Watershed Function, Uplands. This standard is achieved when upland soils exhibit infiltration and permeability rates, moisture storage, and stability appropriate to soil, climate, and landform. Potential indicators of achieving this standard include amount and distribution of plant cover and bare ground and plant composition and community structure. Potential indicators of the condition of rangeland health are influenced by the timing and amount of utilization pressure received over a period of years.

Applying the fertility vaccine would slow down the reproductive rate reducing the grazing pressure over a longer period of time, disperse wild horse use areas, and give native vegetation a greater stronghold. Healthy, diverse, and productive plant communities promote improved resiliency, reducing the threat of noxious weed establishment and spread. Maintaining wild horses within AML secures a carrying capacity that is not exceeded and prevents conditions where competition and limitations are placed on livestock, wild horses, and wildlife.

Due to the hoof action and vehicle use around trap sites, upland vegetation is often trampled and/or uprooted. Because of these effects, trap sites would be located in areas previously used or which have been disturbed in the past. The trap sites would be approximately 0.5 acre in size, which would have a minimal effect. Keeping gather sites in previously used areas or areas previously disturbed would minimize or reduce potential new effects to upland vegetation since vegetation would already have been impacted.

The success of treatments associated with the Burns District Fuel Breaks and Green Strips EA and the juniper control projects would be more readily realized under the proposed action, or any alternative that strived to maintain the wild horse population within AML. The fuel breaks projects aim to protect rangeland vegetation from catastrophic wildfire while the juniper control project goals are to reestablish good condition rangelands. The cumulative effects of maintaining wild horses within AML would reduce the potential for congregation and utilization of vegetation in these treatment areas.

Alternative C - Selective Gather and Removal to Low AML <u>without</u> Applying Temporary Fertility Treatment.

The environmental consequences on upland vegetation would be similar to Alternative B - Proposed Action, with the exception of not slowing down the growth rate as a result of applying fertility treatment. Vegetation would be impacted by increased horse numbers sooner, which would decrease vegetative recovery rates post gather.

Alternative D - Gate Cut Removal Gather to Low AML

The environmental consequences on upland vegetation would be the same as Alternative C – Selective Gather and Removal to Low AML <u>without</u> Applying Temporary Fertility Treatment.

Alternative E - Gather, Slow Population Growth by Spaying a Portion of the Current Mare Population, and Remove as Holding Space Becomes Available

The environmental consequences on upland vegetation would be similar to the proposed action but with the excess horses not removed. The initial population, following a gather, would be higher than any of the other action alternatives because there would be few initial removals. The upland vegetation impacts

currently occurring would continue to occur with little opportunity for conditions to improve in heavy use areas.

IV. CONSULTATION AND COORDINATION

A. Agency, Tribe, and Individual Consultation/Coordination

Table 4-1: Consultation and Coordination

Name	Purpose & Authorities for Consultation or Coordination	Findings & Conclusions
Burns Paiute Tribe	Consultation as required by the American Indian Religious Freedom Act of 1978 (42 U.S.C. 1531) and NHPA (PL 89-665; 54 U.S.C. 300101, et seq.).	A letter was mailed to the Burns Paiute Tribal Council Chairman on May 10, 2017, requesting government-to-government consultation. A follow-up phone call was made to the Tribal Chairman on May 23, 2017. The Tribe has not responded identifying any concerns. Lack of response is interpreted by BLM to indicate that the Tribe has no concerns relative to the proposed action.
Livestock Grazing Permittees	An effort to coordinate with permitted land users directly affected by the management of wild horse populations in Stinkingwater HMA.	A meeting was held on March 2, 2017, to describe and discuss the various alternatives. All permittees present were in agreement that the wild horse population should be maintained within AML.
U.S. Fish and Wildlife Service	No official consultation is required for this project, however a letter was written by BLM to announce the project in the Stinkingwater HMA which is approximately 50% PHMA and is in the Drewsey Priority Area for Conservation for GRSG.	The USFWS support maintaining the wild horse population within AML in order to prevent further adverse impacts horses exert on GRSG habitat and consequently negatively affecting GRSG. They support the use of PZP and encourage the district to explore other long-term options for fertility control.

B. Summary of Public Participation

On December 15, 2016, a BLM IDT met to discuss alternatives to the proposed action and issues to analyze in detail in this EA. On January 18, 2017, the BLM mailed a scoping letter to 65 interested individuals, groups, and agencies regarding the proposed removal of excess horses from the Stinkingwater HMA and future population management actions. The scoping letter was also posted to BLM's ePlanning website. Letters and emails were received from 5 individuals and groups during the scoping period. The comments and issues identified in those letters and emails, along with the issues identified during IDT meetings and through contact with other agencies, have been addressed by the BLM IDT. The Issue Identification section of chapter I identifies those issues analyzed in detail in chapter III. Chapter I also identifies issues considered but eliminated from further analysis.

C. Interdisciplinary Team and Associated Resources

Interdisciplinary Team
Chad Rott, Supervisory Fuels Management Specialist (Air Quality and Fire Management)
Scott Thomas, District Archaeologist (American Indian Traditional Practices, ACECs, Cultural Resources, and Paleontological Resources)
Emily Erwin, Planning and Environmental Coordinator (Environmental Justice)
Breanna O'Connor, Riparian Specialist (Fisheries, SSS Fish, T&E Fish, Water Quality, and Wetland and Riparian Zones)
Lisa Grant, District Wild Horse and Burro Specialist (Social and Economic Values, Wild Horses)
Tim Newkirk, Forester (Forestry and Woodlands)
Travis Hatley, Rangeland Management Specialist (Grazing Management and Rangelands, Upland Vegetation)
Marsha Reponen, Resource Protection Specialist (Hazardous Materials or Solid Waste)
Travis Miller, Wildlife Biologist (Migratory Birds, SSS Wildlife, T&E Wildlife, and Wildlife or Locally Important Species and Habitat).
Rick Wells, Geologist (Minerals)
Ty Cronin, Environmental Protection Specialist (Noxious Weeds)
Tara McLain, Realty Specialist (Realty and Lands)
Mandy DeCroo, Outdoor Recreation Planner (Recreation and OHVs, Visual Resources)
Caryn Burri, Natural Resource Specialist (Soils and Biological Crusts, SSS Plants, T&E Plants)
Connie Pettyjohn, Management and Program Analyst (Transportation and Roads)
Thomas Wilcox, Outdoor Recreation Planner (WSR, WSA, and Lands with Wilderness Characteristics)

Advisory Team
Robert Sharp, Supervisory Wild Horse Management Specialist
Stacy Fenton, Geographic Information Specialist
Emily Erwin, Planning and Environmental Coordinator
Richard Roy, Three Rivers Resource Area Field Manager
Brenda Lincoln-Wojtanik, Program Analyst, Oregon State Office
Robert Hopper, State Wild Horse and Burro Specialist and Rangeland Management Specialist, Oregon State Office

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APPENDIX A
STINKINGWATER HMA VICINITY MAP

APPENDIX B
IM 2009-090 POPULATION LEVEL FERTILITY CONTROL FIELD TRIALS: HERD MANAGEMENT AREA SELECTION, VACCINE APPLICATION, MONITORING AND REPORTING REQUIREMENTS

APPENDIX C
IM 2015-151 COMPREHENSIVE ANIMAL WELFARE PROGRAM FOR WILD HORSE AND BURRO GATHERS

APPENDIX D
IM 2015-070 ANIMAL HEALTH, MAINTENANCE, EVALUATION AND RESPONSE

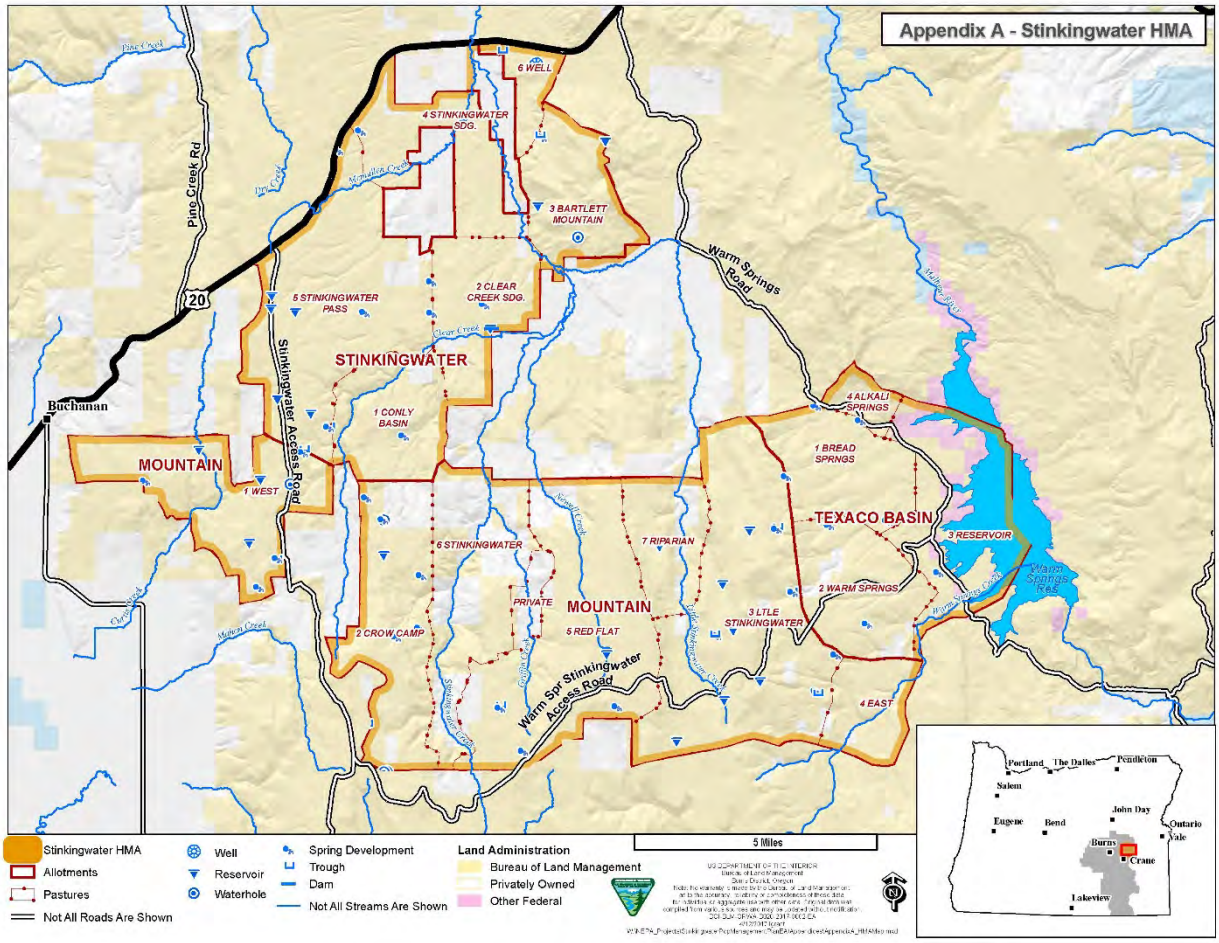
APPENDIX E
AFFECTED ENVIRONMENT TABLE

APPENDIX F
STATISTICAL ANALYSIS FOR 2016 HORSE SURVEY OF HORSE POPULATIONS IN WARM SPRINGS HMA AND STINKINGWATER HMA, OREGON

APPENDIX G
SEPTEMBER 2016 STINKINGWATER HMA SURVEY MAP

APPENDIX H
WINEQUUS POPULATION MODEL RESULTS FOR STINKINGWATER HMA

APPENDIX I
STINKINGWATER HMA ESTIMATED CARRYING CAPACITY TABLE


Appendix A - Stinkingwater HMA
6 WELL
4 STINKINGWATER SDG.
3 BARTLETT MOUNTAIN
5 STINKINGWATER PASS
2 CLEAR CREEK SDG.
STINKINGWATER
1 CONLY BASIN
MOUNTAIN
1 WEST
Buchanan
Pine Creek Rd
20
Stinkingwater Access Road
Warm Springs Road
4 ALKALI SPRINGS
1 BREAD SPRNGS
TEXACO BASIN
3 RESERVOIR
6 STINKINGWATER
7 RIPARIAN
2 WARM SPRNGS
PRIVATE
MOUNTAIN
5 RED FLAT
3 LTLE STINKINGWATER
2 CROW CAMP
Warm Spr Stinkingwater Access Road
4 EAST
Warm Springs Res
Stinkingwater HMA
Allotments
Pastures
Not All Roads Are Shown
Well
Reservoir
Waterhole
Spring Development
Trough
Dam
Not All Streams Are Shown
Land Administration
Bureau of Land Management
Privately Owned
Other Federal
5 Miles
Portland
The Dalles
Pendleton
Salem
John Day
Eugene
Bend
Ontario
Vale
Burns
Crane
Lakeview

UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
WASHINGTON, D.C. 20240

March 12, 2009

In Reply Refer To:
4710 (260) P

EMS TRANSMISSION 03/17/2009
Instruction Memorandum No. 2009-090
Expires: 09/30/2010

To: All Field Officials (except Alaska)

From: Assistant Director, Renewable Resources and Planning

Subject: Population-Level Fertility Control Field Trials: Herd Management Area (HMA) Selection, Vaccine Application, Monitoring and Reporting Requirements

Program Area: Wild Horse and Burro Program

Purpose: The purpose of this Instruction Memorandum is to establish guidance for population-level fertility control field research trials. The primary objective of these trials is to evaluate the effects of a single year or 22-month Porcine Zona Pellucida (PZP) immunocontraceptive vaccine treatment on wild horse population growth rates while expanding the use of these tools in the field.

Policy/Action: This policy establishes guidelines for selecting HMAs for population-level fertility control treatment, vaccine application, and post-treatment monitoring and reporting. It is the policy of the Bureau of Land Management (BLM) to apply fertility control as a component of all gathers unless there is a compelling management reason not to do so.

HMA Selection

Managers are directed to explore options for fertility control trials in all HMAs or complexes when they are scheduled for gathers. Further, an alternative outlining implementation of a fertility control treatment under a population-level research trial shall be analyzed in all gather plan environmental assessments (EA's). Attachment 1 contains the Standard Operating Procedures (SOPs) for the implementation of the single-year and 22-month PZP agents, which should be referenced in the EA.

Fertility control should not be used in a manner that would threaten the health of individual animals or the long-term viability of any herd. In order to address the latter requirement, managers must evaluate the potential effects of fertility control on herd growth rates through use of the Jenkins Population Model (WinEquus). Fertility control application should achieve a substantial treatment effect while maintaining some long-term population growth to mitigate the effects of potential environmental catastrophes.

Fertility control will have the greatest beneficial impact where:

1. Annual herd growth rates are typically greater than 5%.
2. Post-gather herd size is estimated to be greater than 50 animals.
3. Treatment of at least 50% of all breeding-age mares within the herd is possible using either application in conjunction with gathers or remote delivery (darting). A maximum of 90% of all mares should be treated and our goal should be to achieve as close as to this percentage as possible in order to maximize treatment effects.

Fertility control should not be dismissed as a potential management action even if the above conditions are not met. Regardless of primary capture method (helicopter drive-trapping or bait/water trapping), managers should strive to gather horses in sufficient numbers to achieve the goals of the management action, such as selective removal and fertility control treatment. After decisions are made to apply fertility control, historical herd information, remote darting success (if employed) and post-

gather herd demographic data must be reported to the National Program Office (NPO). See the Reporting Requirements section on page four.

Vaccine Application and Animal Identification at Gather Sites Using the 22-Month Vaccine

Once an HMA has been selected as a population-level field trial site, the NPO will designate a trained applicator to administer the vaccine during the scheduled gather. The applicator will be responsible for securing the necessary vaccine from the NPO, transporting all application materials and freeze-marking equipment to the gather site, administering the treatment, and filing a treatment report with the NPO. See Attachment 1 for SOP for Population-level Fertility Control Treatments.

All treated mares will be freeze-marked with two 3.5-inch letters on the left hip for treatment tracking purposes. The only exception to this requirement is when each treated mare can be clearly and specifically identified through photographs. The treatment letters will be assigned and provided by the NPO after the gather and fertility control application is approved by the authorized officer. A different first letter is assigned for each fiscal year starting with fiscal year 2004 and the letter "A." The second letter of the freeze-mark is specific to the application.

Each BLM State Office (SO) is responsible for coordinating with the State Brand Inspector on the use of the identified two-letter freeze-mark. Based on this coordination, possible alternatives or additions to this marking policy are listed below:

1. Use of the adult or foal size angle-numeric BLM freezemark on the neck while recording each treatment product and date with the individual horse's freezemark number.
2. Registration of the BLM fertility control hip mark.
3. Use of a registered brand furnished by the State.
4. Use of the same hip freeze-mark for all fertility control treatments within that State's jurisdiction plus an additional freeze-mark on the neck to differentiate between treatments within the State.
5. Use of the NPO assigned freeze-mark plus additional freeze-mark on the neck to differentiate between treatments within the State.

As an example, the Nevada State Brand Inspector requires that an "F" freeze-mark be applied to the left neck along with the two-letter hip mark assigned by NPO.

Regardless of how the mares are marked, the marks must be identified in the fertility control treatment report in order to track when the mares were treated and the treatment protocol used.

Mares may be considered for re-treatment during subsequent gathers. All re-treatments will consist of the multi-year vaccine unless specifically approved by the NPO. Any re-treated mares must be re-marked or clearly identifiable for future information.

Vaccine Application and Animal Identification Using Remote Delivery (Darting)

Remote delivery of the one year vaccine by a trained darter/applicator will be considered and approved only when (1) application of the current 22-month PZP agent is not feasible because a gather will not be conducted, and (2) the targeted animals can be clearly and specifically identified on an on-going basis through photographs and/or markings. No animals should be darted that cannot be clearly and positively identified later as a treated animal. To increase the success rate of the darting and to insure proper placement of the vaccine, darting should occur along travel corridors or at water sources. If necessary, bait stations using hay or salt may be utilized to draw the horses into specific areas for treatment. The applicator will maintain records containing the basic information on the color and markings of the mare darted and her photographs, darting location, and whether the used darts were recovered from the field. See Appendix 1 for SOP for Population-Level Fertility Control Treatments.

Post-treatment Monitoring

At a minimum, the standard data collected on each treated herd will include one aerial population survey prior to any subsequent gather. This flight will generally occur 3 to 4 years after the fertility control treatment and will be conducted as a routine pre-gather inventory funded by the Field Office (FO). The flight should be timed to assure that the majority of foaling is completed, which for most herds will require that flights be scheduled after August 1st. In addition to pre-gather population data (herd size), information on past removals, sex ratio, and age structure (capture data) will be submitted to the NPO after the first post-treatment gather.

The following standard data will be collected during all post-treatment population surveys:

1. Total number of adult (yearling and older) horses observed.
2. Total number of foals observed.

These data are to be recorded on the Aerial Survey Report form (Attachment 4). In planning post-treatment population surveys, the new population estimation techniques being developed by U.S. Geological Survey (USGS) are strongly recommended. In general, however, it is not necessary that anyone try to identify treated and untreated mares and specifically which mares have foaled during aerial surveys.

To obtain more specific information on vaccine efficacy, some HMAs may be selected for intensive monitoring beginning the first year after treatment and ending with the first gather that follows treatment. These surveys should be completed annually within the same month for consistency of the data. Selection will be based on the proportion of treated mares in the herd, degree of success with vaccine application, degree to which HMA selection criteria are met, and opportunities for good quality data collection. This determination will be made by the WH&B Research Advisory Team and the NPO in consultation with the appropriate Field Office (FO) and State Office (SO). HMAs selected for intensive monitoring will be identified in that specific State's Annual Work Plan. Washington Office 260 (WO260) will provide funding for the annual surveys in those HMAs selected for intensive monitoring.

Field Office personnel may conduct more intensive on-the-ground field monitoring of these herds as time and budget allow. These data should be limited to: 1) the annual number of marked and unmarked mares with and without foals and 2) foaling seasonality. These data, generated for FO use, should be submitted to the NPO to supplement research by the USGS.

Reporting Requirements

1) When an HMA is selected for fertility control treatment, the HMA manager will initiate and complete the appropriate sections of the Gather, Removal, and Treatment Summary Report (Attachment 2) and submit the report to the NPO. At the conclusion of the gather and treatment, the HMA manager will complete the remainder of the Gather, Removal, and Treatment Summary Report and submit it to the NPO within 30 days. The NPO will file and maintain these reports, with a copy sent to the National WH&B Research Coordinator.

2) Following treatment, the fertility control applicator will complete a PZP Application Report and PZP Application Data Sheet (Attachments 3 & 4) and submit it to the NPO that summarizes the treatment. The NPO will maintain this information and provide copies of the reports to appropriate FOs and USGS.

3) Managers are required to send post-treatment monitoring data (Aerial Survey Report, Attachment 5) to the NPO within 30 days of completing each aerial survey. Any additional on-the-ground monitoring data should be sent to the NPO on an annual basis by December 31st.

4) During the next post-treatment gather (generally 4 to 6 years after treatment), the manager will complete a new Gather, Removal, and Treatment Summary Report with pertinent information and submit the report to the NPO. Completion of this report will fulfill the requirements for monitoring and reporting for each population-level study. A possible exception would be if mares are treated (or re-treated) and the HMA is retained as a population-level study herd.

The USGS will analyze all standard data collected. The results of these analyses along with other research efforts will help determine the future use of PZP fertility control for management of wild horse herds by the BLM.

Timeframe: This Instruction Memorandum is effective upon issuance.

Budget Impact: Implementation of this policy will achieve cost savings by reducing the numbers of excess animals removed from the range and minimizing the numbers of less adoptable animals removed. The costs to administer the one-year PZP agent include the labor and equipment costs for the applicator and assistant of roughly $4,000/month and the treatment cost of approximately $25 per animal. The costs to administer the 22-month PZP agent include the capture cost of about $1,000 per animal treated (under normal sex ratios it requires two horses, one stud and one mare, to be captured for each mare treated) and the PZP vaccine is approximately $250 per animal. The budgetary savings for each foal not born due to fertility control is about $500 for capture, $1,100 for adoption

prep and short-term holding, $500-1,000 for adoption costs, and approximately $475 per year for long-term holding of animals removed but not adopted. For each animal that would have been maintained at long term holding for the remainder of its life after capture, the total cost savings is about $13,000. Any additional FO-level monitoring will be accomplished while conducting other routine field activities at no additional cost.

Population-level studies will help to further evaluate the effectiveness of fertility control in wild horse herds. Recent research results showed that application of the current 22-month PZP contraceptive appears capable of reducing operating costs for managing wild horse populations. Application of a 3-4 year contraceptive, when developed, tested, and available, may be capable of reducing operating costs by even more (Bartholow, 2004).

Background: The one-year PZP vaccine has been used with success on the Pryor Mountain and the Little Book Cliffs Wild Horse Ranges. The 22-month PZP vaccine has been administered to 1,808 wild horse mares in 47 HMAs since fiscal year 2004. This formulation has been shown to provide infertility potentially through the third year post-treatment as determined by a trial conducted at the Clan Alpine HMA in 1999. The intent of the ongoing population-level fertility control trials is to determine if the rate of population growth in wild horse herds can be reduced through the use of the currently available 22-month time-release PZP vaccine, applied within a 3-4 year gather and treatment cycle. Monitoring data collected over the next few years are essential to determine the effectiveness of the vaccine when applied on a broad scale as well as its potential for management use.

PZP is classified as an Investigational New Animal Drug and some level of monitoring will continue to be required until such time as the Food and Drug Administration (FDA) or the Environmental Protection Agency (EPA) either reclassify the vaccine or provide some other form of relief.

Manual/Handbook Sections Affected: The monitoring requirements do not change or affect any manual or handbook.

Coordination: The requirements outlined in this policy have been evaluated by the National Wild Horse and Burro Research Advisory Team, coordinated with the National Wild Horse and Burro Advisory Board, and reviewed by Field Specialists.

Contact: Questions concerning this policy should be directed to Alan Shepherd, WH&B Research Coordinator at the Wyoming State Office in Cheyenne, Wyoming at (307) 775-6097.

Reference: Bartholow, J.M. 2004. **An economic analysis of alternative fertility control and associated management techniques for three BLM wild horse herds.** Fort Collins, CO: U.S. Geological Survey. Open-File Report 2004-1199. 33 p.

Signed by:
Edwin L. Roberson
Assistant Director
Renewable Resources and Planning

Authenticated by:
Robert M. Williams
Division of IRM Governance,WO-560

5 Attachments
1- Standard Operating Procedure for Population0level Fertility Control Treatments (2 pp)
2- Gather Removal, and Treatment Report (3 pp)
3- PZP Application Report (1 p)
4- PZP Application Data Sheet (1 p)
5- Aerial Survey Report (1 p)

Attachment 1: Standard Operating Procedures for 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 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:

1. PZP vaccine would be administered only by trained 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 jabstick 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 Freunds 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 HMA 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 HMA 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 by HMA, field office, and State along with the freeze-mark(s) applied by HMA and date.

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UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
WASHINGTON, D.C. 20240-0036
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September 25, 2015

In Reply Refer To:
4720 (260) P

EMS TRANSMISSION 09/29/2015
Instruction Memorandum No. 2015-151
Expires: 09/30/2018

To: All Field Office Officials (except Alaska)

From: Assistant Director, Resources and Planning

Subject: Comprehensive Animal Welfare Program for Wild Horse and Burro Gathers

Program Area: Wild Horse and Burro (WH&B) Program

Purpose: The purpose of this Instruction Memorandum (IM) is to establish policy for the Wild Horse and Burro (WH&B) Gather component of the Comprehensive Animal Welfare Program (CAWP). It defines standards, training and monitoring for conducting safe, efficient and successful WH&B gather operations while ensuring humane care and handling of animals gathered.

Policy/Action: The Bureau of Land Management (BLM) is committed to the well-being and responsible care of WH&B we manage. At all times, the care and treatment provided by the BLM and its contractors will be characterized by *compassion and concern* for WH&B well-being and welfare needs.

All State, District and Field Offices are required to comply with the CAWP policy for all gathers within their jurisdiction. The CAWP for WH&B gathers includes three components:

1. Comprehensive Animal Welfare Program Standards for Wild Horse and Burro Gathers (Attachment 1): These standards include requirements for trap and temporary holding facility design; capture and handling; transportation; and appropriate care after capture. The standards have been incorporated into helicopter gather contracts as specifications for performance.

2. Training: All Incident Commanders (IC), Contracting Officer Representatives (COR), Project Inspectors (PI) and contractors must complete a mandatory training course. The training is available online via DOI Learn: Course Title: BLM's Comprehensive Animal Welfare Program (CAWP) – gathers; Course Number: 4700-13.

3. CAWP Gather Assessment Tool (Attachment 2): The Gather Assessment Tool will be used during FY2016 for evaluating the effectiveness of mandatory training and adequacy of the Standards for CAWP for WH&B Gathers. The WO-260 Division is responsible for overseeing implementation of assessments as well as providing the necessary access to the assessment tool for those gathers selected for internal assessment during FY2016.

4. Starting in FY2017, the Assessment Tool will be used to evaluate compliance by the BLM and its contractors with the Standards for CAWP for WH&B Gathers. The WO-260 Division will oversee the completion of all assessments as well as providing the necessary access to the assessment tool for those gathers identified for both internal and external assessment by internal and external personnel during FY2017.

This IM supersedes Interim IM No. 2013-059, Wild Horse and Burro Gathers: Comprehensive Animal Welfare Policy which was issued as part of a package of IMs covering various aspects of the management of WH&B gathers, including:

- IM No. 2013-058, Wild Horse and Burro Gathers: Public and Media Management.
- IM No. 2013-060, Wild Horse and Burro Gathers: Management by Incident Command System
- IM No. 2013-061, Wild Horse and Burro Gathers: Internal and External Communicating and Reporting

The goal of this IM is to ensure that the responsibility for humane care and treatment of WH&Bs remains a high priority for the BLM and its contractors at all times. The Bureau's objective is to use the best available science, husbandry and handling practices applicable for WH&Bs and to make improvements whenever possible, while also meeting our overall gather goals and objectives in accordance with current BLM policy, standard operating procedures and contract requirements. The CAWP and its associated components will be reviewed regularly and modified as necessary to enhance its transparency and effectiveness in assuring the humane care and treatment of the WH&Bs.

The Lead COR is the primary party responsible for promptly addressing any actions that are inconsistent with the Standards set forth in the CAWP. The Lead COR may delegate responsibility to an alternate COR. The Lead COR will promptly notify the contractor if any improper or unsafe actions are observed and will ensure that they are promptly rectified. If issues are left unresolved or immediate action is required, the Lead COR has the authority to suspend gather operations. Through coordination with the Contracting Officer, the Lead COR shall, if necessary, ensure that corrective measures have been taken to prevent such actions from reoccurring and all follow-up and corrective measures shall be reported as a component of the Lead COR's daily reports.

Timeframe: All portions of this policy are effective as of October 1st, 2015.

Budget Impact: This IM is implementing new policy and guidance with additional training and reporting requirements for personnel and

contractors. The cost for the required training is about $250 per person. CAWP program implementation, oversight, data compilation and reporting requirements will require an additional 12 to 15 work months per year.

Background: The authority for a Comprehensive Animal Welfare Program for WH&B Gathers is provided by Public Law 92-195, Wild Free-Roaming Horses and Burros Act of 1971 (as amended) and 43 CFR 4700.0-2.

The Comprehensive Animal Welfare Program for WH&B gathers consolidates and highlights the BLM's policies, procedures and ongoing commitment to protect animal welfare; provide training for employees and contractors on animal care and handling; and implement a gather assessment tool which will be used to evaluate the agency's and contractor's adherence to standards for the handling and care of animals during gather operations.

Manual/Handbook Sections Affected: None

Coordination: This IM was coordinated among WO-100, WO-200, WO-260, WO-600, WH&B State Leads and WH&B Specialists.

Contact: Bryan Fuell, On-Range Branch Chief, Wild Horse and Burro Program, at 775-861-6611.

Signed by:
Michael H. Tupper
Acting, Assistant Director
Resources and Planning

Authenticated by:
Robert M. Williams
Division of IRM Governance, WO-860

2 Attachments
1 - Comprehensive Animal Welfare Program Standards for Wild Horse and Burro Gathers (20 pp)
2 - CAWP Gather Assessment Tool screen shots (26 pp)

ATTACHMENT 1: COMPREHENSIVE ANIMAL WELFARE PROGRAM FOR WILD HORSE AND BURRO GATHERS

STANDARDS

Developed by

The Bureau of Land Management
Wild Horse and Burro Program

in collaboration with

Carolyn L. Stull, PhD
Kathryn E. Holcomb, PhD
University of California, Davis
School of Veterinary Medicine

June 30, 2015

WELFARE ASSESSMENT STANDARDS for GATHERS

CONTENTS

Welfare Assessment Standards

STANDARDS

Standard Definitions

Major Standard: Impacts the health or welfare of WH&Bs. Relates to an alterable equipment or facility standard or procedure. Appropriate wording is "must." "unacceptable." "prohibited."

Minor Standard: unlikely to affect WH&Bs health or welfare or involves an uncontrollable situation. Appropriate wording is "should."

Lead COR = Lead Contracting Officer's Representative

COR = Contracting Officer's Representative

PI = Project Inspector

WH&Bs = Wild horses and burros

I. FACILITY DESIGN

A. Trap Site and Temporary Holding Facility

1. The trap site and temporary holding facility must be constructed of stout materials and must be maintained in proper working condition, including gates that swing freely and latch or tie easily. (**major**)
2. The trap site should be moved close to WH&B locations whenever possible to minimize the distance the animals need to travel.(minor)
3. If jute is hung on the fence posts of an existing wire fence in the trap wing, the wire should be either be rolled up or let down for the entire length of the jute in such a way that minimizes the possibility of entanglement by WH&Bs unless otherwise approved by the Lead COR/COR/PI. (minor)
4. Fence panels in pens and alleys must be not less than 6 feet high for horses, 5 feet high for burros, and the bottom rail must not be more than 12 inches from ground level. (**major**)

5. The temporary holding facility must have a sufficient number of pens available to sort WH&Bs according to gender, age, number, temperament, or physical condition. (**major**)
   a. All pens must be assembled with capability for expansion. (**major**)
   b. Alternate pens must be made available for the following: (**major**)
      1) WH&Bs that are weak or debilitated
      2) Mares/jennies with dependent foals
   c. WH&Bs in pens at the temporary holding facility should be maintained at a proper stocking density such that when at rest all WH&Bs occupy no more than half the pen area. (minor)
6. An appropriate chute designed for restraining WH&Bs must be available for necessary procedures at the temporary holding facility. This does not apply to bait trapping operations unless directed by the Lead COR/COR/PI. (**major**)
7. There must be no holes, gaps or openings, protruding surfaces, or sharp edges present in fence panels or other structures that may cause escape or possible injury. (**major**)
8. Padding must be installed on the overhead bars of all gates and chutes used in single file alleys. (**major**)
9. Hinged, self-latching gates must be used in all pens and alleys except for entry gates into the trap, which may be secured with tie ropes. (**major**)
10. Finger gates (one-way funnel gates) used in bait trapping must be constructed of materials approved by the Lead COR/COR/PI. Finger gates must not be constructed of materials that have sharp ends that may cause injuries to WH&Bs, such as "T" posts, sharpened willows, etc. (**major**)
11. Water must be provided at a minimum rate of ten gallons per 1000 pound animal per day, adjusted accordingly for larger or smaller horses, burros and foals, and environmental conditions, with each trough placed in a separate location of the pen (i.e. troughs at opposite ends of the pen). Water must be refilled at least every morning and evening. (**major**)
12. The design of pens at the trap site and temporary holding facility should be constructed with rounded corners. (minor)

13. All gates and panels in the animal holding and handling pens and alleys of the trap site must be covered with materials such as plywood, snow fence, tarps, burlap, etc. approximately 48" in height to provide a visual barrier for the animals. All materials must be secured in place.(**major**)

    These guidelines apply:

    a. For exterior fences, material covering panels and gates must extend from the top of the panel or gate toward the ground.(**major**)
    b. For alleys and small internal handling pens, material covering panels and gates should extend from no more than 12 inches below the top of the panel or gate toward the ground to facilitate visibility of animals and the use of flags and paddles during sorting. (minor)
    c. The initial capture pen may be left uncovered as necessary to encourage animals to enter the first pen of the trap. (minor)

14. Non-essential personnel and equipment must be located to minimize disturbance of WH&Bs. (**major**)
15. Trash, debris, and reflective or noisy objects should be eliminated from the trap site and temporary holding facility. (minor)

B. Loading and Unloading Areas

1. Facilities in areas for loading and unloading WH&Bs at the trap site or temporary holding facility must be maintained in a safe and proper working condition, including gates that swing freely and latch or tie easily. (**major**)
2. The side panels of the loading chute must be a minimum of 6 feet high and fully covered with materials such as plywood or metal without holes that may cause injury. (**major**)
3. There must be no holes, gaps or openings, protruding surfaces, or sharp edges present in fence panels or other structures that may cause escape or possible injury. (**major**)
4. All gates and doors must open and close easily and latch securely. (**major**)

5. Loading and unloading ramps must have a non-slip surface and be maintained in a safe and proper working condition to prevent slips and falls. Examples of non-slip flooring would include, but not be limited to, rubber mats, sand, shavings, and steel reinforcement rods built into ramp. There must be no holes in the flooring or items that can cause an animal to trip. (**major**)
6. Trailers must be properly aligned with loading and unloading chutes and panels such that no gaps exist between the chute/panel and floor or sides of the trailer creating a situation where a WH&B could injure itself. (**major**)
7. Stock trailers should be positioned for loading or unloading such that there is no more than 12" clearance between the ground and floor of the trailer for burros and 18" for horses. (minor)

II. CAPTURE TECHNIQUE

A. Capture Techniques

1. WH&Bs gathered on a routine basis for removal or return to range must be captured by the following approved procedures under direction of the Lead COR/COR/PI. (**major**)
   a. Helicopter
   b. Bait trapping
2. WH&Bs must not be captured by snares or net gunning. (**major**)
3. Chemical immobilization must only be used for capture under exceptional circumstances and under the direct supervision of an on-site veterinarian experienced with the technique. (**major**)

B. Helicopter Drive Trapping

1. The helicopter must be operated using pressure and release methods to herd the animals in a desired direction and should not repeatedly evoke erratic behavior in the WH&Bs causing injury or exhaustion. Animals must not be pursued to a point of exhaustion; the on-site veterinarian must examine WH&Bs for signs of exhaustion. (**major**)

2. The rate of movement and distance the animals travel must not exceed limitations set by the Lead COR/COR/PI who will consider terrain, physical barriers, access limitations, weather, condition of the animals, urgency of the operation (animals facing drought, starvation, fire, etc.) and other factors. (**major**)
    a. WH&Bs that are weak or debilitated must be identified by BLM staff or the contractors. Appropriate gather and handling methods should be used according to the direction of the Lead COR/COR/PI. (**major**)
    b. The appropriate herding distance and rate of movement must be determined on a case-by-case basis considering the weakest or smallest animal in the group (e.g., foals, pregnant mares, or horses that are weakened by body condition, age, or poor health) and the range and environmental conditions present. (**major**)
    c. Rate of movement and distance travelled must not result in exhaustion at the trap site, with the exception of animals requiring capture that have an existing severely compromised condition prior to gather. Where compromised animals cannot be left on the range or where doing so would only serve to prolong their suffering, euthanasia will be performed in accordance with BLM policy. (**major**)
3. WH&Bs must not be pursued repeatedly by the helicopter such that the rate of movement and distance travelled exceeds the limitation set by the Lead COR/COR/PI. Abandoning the pursuit or alternative capture methods may be considered by the Lead COR/COR/PI in these cases. (**major**)
4. When WH&Bs are herded through a fence line en route to the trap, the Lead COR/COR/PI must be notified by the contractor. The Lead COR/COR/PI must determine the appropriate width of the opening that the fence is let down to allow for safe passage through the opening. The Lead COR/COR/PI must decide if existing fence lines require marking to increase visibility to WH&Bs. (**major**)
5. The helicopter must not come into physical contact with any WH&B. The physical contact of any WH&B by helicopter must be documented by Lead COR/COR/PI along with the circumstances. (**major**)
6. WH&Bs may escape or evade the gather site while being moved by the helicopter. If there are mare/dependent foal pairs in a group being brought to a trap and half of an identified pair is thought to have evaded capture, multiple attempts by helicopter may

be used to bring the missing half of the pair to the trap or to facilitate capture by roping. In these instances, animal condition and fatigue must be evaluated by the Lead COR/COR/PI or on-site veterinarian on a case-by-case basis to determine the number of attempts that can be made to capture an animal.(**major**)

7. Horse captures must not be conducted when ambient temperature at the trap site is below 10°F or above 95°F without approval of the Lead COR/COR/PI. Burro captures must not be conducted when ambient temperature is below 10°F or above 100°F without approval of the Lead COR/COR/PI. The Lead COR/COR/PI will not approve captures when the ambient temperature exceeds 105 °F. (**major**)

C. Roping

1. The roping of any WH&B must be approved prior to the procedure by the Lead COR/COR/PI. (**major**).
2. The roping of any WH&B must be documented by the Lead COR/COR/PI along with the circumstances. WH&Bs may be roped under circumstances which include but are not limited to the following: reunite a mare or jenny and her dependent foal; capture nuisance, injured or sick WH&Bs or those that require euthanasia; environmental reasons such as deep snow or traps that cannot be set up due to location or environmentally sensitive designation; and public and animal safety or legal mandates for removal. (**major**)
3. Ropers should dally the rope to their saddle horn such that animals can be brought to a stop as slowly as possible and must not tie the rope hard and fast to the saddle so as to intentionally jerk animals off their feet. (**major**)
4. WH&Bs that are roped and tied down in recumbency must be continuously observed and monitored by an attendant at a maximum of 100 feet from the animal. (**major**)
5. WH&Bs that are roped and tied down in recumbency must be untied within 30 minutes. (**major**)
6. If the animal is tied down within the wings of the trap, helicopter drive trapping within the wings will cease until the tied-down animal is removed. (**major**)
7. Sleds, slide boards, or slip sheets must be placed underneath the animal's body to move and/or load recumbent WH&Bs. (**major**)

8. Halters and ropes tied to a WH&B may be used to roll, turn, position or load a recumbent animal, but a WH&B must not be dragged across the ground by a halter or rope attached to its body while in a recumbent position. (**major**)
9. Animals captured by roping must be evaluated by the on-site/on-call veterinarian within four hours after capture, marked for identification at the trap site, and be re-evaluated periodically as deemed necessary by the on-site/on-call veterinarian. (**major**)

D. Bait Trapping

1. WH&Bs may be lured into a temporary trap using bait (feed, mineral supplement, water) or sexual attractants (mares/jennies in heat) with the following requirements:
   a. The period of time water sources other than in the trap site are inaccessible must not adversely affect the wellbeing of WH&Bs, wildlife or livestock, as determined by the Lead COR/COR/PI. (**major**)
   b. Unattended traps must not be left unobserved for more than 12 hours. (**major**)
   c. Mares/jennies and their dependent foals must not be separated unless for safe transport. (**major**)
   d. WH&Bs held for more than 12 hours must be provided with accessible clean water at a minimum rate of ten gallons per 1000 pound animal per day, adjusted accordingly for larger or smaller horses, burros and foals and environmental conditions. (**major**)
   e. WH&Bs held for more than 12 hours must be provided good quality hay at a minimum rate of 20 pounds per 1000 pound adult animal per day, adjusted accordingly for larger or smaller horses, burros and foals. (**major**)
      1) Hay must not contain poisonous weeds, debris, or toxic substances. (**major**)
      2) Hay placement must allow all WH&Bs to eat simultaneously. (**major**)

III. WILD HORSE AND BURRO CARE

A. Veterinarian

1. On-site veterinary support must be provided for all helicopter gathers and on-site or on-call support must be provided for bait trapping. (**major**)

2. Veterinary support must be under the direction of the Lead COR/COR/PI. The on-site/on-call veterinarian will provide consultation on matters related to WH&B health, handling, welfare, and euthanasia at the request of the Lead COR/COR/PI. All decisions regarding medical treatment or euthanasia will be made by the on-site Lead COR/COR/PI. (**major**)

B. Care

1. Feeding and Watering
   a. Adult WH&Bs held in traps or temporary holding pens for longer than 12 hours must be fed every morning and evening with water available at all times other than when animals are being sorted or worked. (**major**)
   b. Water must be provided at a minimum rate of ten gallons per 1000 pound animal per day, adjusted accordingly for larger or smaller horses, burros and foals, and environmental conditions, with each trough placed in a separate location of the pen (i.e. troughs at opposite ends of the pen). . (**major**)
   c. Good quality hay must be fed at a minimum rate of 20 pounds per 1000 pound adult animal per day, adjusted accordingly for larger or smaller horses, burros and foals. (**major**)
      i. Hay must not contain poisonous weeds or toxic substances. (**major**)
      ii. Hay placement must allow all WH&Bs to eat simultaneously. (**major**)
   d. When water or feed deprivation conditions exist on the range prior to the gather, the Lead COR/COR/PI should adjust the watering and feeding arrangements in consultation with the onsite veterinarian as necessary to provide for the needs of the animals. (minor)
2. Dust abatement
   a. Dust abatement by spraying the ground with water must be employed when necessary at the trap site and temporary holding facility. (**major**)

3. Trap Site
    a. Dependent foals or weak/debilitated animals must be separated from other WH&Bs at the trap site to avoid injuries during transportation to the temporary holding facility. Separation of dependent foals from mares must not exceed four hours unless the Lead COR/COR/PI authorizes a longer time or a decision is made to wean the foals. (**major**)
4. Temporary Holding Facility
    a. All WH&Bs in confinement must be observed at least once daily to identify sick or injured WH&Bs and ensure adequate food and water. (**major**)
    b. Foals must be reunited with their mares/jennies at the temporary holding facility within four hours of capture unless the Lead COR/COR/PI authorizes a longer time or foals are old enough to be weaned during the gather. (**major**)
    c. Non-ambulatory WH&Bs must be located in a pen separate from the general population and must be examined by the BLM horse specialist and/or on-call or on-site veterinarian as soon as possible, no more than four hours after recumbency is observed. Unless otherwise directed by a veterinarian, hay and water must be accessible to an animal within six hours after recumbency.(**major**)
    d. Alternate pens must be made available for the following: (**major**)
        1) WH&Bs that are weak or debilitated
        2) Mares/jennies with dependent foals
    e. Aggressive WH&Bs causing serious injury to other animals should be identified and relocated into alternate pens when possible. (minor)
    f. WH&Bs in pens at the temporary holding facility should be maintained at a proper stocking density such that when at rest all WH&Bs occupy no more than half the pen area. (minor)

C. Biosecurity

1. Health records for all saddle and pilot horses used on WH&B gathers must be provided to the Lead COR/COR/PI prior to joining a gather, including: (**major**)
   a. Certificate of Veterinary Inspection (Health Certificate, within 30 days).
   b. Proof of:
      1) A negative test for equine infectious anemia (Coggins or EIA ELISA test) within 12 months.
      2) Vaccination for tetanus, eastern and western equine encephalomyelitis, West Nile virus, equine herpes virus, influenza, *Streptococcus equi*, and rabies within 12 months.
2. Saddle horses, pilot horses and mares used for bait trapping lures must not be removed from the gather operation (such as for an equestrian event) and allowed to return unless they have been observed to be free from signs of infectious disease for a period of at least three weeks and a new Certificate of Veterinary Examination is obtained after three weeks and prior to returning to the gather. (**major**)
3. WH&Bs, saddle horses, and pilot horses showing signs of infectious disease must be examined by the on-site/on-call veterinarian. (**major**)
   a. Any saddle or pilot horses showing signs of infectious disease (fever, nasal discharge, or illness) must be removed from service and isolated from other animals on the gather until such time as the horse is free from signs of infectious disease and approved by the on-site/on-call veterinarian to return to the gather. (**major**)
   b. Groups of WH&Bs showing signs of infectious disease should not be mixed with groups of healthy WH&Bs at the temporary holding facility, or during transport. (minor)
4. Horses not involved with gather operations should remain at least 300 yards from WH&Bs, saddle horses, and pilot horses being actively used on a gather. (minor)

IV. HANDLING

A. Willful Acts of Abuse

1. Hitting, kicking, striking, or beating any WH&B in an abusive manner is prohibited. **(major)**
2. Dragging a recumbent WH&B without a sled, slide board or slip sheet is prohibited. Ropes used for moving the recumbent animal must be attached to the sled, slide board or slip sheet unless being loaded as specified in Section II. C. 8. **(major)**
3. There should be no deliberate driving of WH&Bs into other animals, closed gates, panels, or other equipment. (minor)
4. There should be no deliberate slamming of gates and doors on WH&Bs. (minor)
5. There should be no excessive noise (e.g., constant yelling) or sudden activity causing WH&Bs to become unnecessarily flighty, disturbed or agitated. (minor)

B. General Handling

1. All sorting, loading or unloading of WH&Bs during gathers must be performed during daylight hours except when unforeseen circumstances develop and the Lead COR/CO/PI approves the use of supplemental light. **(major)**
2. WH&Bs should be handled to enter runways or chutes in a forward direction. (minor)
3. WH&Bs should not remain in single-file alleyways, runways, or chutes longer than 30 minutes. (minor)
4. Equipment except for helicopters should be operated and located in a manner to minimize flighty behavior . (minor)

C. Handling Aids

1. Handling aids such as flags and shaker paddles must be the primary tools for driving and moving WH&Bs during handling and transport procedures. Contact of the flag or paddle end of primary handling aids with a WH&B is allowed. Ropes looped around the hindquarters may be used from horseback or on foot to assist in moving an animal forward or during loading. **(major)**

2. Electric prods must not be used routinely as a driving aid or handling tool. Electric prods may be used in limited circumstances only if the following guidelines are followed:
   a. Electric prods must only be a commercially available make and model that uses DC battery power and batteries should be fully charged at all times. (**major**)
   b. The electric prod device must never be disguised or concealed. (**major**)
   c. Electric prods must only be used after three attempts using other handling aids (flag, shaker paddle, voice or body position) have been tried unsuccessfully to move the WH&Bs. (**major**)
   d. Electric prods must only be picked up when intended to deliver a stimulus; these devices must not be constantly carried by the handlers. (**major**)
   e. Space in front of an animal must be available to move the WH&B forward prior to application of the electric prod. (**major**)
   f. Electric prods must never be applied to the face, genitals, anus, or underside of the tail of a WH&B. (**major**)
   g. Electric prods must not be applied to any one WH&B more than three times during a procedure (e.g., sorting, loading) except in extreme cases with approval of the Lead COR/COR/PI. Each exception must be approved at the time by the Lead COR/COR/PI. (**major**)
   h. Any electric prod use that may be necessary must be documented daily by the Lead COR/COR/PI including time of day, circumstances, handler, location (trap site or temporary holding facility), and any injuries (to WH&B or human). (**major**)

V. TRANSPORTATION

A. General

1. All sorting, loading, or unloading of WH&Bs during gathers must be performed during daylight hours except when unforeseen circumstances develop and the Lead COR/CO/PI approves the use of supplemental light. (**major**)

2. WH&Bs identified for removal should be shipped from the temporary holding facility to a BLM facility within 48 hours. (minor)
    a. Shipping delays for animals that are being held for release to range or potential on-site adoption must be approved by the Lead COR/COR/PI. (**major**)
3. Shipping should occur in the following order of priority; 1) debilitated animals, 2) pairs, 3) weanlings, 4) dry mares and 5) studs. (minor)
4. Planned
5. transport time to the BLM preparation facility from the trap site or temporary holding facility must not exceed 10 hours. (**major**)
6. WH&Bs should not wait in stock trailers and/or semi-trailers at a standstill for more than a combined period of three hours during the entire journey. (minor)

B. Vehicles

1. Straight-deck trailers and stock trailers must be used for transporting WH&Bs. (**major**)
    a. Two-tiered or double deck trailers are prohibited. (**major**)
    b. Transport vehicles for WH&Bs must have a covered roof or overhead bars containing them such that WH&Bs cannot escape. (**major**)
2. WH&Bs must have adequate headroom during loading and unloading and must be able to maintain a normal posture with all four feet on the floor during transport without contacting the roof or overhead bars. (**major**)
3. The width and height of all gates and doors must allow WH&Bs to move through freely. (**major**)
4. All gates and doors must open and close easily and be able to be secured in a closed position. (**major**)
5. The rear door(s) of the trailers must be capable of opening the full width of the trailer. (**major**)
6. Loading and unloading ramps must have a non-slip surface and be maintained in proper working condition to prevent slips and falls. (**major**)

7. Transport vehicles more than 18 feet and less than 40 feet in length must have a minimum of one partition gate providing two compartments; transport vehicles 40 feet or longer must have at least two partition gates to provide a minimum of three compartments. (**major**)
8. All partitions and panels inside of trailers must be free of sharp edges or holes that could cause injury to WH&Bs. (**major**)
9. The inner lining of all trailers must be strong enough to withstand failure by kicking that would lead to injuries. (**major**)
10. Partition gates in transport vehicles should be used to distribute the load into compartments during travel. (minor)
11. Surfaces and floors of trailers must be cleaned of dirt, manure and other organic matter prior to the beginning of a gather. (**major**)

C. Care of WH&Bs during Transport Procedures

1. WH&Bs that are loaded and transported from the temporary holding facility to the BLM preparation facility must be fit to endure travel. (**major**)
   a. WH&Bs that are non-ambulatory, blind in both eyes, or severely injured must not be loaded and shipped unless it is to receive immediate veterinary care or euthanasia. (**major**)
   b. WH&Bs that are weak or debilitated must not be transported without approval of the Lead COR/COR/PI in consultation with the on-site veterinarian. Appropriate actions for their care during transport must be taken according to direction of the Lead COR/COR/PI. (**major**)
2. WH&Bs should be sorted prior to transport to ensure compatibility and minimize aggressive behavior that may cause injury. (minor)
3. Trailers must be loaded using the minimum space allowance in all compartments as follows: (**major**)
   a. 12 square feet per adult horse.
   b. 6.0 square feet per dependent horse foal.
   c. 8.0 square feet per adult burro.
   d. 4.0 square feet per dependent burro foal.

4. The Lead COR/COR/PI in consultation with the receiving Facility Manager must document any WH&B that is recumbent or dead upon arrival at the destination. (**major**)
    a. Non-ambulatory or recumbent WH&Bs must be evaluated on the trailer and either euthanized or removed from the trailers using a sled, slide board or slip sheet. (**major**)
5. Saddle horses must not be transported in the same compartment with WH&Bs. (**major**)

VI. EUTHANASIA OR DEATH

A. Euthanasia Procedure during Gather Operations

1. An authorized, properly trained, and experienced person as well as a firearm appropriate for the circumstances must be available at all times during gather operations. When the travel time between the trap site and temporary holding facility exceeds one hour or if radio or cellular communication is not reliable, provisions for euthanasia must be in place at both the trap site and temporary holding facility during the gather operation. (**major**)
2. Euthanasia must be performed according to American Veterinary Medical Association euthanasia guidelines (2013) using methods of gunshot or injection of an approved euthanasia agent. (**major**)
3. The decision to euthanize and method of euthanasia must be directed by the Authorized Officer or their Authorized Representative(s) that include but are not limited to the Lead COR/COR/PI who must be on site and may consult with the on-site/on-call veterinarian. (**major**)
4. Photos needed to document an animal's condition should be taken prior to the animal being euthanized. No photos of animals that have been euthanized should be taken. An exception is when a veterinarian or the Lead COR/COR/PI may want to document certain findings discovered during a postmortem examination or necropsy. (minor)
5. Any WH&B that dies or is euthanized must be documented by the Lead COR/COR/PI including time of day, circumstances, euthanasia method, location, a

description of the age, gender, and color of the animal and the reason the animal was euthanized. (**major**)

6. The on-site/on-call veterinarian should review the history and conduct a postmortem physical examination of any WH&B that dies or is euthanized during the gather operation. A necropsy should be performed whenever feasible if the cause of death is unknown. (minor)

B. Carcass Disposal

1. The Lead COR/COR/PI must ensure that appropriate equipment is available for the timely disposal of carcasses when necessary on the range, at the trap site, and temporary holding facility. (**major**)
2. Disposal of carcasses must be in accordance with state and local laws. (**major**)
3. WH&Bs euthanized with a barbiturate euthanasia agent must be buried or otherwise disposed of properly. (**major**)
4. Carcasses left on the range should not be placed in washes or riparian areas where future runoff may carry debris into ponds or waterways. Trenches or holes for buried animals should be dug so the bottom of the hole is at least 6 feet above the water table and 4-6 feet of level earth covers the top of the carcass with additional dirt mounded on top where possible. (minor)

CAWP

REQUIRED DOCUMENTATION AND RESPONSIBILITIES OF LEAD COR/COR/PI

Required Documentation

Section	Documentation
II.B.5	Helicopter contact with any WH&B.
II.C.2	Roping of any WH&B.
III.B.3.a and III.B.4.b	Reason for allowing longer than four hours to reunite foals with mares/jennies. Does not apply if foals are being weaned.
III.C.1	Health status of all saddle and pilot horses.
IV.C.2.h	All uses of electric prod.
V.C.4	Any WH&B that is recumbent or dead upon arrival at destination following transport.
VI.A.5	Any WH&B that dies or is euthanized during gather operation.

Responsibilities

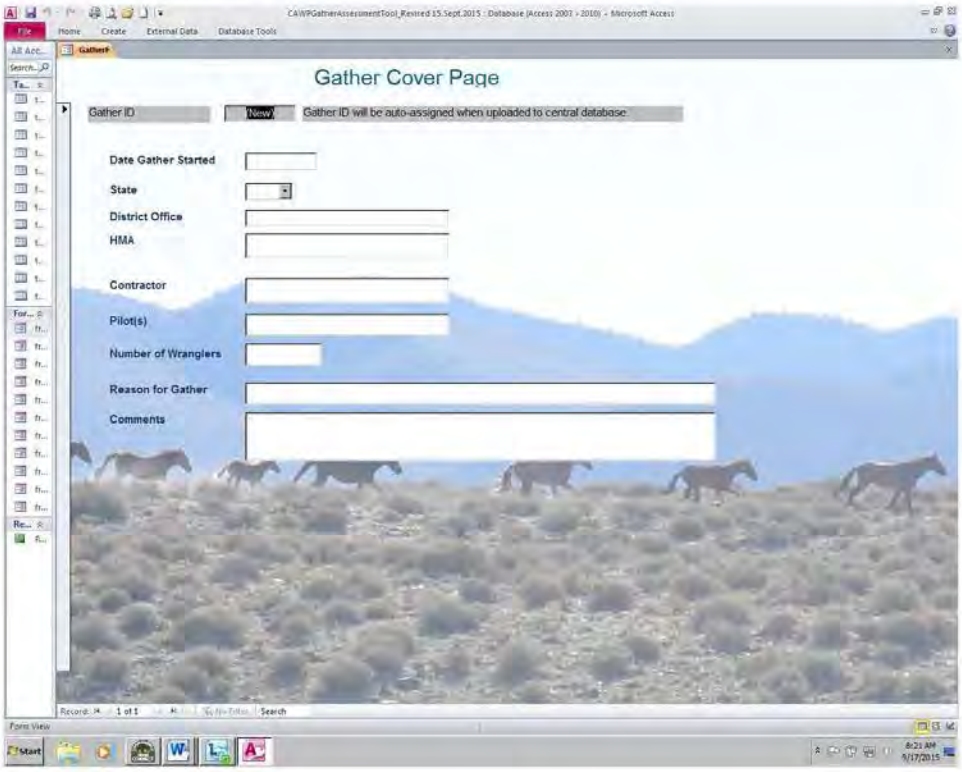
Section	Responsibility
I.A.10	Approve materials used in construction of finger gates in bait trapping
II.A.1	Direct gather procedures using approved gather technique.
II.B. 2	Determine rate of movement and distance limitations for WH&B helicopter gather.
II.B.2.a	Direct appropriate gather/handling methods for weak or debilitated WH&B.
II.B.3	Determine whether to abandon pursuit or use other capture method in order to avoid repeated pursuit of WH&B.
II.B.4	Determine width and need for visibility marking when using opening in fence en route to trap.
II.B.6	Determine number of attempts that can be made to capture the missing half of a mare/foal pair that has become separated.
II.B.7	Determine whether to proceed with gather when ambient temperature is outside the range of 10°F to 95°F for horses or 10°F to 100°F for burros.
II.C.1	Approve roping of any WH&B.
II.D.1.a	Determine period of time that water outside a bait trap is inaccessible such that wellbeing of WH&Bs, wildlife, or livestock is not adversely affected.
III.A.2	Direct and consult with on-site/on-call veterinarian on any matters related to WH&B health, handling, welfare and euthanasia.

III.B.1.e	Adjust feed/water as necessary, in consultation with onsite/on call veterinarian, to provide for needs of animals when water or feed deprivation conditions exist on range.
III.B.4.c	Determine provision of water and hay to non-ambulatory animals.
IV.C.2.g	Approve use of electric prod more than three times, for exceptional cases only.
V.A.1	Approve sorting, loading, or unloading at night with use of supplemental light.
V.A.2.a	Approve shipping delays of greater than 48 hours from temporary holding facility to BLM facility.
V.C.1.b	Approve of transport and care during transport for weak or debilitated WH&B.
VI.A.3	Direct decision regarding euthanasia and method of euthanasia for any WH&B; may consult with on-site/on-call veterinarian.
VI.B.1	Ensure that appropriate equipment is available for carcass disposal.

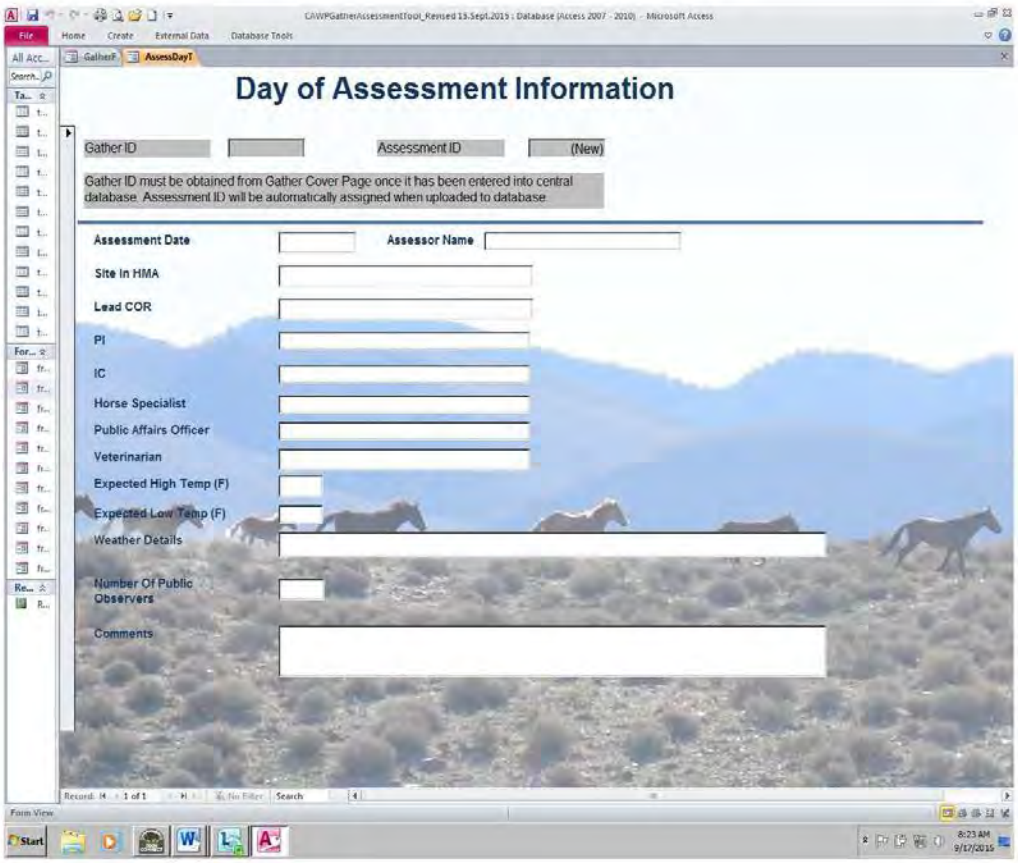
Attachment 2: Comprehensive Animal Welfare Policy Gather Assessment Tool

Summary: The Comprehensive Animal Welfare Policy (CAWP) Gather Assessment Tool is a MS Access database that has been developed as a means to assess, standardize, and track CAWP compliance. The following document contains screen shots of the standardized forms from the tool and details the information that will be collected during a gather assessment.

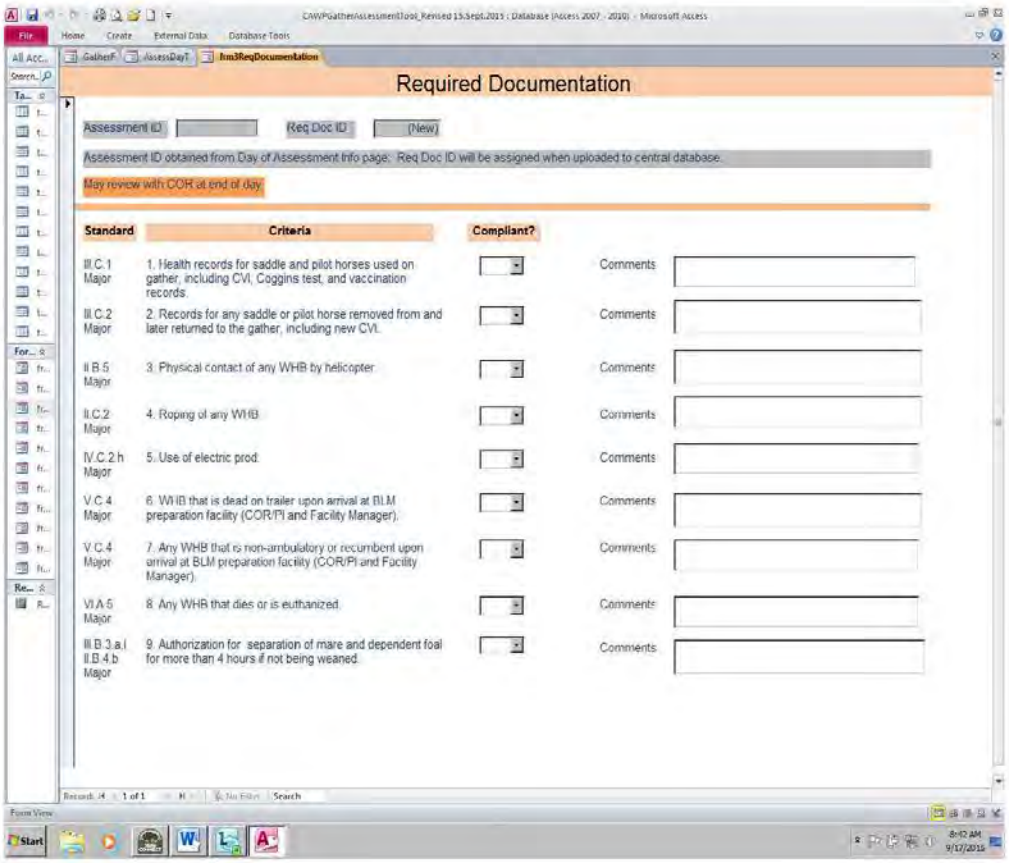
Form #1: Gather Cover Page



Form #2: Day of Assessment Information



Form #3: Required Documentation



Required Documentation

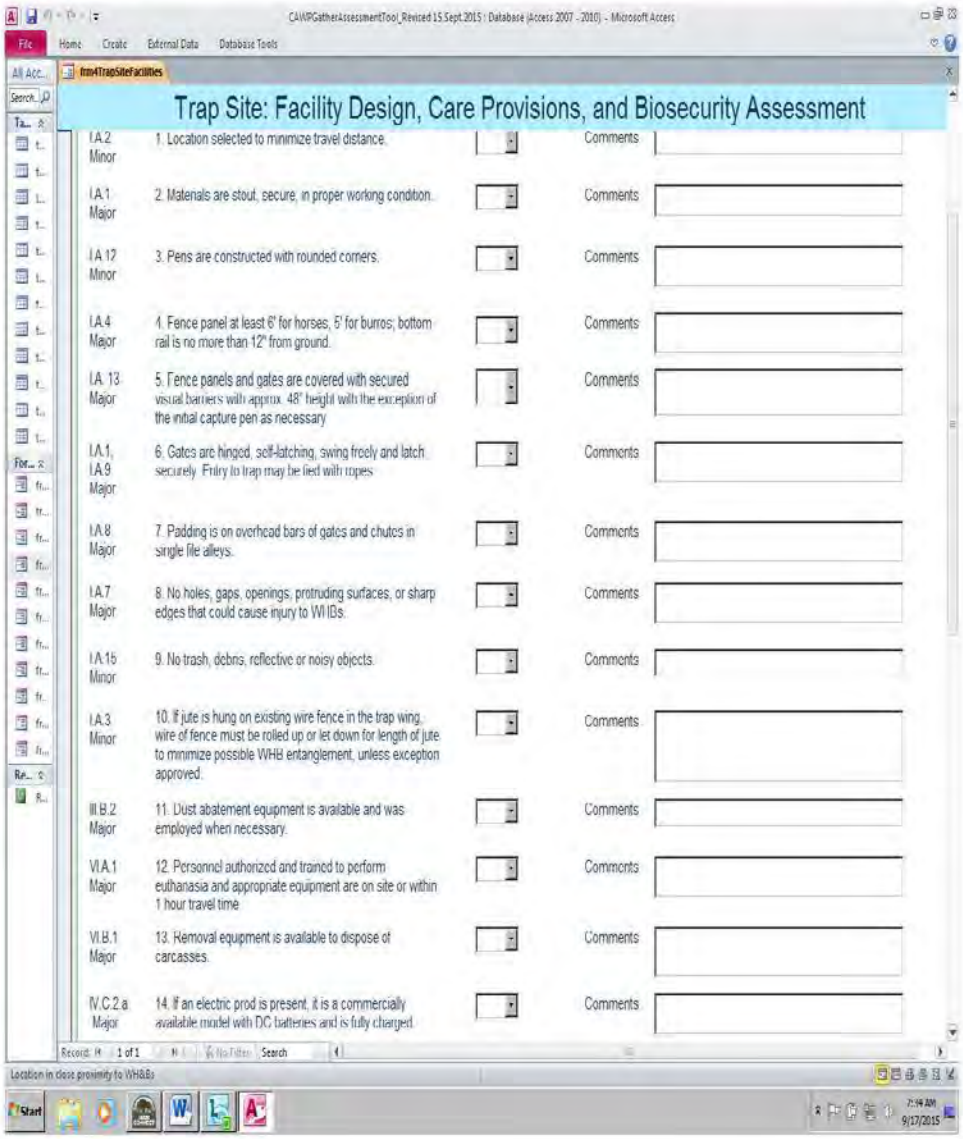
Assessment ID | Req Doc ID: (New)

Assessment ID obtained from Day of Assessment Info page. Req Doc ID will be assigned when uploaded to central database.

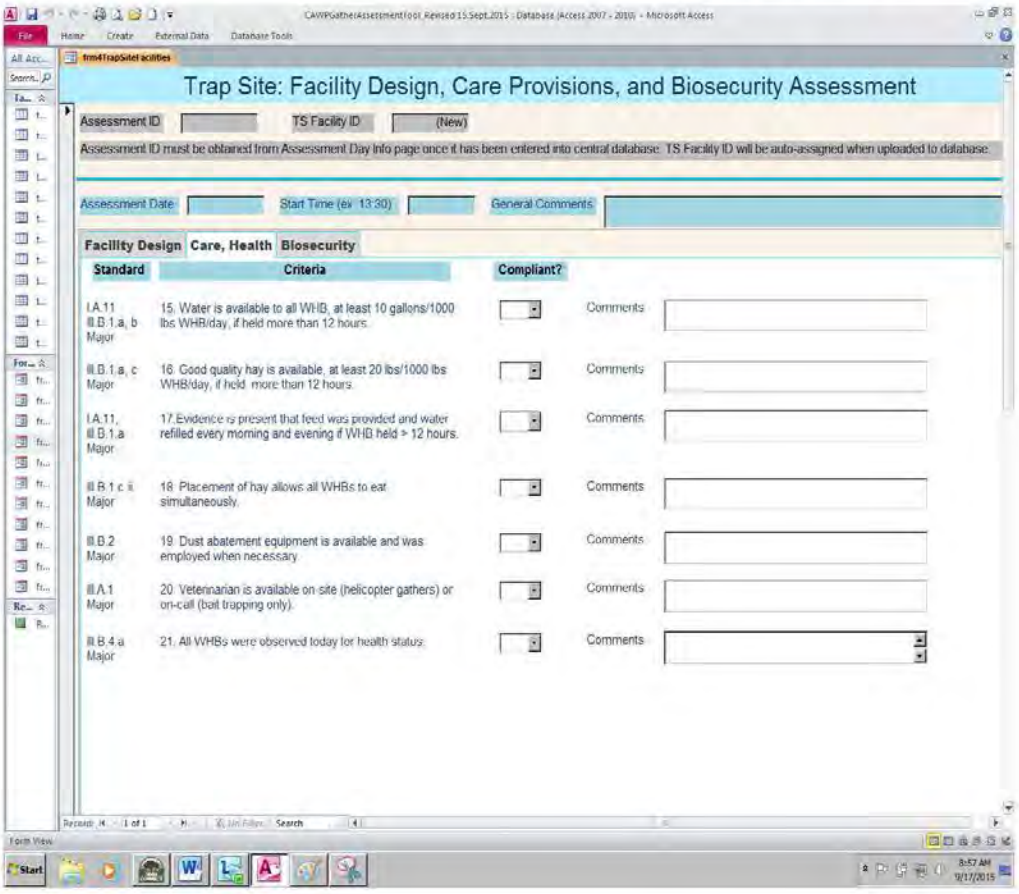
May review with COR at end of day

Standard	Criteria	Compliant?	
III.C.1 Major	1. Health records for saddle and pilot horses used on gather, including CVI, Coggins test, and vaccination records.		Comments
III.C.2 Major	2. Records for any saddle or pilot horse removed from and later returned to the gather, including new CVI.		Comments
II.B.5 Major	3. Physical contact of any WHB by helicopter		Comments
II.C.2 Major	4. Roping of any WHB		Comments
IV.C.2.h Major	5. Use of electric prod		Comments
V.C.4 Major	6. WHB that is dead on trailer upon arrival at BLM preparation facility (COR/PI and Facility Manager).		Comments
V.C.4 Major	7. Any WHB that is non-ambulatory or recumbent upon arrival at BLM preparation facility (COR/PI and Facility Manager).		Comments
VI.A.5 Major	8. Any WHB that dies or is euthanized.		Comments
III.B.3.a.i II.B.4.b Major	9. Authorization for separation of mare and dependent foal for more than 4 hours if not being weaned.		Comments

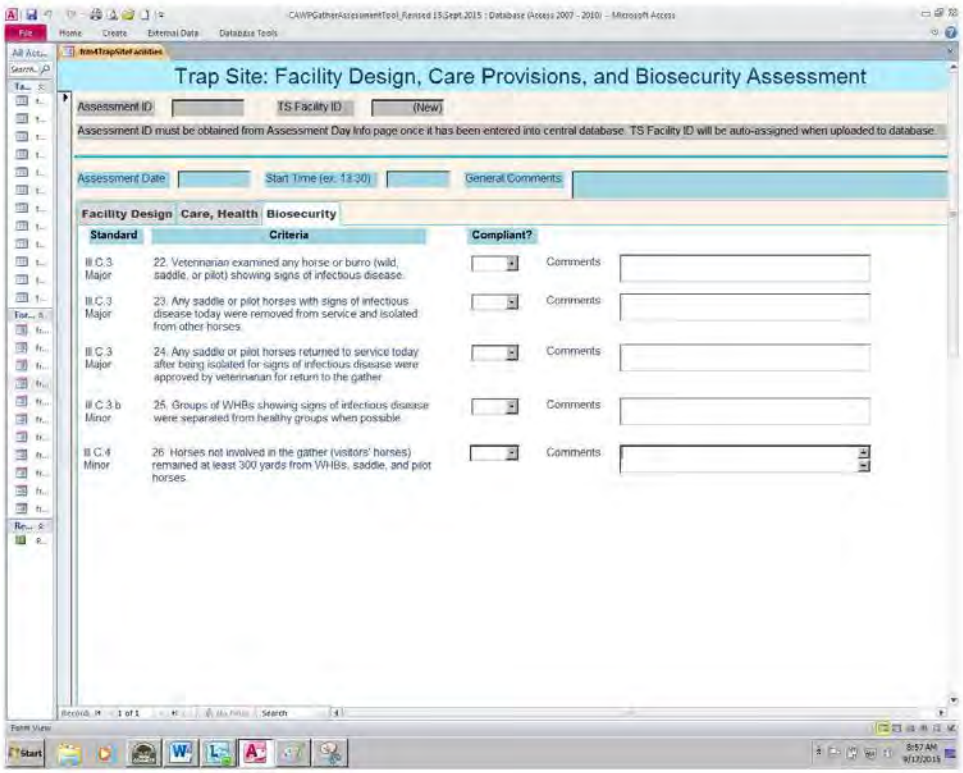
Form #4a: Trap Site: Facility Design, Care Provisions, and Biosecurity Assessment – Facility Design



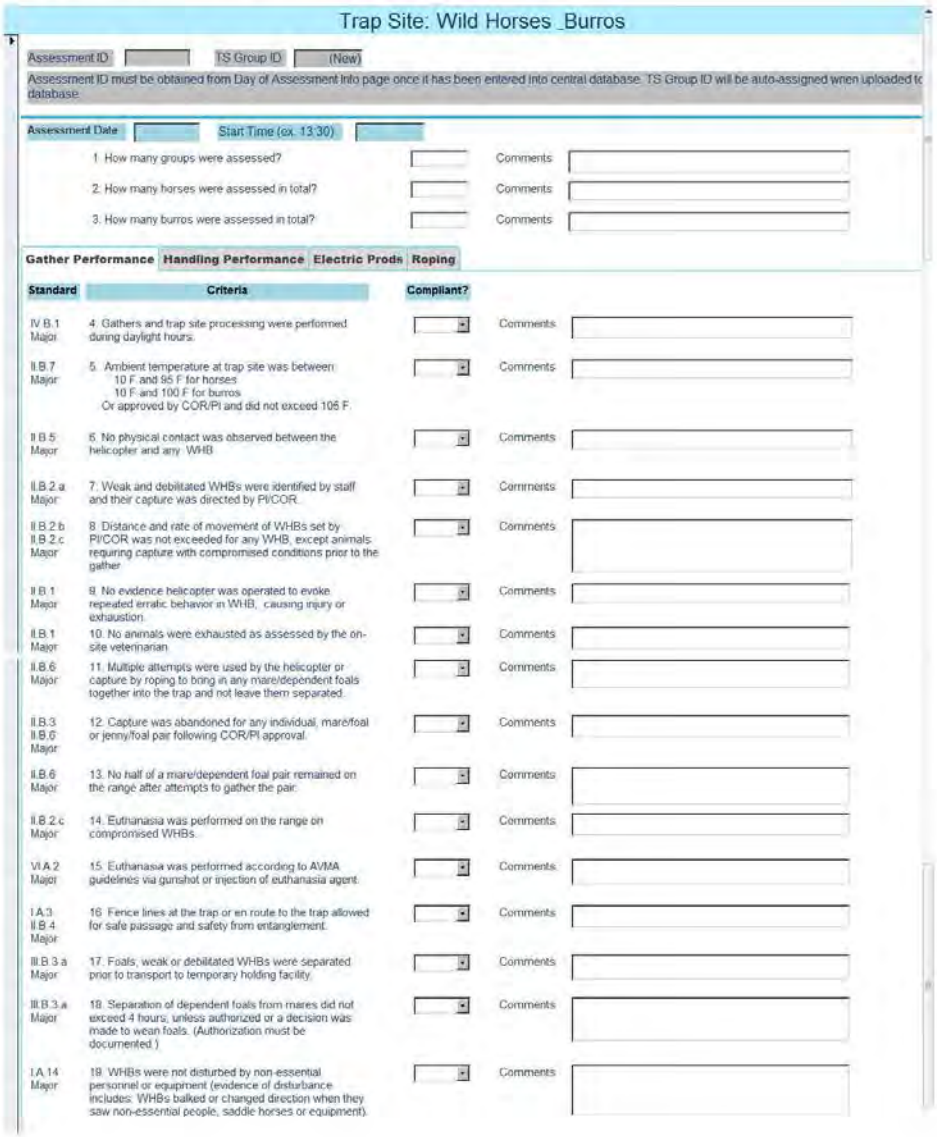
Form #4b: Trap Site: Facility Design, Care Provisions, and Biosecurity Assessment – Care, Health



Form #4c: Trap Site: Facility Design, Care Provisions, and Biosecurity Assessment – Biosecurity



Form #5a: Trap Site: Gather Performance



Trap Site: Wild Horses _Burros

Assessment ID | TS Group ID (New)

Assessment ID must be obtained from Day of Assessment Info page once it has been entered into central database. TS Group ID will be auto-assigned when uploaded to database.

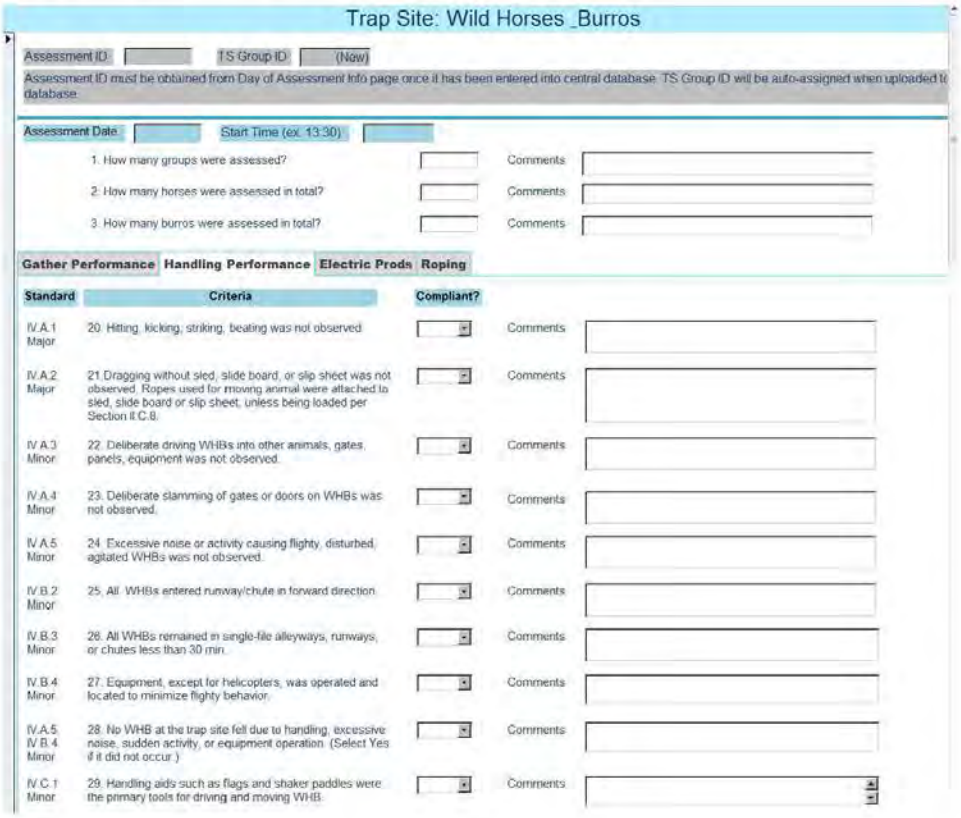
Assessment Date | Start Time (ex. 13:30)

1. How many groups were assessed? Comments
2. How many horses were assessed in total? Comments
3. How many burros were assessed in total? Comments

Gather Performance | Handling Performance | Electric Prods | Roping

Standard	Criteria	Compliant?	
IV.B.1 Major	4. Gathers and trap site processing were performed during daylight hours.		Comments
II.B.7 Major	5. Ambient temperature at trap site was between: 10 F and 95 F for horses 10 F and 100 F for burros Or approved by COR/PI and did not exceed 105 F.		Comments
II.B.5 Major	6. No physical contact was observed between the helicopter and any WHB		Comments
II.B.2.a Major	7. Weak and debilitated WHBs were identified by staff and their capture was directed by PI/COR.		Comments
II.B.2.b II.B.2.c Major	8. Distance and rate of movement of WHBs set by PI/COR was not exceeded for any WHB, except animals requiring capture with compromised conditions prior to the gather		Comments
II.B.1 Major	9. No evidence helicopter was operated to evoke repeated erratic behavior in WHB, causing injury or exhaustion.		Comments
II.B.1 Major	10. No animals were exhausted as assessed by the on-site veterinarian		Comments
II.B.6 Major	11. Multiple attempts were used by the helicopter or capture by roping to bring in any mare/dependent foals together into the trap and not leave them separated.		Comments
II.B.3 II.B.6 Major	12. Capture was abandoned for any individual, mare/foal or jenny/foal pair following COR/PI approval.		Comments
II.B.6 Major	13. No half of a mare/dependent foal pair remained on the range after attempts to gather the pair.		Comments
II.B.2.c Major	14. Euthanasia was performed on the range on compromised WHBs.		Comments
VI.A.2 Major	15. Euthanasia was performed according to AVMA guidelines via gunshot or injection of euthanasia agent.		Comments
I.A.3 II.B.4 Major	16. Fence lines at the trap or en route to the trap allowed for safe passage and safety from entanglement.		Comments
III.B.3.a Major	17. Foals, weak or debilitated WHBs were separated prior to transport to temporary holding facility.		Comments
III.B.3.a Major	18. Separation of dependent foals from mares did not exceed 4 hours, unless authorized or a decision was made to wean foals. (Authorization must be documented.)		Comments
I.A.14 Major	19. WHBs were not disturbed by non-essential personnel or equipment (evidence of disturbance includes: WHBs balked or changed direction when they saw non-essential people, saddle horses or equipment).		Comments

Form #5b: Trap Site: Handling Performance



Trap Site: Wild Horses _Burros

Assessment ID: TS Group ID: (New)

Assessment ID must be obtained from Day of Assessment Info page once it has been entered into central database. TS Group ID will be auto-assigned when uploaded to database.

Assessment Date: Start Time (ex. 13:30):

1. How many groups were assessed? Comments

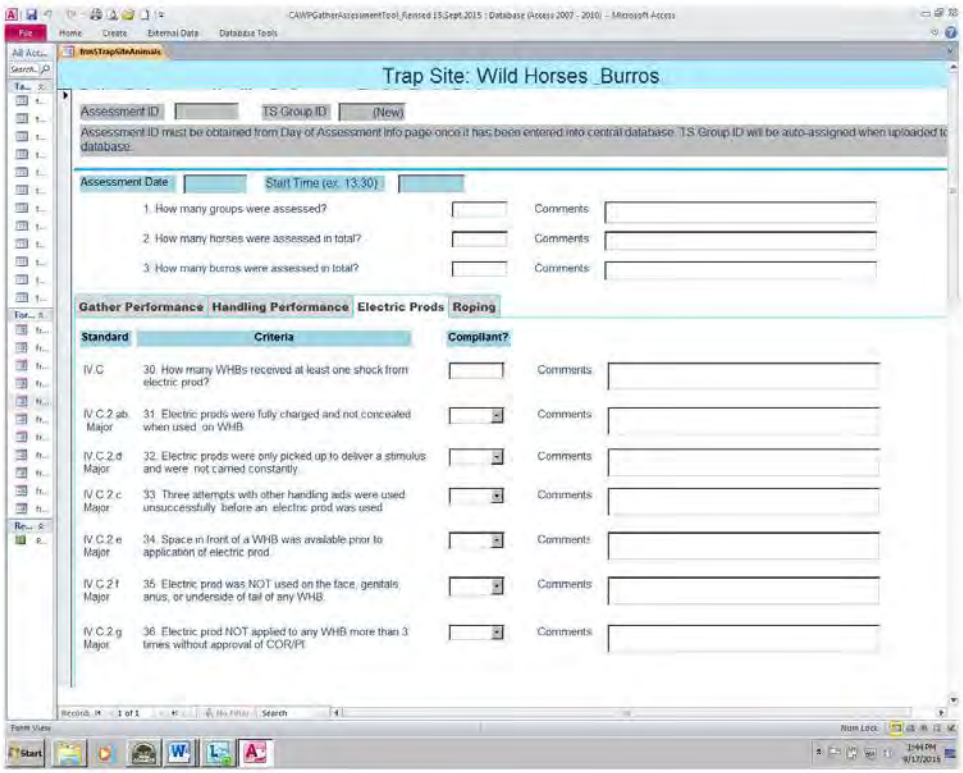
2. How many horses were assessed in total? Comments

3. How many burros were assessed in total? Comments

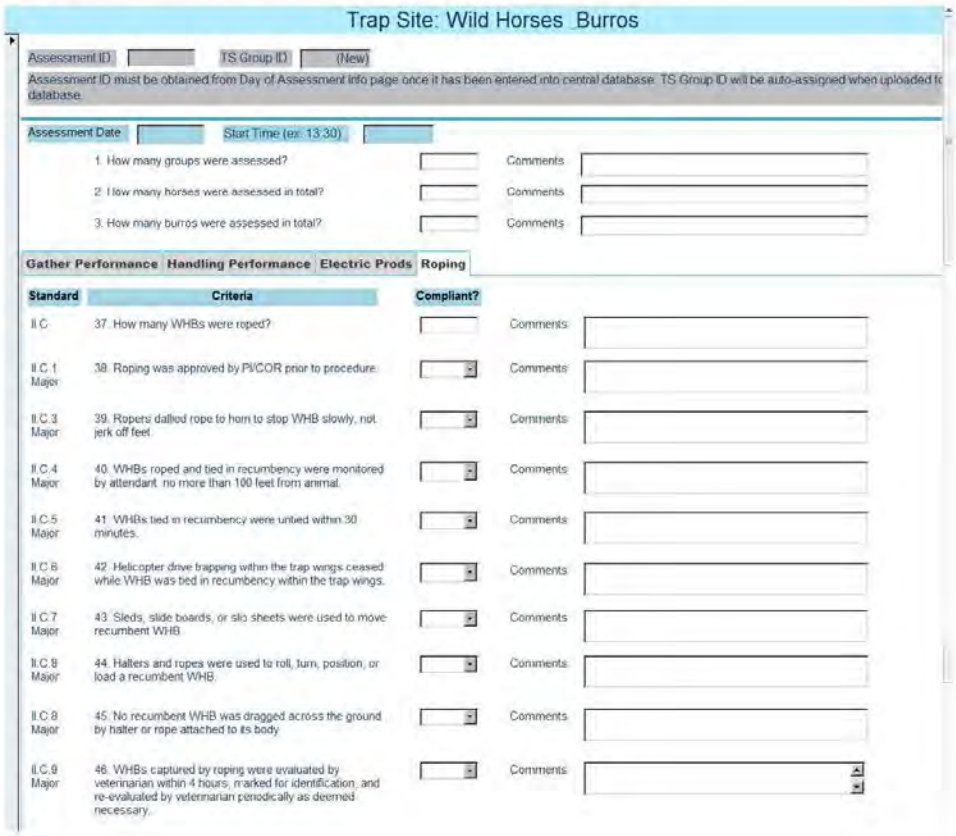
Gather Performance | Handling Performance | Electric Prods | Roping

Standard	Criteria	Compliant?	
IV.A.1 Major	20. Hitting, kicking, striking, beating was not observed.		Comments
IV.A.2 Major	21.Dragging without sled, slide board, or slip sheet was not observed. Ropes used for moving animal were attached to sled, slide board or slip sheet, unless being loaded per Section II.C.8.		Comments
IV.A.3 Minor	22. Deliberate driving WHBs into other animals, gates, panels, equipment was not observed.		Comments
IV.A.4 Minor	23. Deliberate slamming of gates or doors on WHBs was not observed.		Comments
IV.A.5 Minor	24. Excessive noise or activity causing flighty, disturbed, agitated WHBs was not observed.		Comments
IV.B.2 Minor	25. All WHBs entered runway/chute in forward direction.		Comments
IV.B.3 Minor	26. All WHBs remained in single-file alleyways, runways, or chutes less than 30 min.		Comments
IV.B.4 Minor	27. Equipment, except for helicopters, was operated and located to minimize flighty behavior.		Comments
IV.A.5 IV.B.4 Minor	28. No WHB at the trap site fell due to handling, excessive noise, sudden activity, or equipment operation. (Select Yes if it did not occur.)		Comments
IV.C.1 Minor	29. Handling aids such as flags and shaker paddles were the primary tools for driving and moving WHB.		Comments

Form #5c: Trap Site: Electric Prod



Form #5d: Trap Site: Roping



Trap Site: Wild Horses _Burros

Assessment ID | TS Group ID | (New)

Assessment ID must be obtained from Day of Assessment Info page once it has been entered into central database. TS Group ID will be auto-assigned when uploaded to database.

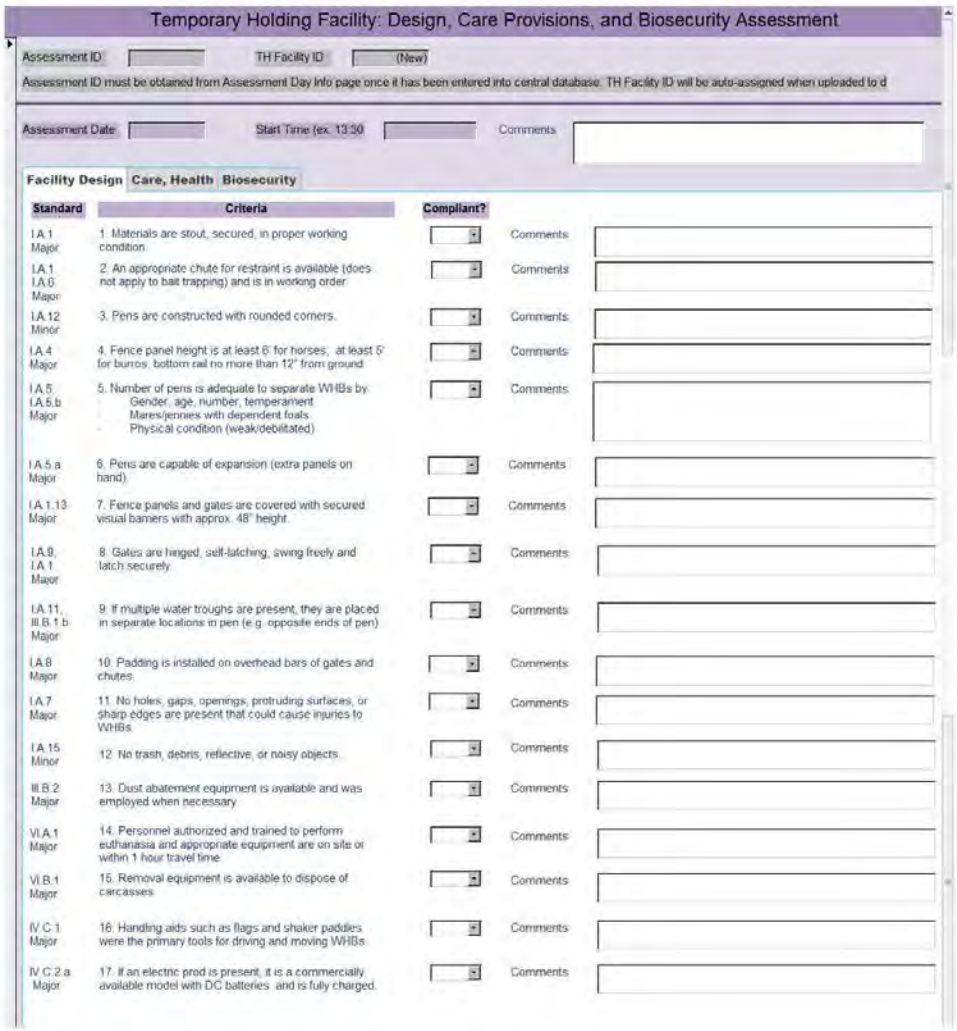
Assessment Date | Start Time (ex: 13:30)

1. How many groups were assessed? Comments
2. How many horses were assessed in total? Comments
3. How many burros were assessed in total? Comments

Gather Performance | Handling Performance | Electric Prods | Roping

Standard	Criteria	Compliant?	Comments
II.C	37. How many WHBs were roped?		Comments
II.C.1 Major	38. Roping was approved by PI/COR prior to procedure.		Comments
II.C.3 Major	39. Ropers dallied rope to horn to stop WHB slowly, not jerk off feet.		Comments
II.C.4 Major	40. WHBs roped and tied in recumbency were monitored by attendant, no more than 100 feet from animal.		Comments
II.C.5 Major	41. WHBs tied in recumbency were untied within 30 minutes.		Comments
II.C.6 Major	42. Helicopter drove trapping within the trap wings ceased while WHB was tied in recumbency within the trap wings.		Comments
II.C.7 Major	43. Sleds, slide boards, or slip sheets were used to move recumbent WHB.		Comments
II.C.8 Major	44. Halters and ropes were used to roll, turn, position, or load a recumbent WHB.		Comments
II.C.8 Major	45. No recumbent WHB was dragged across the ground by halter or rope attached to its body.		Comments
II.C.9 Major	46. WHBs captured by roping were evaluated by veterinarian within 4 hours, marked for identification, and re-evaluated by veterinarian periodically as deemed necessary.		Comments

Form #6a: Temporary Holding Facility: Facility Design



Temporary Holding Facility: Design, Care Provisions, and Biosecurity Assessment

Assessment ID: TH Facility ID: (New)

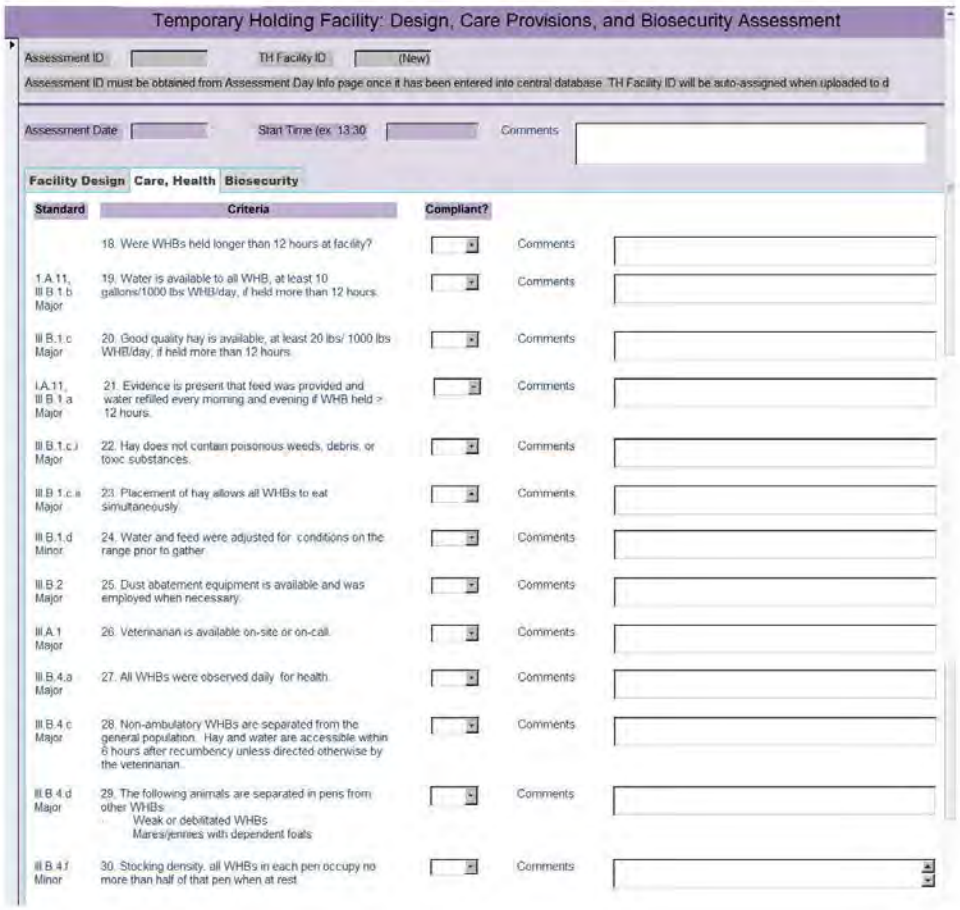
Assessment ID must be obtained from Assessment Day Info page once it has been entered into central database. TH Facility ID will be auto-assigned when uploaded to d

Assessment Date: Start Time (ex. 13:30: Comments:

Facility Design | Care, Health | Biosecurity

Standard	Criteria	Compliant?	Comments
I.A.1 Major	1. Materials are stout, secured, in proper working condition.		Comments:
I.A.1 I.A.6 Major	2. An appropriate chute for restraint is available (does not apply to bait trapping) and is in working order.		Comments:
I.A.12 Minor	3. Pens are constructed with rounded corners.		Comments:
I.A.4 Major	4. Fence panel height is at least 6' for horses; at least 5' for burros; bottom rail no more than 12" from ground.		Comments:
I.A.5 I.A.5.b Major	5. Number of pens is adequate to separate WHBs by: - Gender, age, number, temperament - Mares/jennies with dependent foals - Physical condition (weak/debilitated)		Comments:
I.A.5.a Major	6. Pens are capable of expansion (extra panels on hand).		Comments:
I.A.1.13 Major	7. Fence panels and gates are covered with secured visual barriers with approx. 48" height.		Comments:
I.A.9, I.A.1 Major	8. Gates are hinged, self-latching, swing freely and latch securely.		Comments:
I.A.11, III.B.1.b Major	9. If multiple water troughs are present, they are placed in separate locations in pen (e.g. opposite ends of pen)		Comments:
I.A.8 Major	10. Padding is installed on overhead bars of gates and chutes.		Comments:
I.A.7 Major	11. No holes, gaps, openings, protruding surfaces, or sharp edges are present that could cause injuries to WHBs.		Comments:
I.A.15 Minor	12. No trash, debris, reflective, or noisy objects.		Comments:
III.B.2 Major	13. Dust abatement equipment is available and was employed when necessary.		Comments:
VI.A.1 Major	14. Personnel authorized and trained to perform euthanasia and appropriate equipment are on site or within 1 hour travel time.		Comments:
VI.B.1 Major	15. Removal equipment is available to dispose of carcasses.		Comments:
IV.C.1 Major	16. Handling aids such as flags and shaker paddles were the primary tools for driving and moving WHBs.		Comments:
IV.C.2.a Major	17. If an electric prod is present, it is a commercially available model with DC batteries and is fully charged.		Comments:

Form #6b: Temporary Holding Facility: Care, Health



Temporary Holding Facility: Design, Care Provisions, and Biosecurity Assessment

Assessment ID: TH Facility ID: (New)

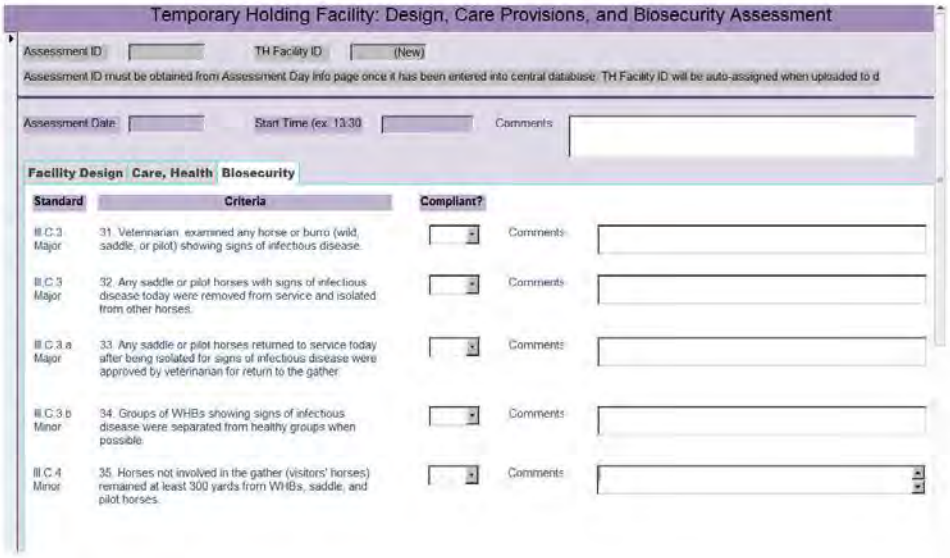
Assessment ID must be obtained from Assessment Day Info page once it has been entered into central database. TH Facility ID will be auto-assigned when uploaded to d

Assessment Date: Start Time (ex: 13:30: Comments:

Facility Design | Care, Health | Biosecurity

Standard	Criteria	Compliant?	
	18. Were WHBs held longer than 12 hours at facility?		Comments
I.A.11, III.B.1.b Major	19. Water is available to all WHB, at least 10 gallons/1000 lbs WHB/day, if held more than 12 hours.		Comments
III.B.1.c Major	20. Good quality hay is available, at least 20 lbs/ 1000 lbs WHB/day, if held more than 12 hours.		Comments
I.A.11, III.B.1.a Major	21. Evidence is present that feed was provided and water refilled every morning and evening if WHB held > 12 hours.		Comments
III.B.1.c.i Major	22. Hay does not contain poisonous weeds, debris, or toxic substances.		Comments
III.B.1.c.ii Major	23. Placement of hay allows all WHBs to eat simultaneously.		Comments
III.B.1.d Minor	24. Water and feed were adjusted for conditions on the range prior to gather.		Comments
III.B.2 Major	25. Dust abatement equipment is available and was employed when necessary.		Comments
III.A.1 Major	26. Veterinarian is available on-site or on-call.		Comments
III.B.4.a Major	27. All WHBs were observed daily for health.		Comments
III.B.4.c Major	28. Non-ambulatory WHBs are separated from the general population. Hay and water are accessible within 6 hours after recumbency unless directed otherwise by the veterinarian.		Comments
III.B.4.d Major	29. The following animals are separated in pens from other WHBs: Weak or debilitated WHBs Mares/jennies with dependent foals		Comments
III.B.4.f Minor	30. Stocking density, all WHBs in each pen occupy no more than half of that pen when at rest.		Comments

Form #6c: Temporary Holding Facility: Biosecurity



Temporary Holding Facility: Design, Care Provisions, and Biosecurity Assessment

Assessment ID | TH Facility ID (New)

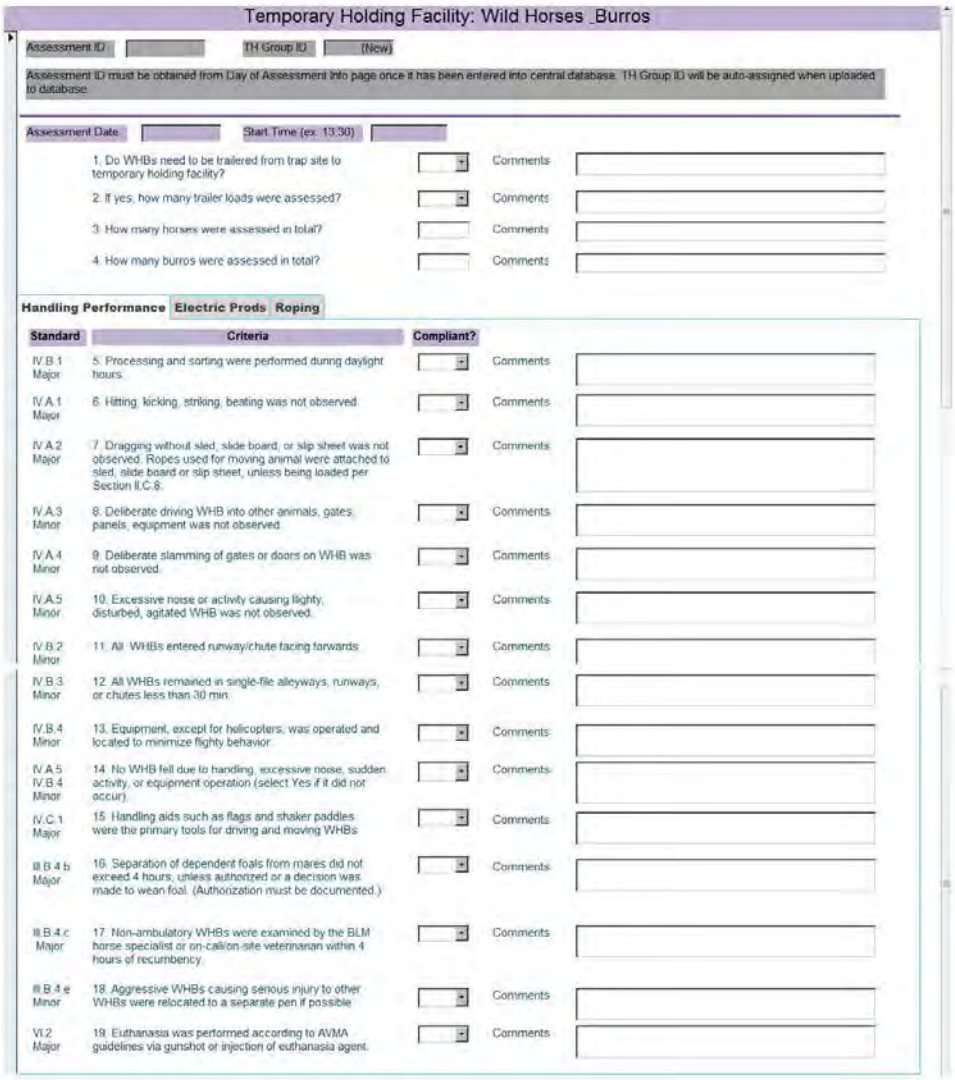
Assessment ID must be obtained from Assessment Day Info page once it has been entered into central database. TH Facility ID will be auto-assigned when uploaded to d

Assessment Date | Start Time (ex: 13:30) | Comments

Facility Design | Care, Health | Biosecurity

Standard	Criteria	Compliant?	Comments
III.C.3 Major	31. Veterinarian examined any horse or burro (wild, saddle, or pilot) showing signs of infectious disease.		
III.C.3 Major	32. Any saddle or pilot horses with signs of infectious disease today were removed from service and isolated from other horses.		
III.C.3.a Major	33. Any saddle or pilot horses returned to service today after being isolated for signs of infectious disease were approved by veterinarian for return to the gather.		
III.C.3.b Minor	34. Groups of WHBs showing signs of infectious disease were separated from healthy groups when possible.		
III.C.4 Minor	35. Horses not involved in the gather (visitors' horses) remained at least 300 yards from WHBs, saddle, and pilot horses.		

Form #7a: Temporary Holding Facility: Handling Performance



Temporary Holding Facility: Wild Horses _Burros

Assessment ID: | TH Group ID: (New)

Assessment ID must be obtained from Day of Assessment Info page once it has been entered into central database. TH Group ID will be auto-assigned when uploaded to database.

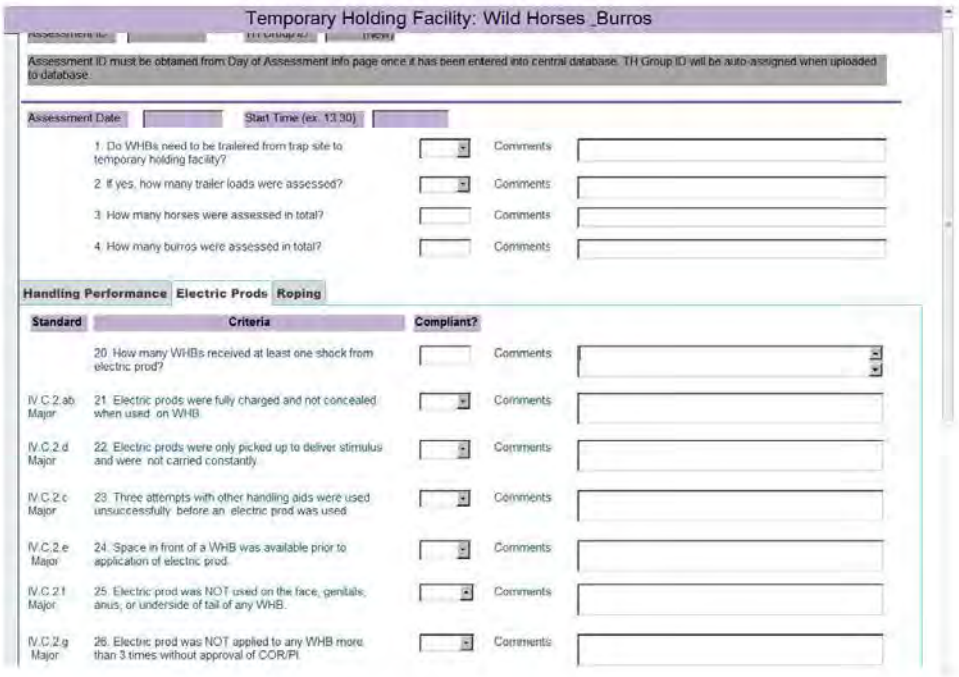
Assessment Date: | Start Time (ex: 13:30):

	1. Do WHBs need to be trailered from trap site to temporary holding facility?		Comments:
	2. If yes, how many trailer loads were assessed?		Comments:
	3. How many horses were assessed in total?		Comments:
	4. How many burros were assessed in total?		Comments:

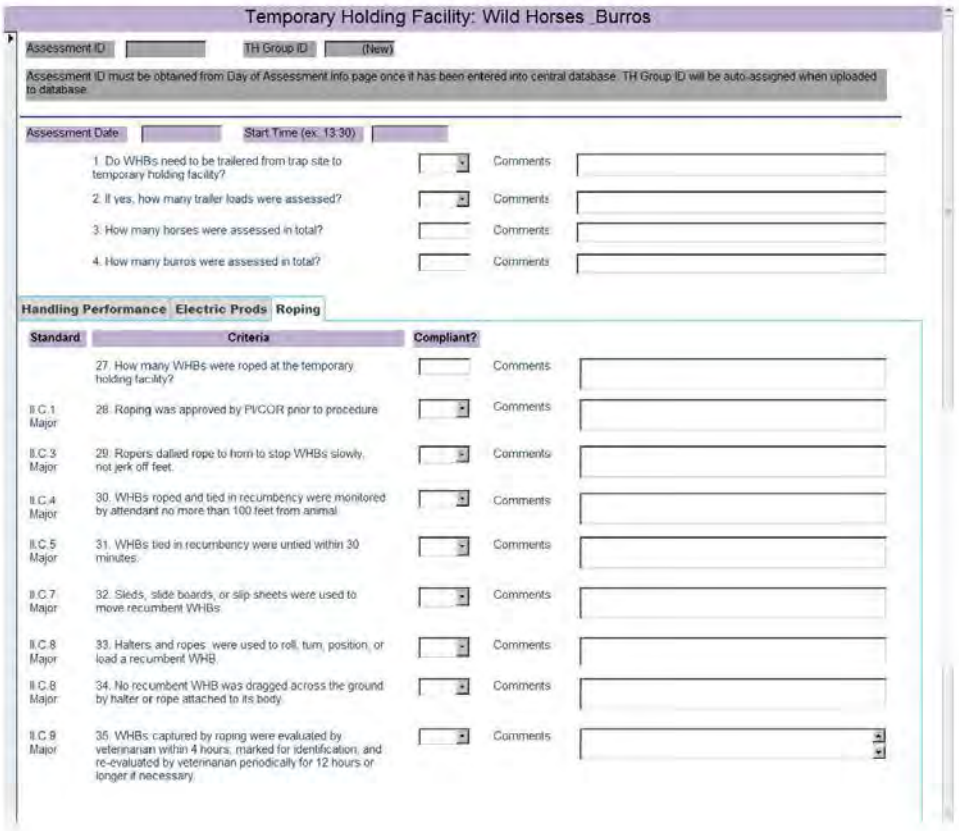
Handling Performance | Electric Prods | Roping

Standard	Criteria	Compliant?	
IV.B.1 Major	5. Processing and sorting were performed during daylight hours.		Comments:
IV.A.1 Major	6. Hitting, kicking, striking, beating was not observed.		Comments:
IV.A.2 Major	7. Dragging without sled, slide board, or slip sheet was not observed. Ropes used for moving animal were attached to sled, slide board or slip sheet, unless being loaded per Section II.C.8.		Comments:
IV.A.3 Minor	8. Deliberate driving WHB into other animals, gates, panels, equipment was not observed.		Comments:
IV.A.4 Minor	9. Deliberate slamming of gates or doors on WHB was not observed.		Comments:
IV.A.5 Minor	10. Excessive noise or activity causing flighty, disturbed, agitated WHB was not observed.		Comments:
IV.B.2 Minor	11. All WHBs entered runway/chute facing forwards.		Comments:
IV.B.3 Minor	12. All WHBs remained in single-file alleyways, runways, or chutes less than 30 min.		Comments:
IV.B.4 Minor	13. Equipment, except for helicopters, was operated and located to minimize flighty behavior.		Comments:
IV.A.5 IV.B.4 Minor	14. No WHB fell due to handling, excessive noise, sudden activity, or equipment operation (select Yes if it did not occur).		Comments:
IV.C.1 Major	15. Handling aids such as flags and shaker paddles were the primary tools for driving and moving WHBs.		Comments:
III.B.4.b Major	16. Separation of dependent foals from mares did not exceed 4 hours, unless authorized or a decision was made to wean foal. (Authorization must be documented.)		Comments:
III.B.4.c Major	17. Non-ambulatory WHBs were examined by the BLM horse specialist or on-call/on-site veterinarian within 4 hours of recumbency.		Comments:
III.B.4.e Minor	18. Aggressive WHBs causing serious injury to other WHBs were relocated to a separate pen if possible.		Comments:
VI.2 Major	19. Euthanasia was performed according to AVMA guidelines via gunshot or injection of euthanasia agent.		Comments:

Form #7b: Temporary Holding Facility: Electric Prods



Form #7c: Temporary Holding Facility: Roping



Temporary Holding Facility: Wild Horses _Burros

Assessment ID | TH Group ID (New)

Assessment ID must be obtained from Day of Assessment Info page once it has been entered into central database. TH Group ID will be auto-assigned when uploaded to database.

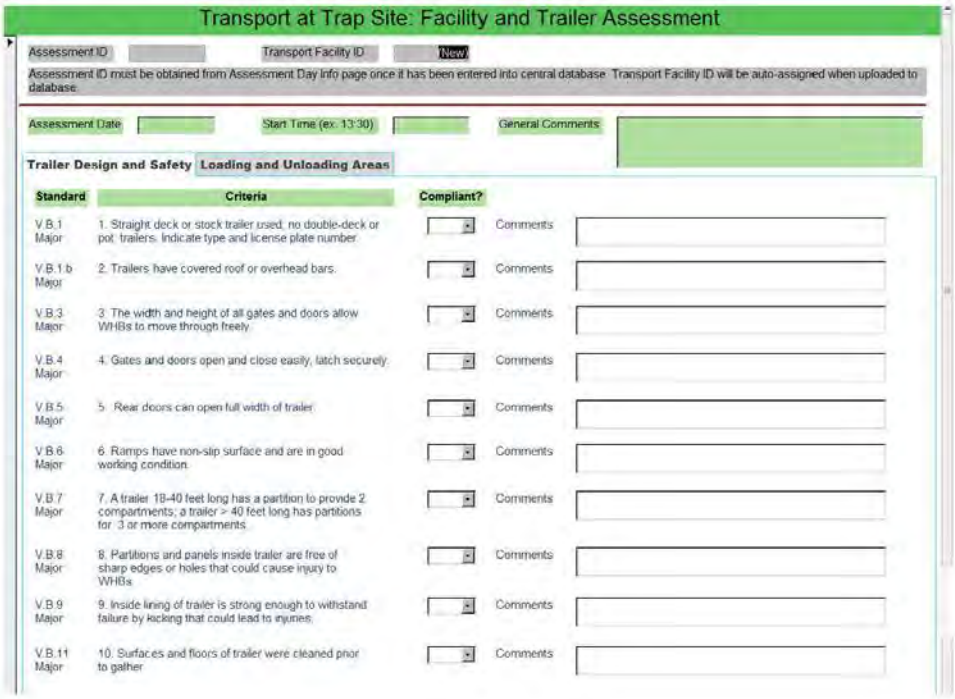
Assessment Date | Start Time (ex: 13:30)

	1. Do WHBs need to be trailered from trap site to temporary holding facility?		Comments
	2. If yes, how many trailer loads were assessed?		Comments
	3. How many horses were assessed in total?		Comments
	4. How many burros were assessed in total?		Comments

Handling Performance | Electric Prods | Roping

Standard	Criteria	Compliant?	
	27. How many WHBs were roped at the temporary holding facility?		Comments
II.C.1 Major	28. Roping was approved by PVCOR prior to procedure		Comments
II.C.3 Major	29. Ropers dallied rope to horn to stop WHBs slowly, not jerk off feet.		Comments
II.C.4 Major	30. WHBs roped and tied in recumbency were monitored by attendant no more than 100 feet from animal.		Comments
II.C.5 Major	31. WHBs tied in recumbency were untied within 30 minutes.		Comments
II.C.7 Major	32. Sleds, slide boards, or slip sheets were used to move recumbent WHBs.		Comments
II.C.8 Major	33. Halters and ropes were used to roll, turn, position, or load a recumbent WHB.		Comments
II.C.8 Major	34. No recumbent WHB was dragged across the ground by halter or rope attached to its body.		Comments
II.C.9 Major	35. WHBs captured by roping were evaluated by veterinarian within 4 hours, marked for identification, and re-evaluated by veterinarian periodically for 12 hours or longer if necessary.		Comments

Form #8a: Transport at Trap Site: Trailer Design and Safety



Transport at Trap Site: Facility and Trailer Assessment

Assessment ID | Transport Facility ID | New

Assessment ID must be obtained from Assessment Day Info page once it has been entered into central database. Transport Facility ID will be auto-assigned when uploaded to database.

Assessment Date | Start Time (ex. 13:30) | General Comments

Trailer Design and Safety | Loading and Unloading Areas

Standard	Criteria	Compliant?		
V.B.1 Major	1. Straight deck or stock trailer used; no double-deck or pot trailers. Indicate type and license plate number.		Comments	
V.B.1.b Major	2. Trailers have covered roof or overhead bars.		Comments	
V.B.3 Major	3. The width and height of all gates and doors allow WHBs to move through freely.		Comments	
V.B.4 Major	4. Gates and doors open and close easily, latch securely.		Comments	
V.B.5 Major	5. Rear doors can open full width of trailer.		Comments	
V.B.6 Major	6. Ramps have non-slip surface and are in good working condition.		Comments	
V.B.7 Major	7. A trailer 18-40 feet long has a partition to provide 2 compartments; a trailer > 40 feet long has partitions for 3 or more compartments.		Comments	
V.B.8 Major	8. Partitions and panels inside trailer are free of sharp edges or holes that could cause injury to WHBs.		Comments	
V.B.9 Major	9. Inside lining of trailer is strong enough to withstand failure by kicking that could lead to injuries.		Comments	
V.B.11 Major	10. Surfaces and floors of trailer were cleaned prior to gather.		Comments	

Form #8b: Transport at Trap Site: Loading and Unloading Areas

Form #9a: Transport at Trap Site: Loading and Unloading Procedures

Transport at Trap Site: Wild Horses _Burros

Assessment ID | Transport Group ID (New)

Assessment ID must be obtained from Assessment Day Info page once it has been entered into central database. Transport Group ID will be auto-assigned when uploaded to database.

Assessment Date | Assessment Start Time (ex. 13:30)

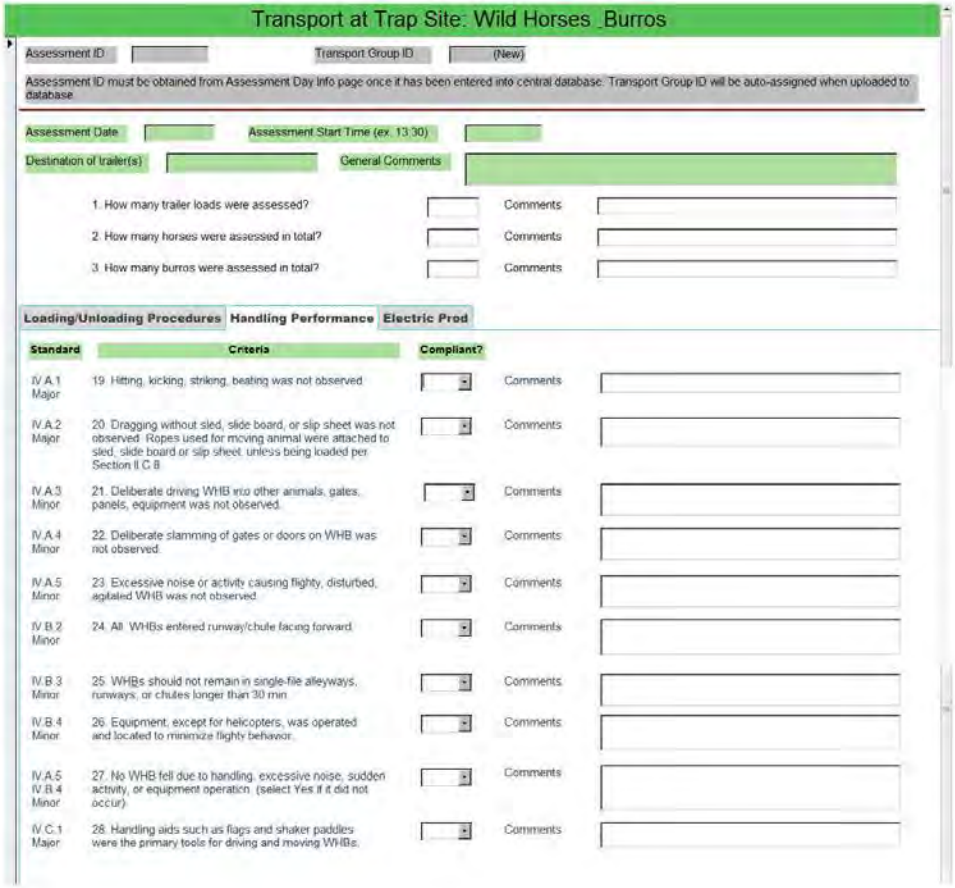
Destination of trailer(s) | General Comments

1. How many trailer loads were assessed?		Comments
2. How many horses were assessed in total?		Comments
3. How many burros were assessed in total?		Comments

Loading/Unloading Procedures | **Handling Performance** | **Electric Prod**

Standard	Criteria	Compliant?	
V.A.1 Major	4. Sorting and loading/unloading were performed during daylight hours.		Comments
V.C.3 Major	5. Trailer provided minimum space in all compartments, as follows: a. 12 sq ft per adult horse b. 6.0 sq ft per dependent horse foal c. 8.0 sq ft per adult burro d. 4.0 sq ft per dependent burro foal		Comments
V.A.2 Minor	6. WHBs were transported to the BLM preparation facility within 48 hours of capture.		Comments
V.A.2.a Major	7. Shipping delays (e.g. release to range, on-site adoption) were approved by COR/PI.		Comments
V.C.1.a Major	8. No nonambulatory, blind, or severely injured WHBs were loaded.		Comments
V.C.1.b Major	9. No weak or debilitated WHBs were loaded without approval of COR and veterinarian.		Comments
V.C.5 Major	10. No saddle horses were transported in same compartment as WHBs.		Comments
V.A.3 Minor	11. WHBs were shipped in order of priority: 1. debilitated 2. pairs 3. weanlings 4. dry mares and studs		Comments
V.C.2 Minor	12. WHBs were sorted for compatibility during travel to minimize possibility of injury.		Comments
V.B.2 Major	13. During loading and unloading, all WHBs had adequate headroom. No head contact with roof or gate openings.		Comments
V.B.2 Major	14. During transport, all WHBs had adequate headroom and were able to maintain normal posture with all four feet on floor and no contact with roof or overhead bars.		Comments
V.B.10 Minor	15. Partition gates were used to distribute load during travel in trailers longer than 18 feet.		Comments
V.A.4 Major	16. Planned drive time to BLM preparation facility/ destination does not exceed 10 hours.		Comments
V.C.4 Major	17. Any WHB that was non-ambulatory or recumbent on arrival was evaluated on the trailer, and euthanized or removed using sled, slide board, or slip sheet.		Comments
V.A.5 Minor	18. Vehicle holding WHBs did not exceed a combined period of 3 hours at a standstill during entire journey.		Comments

Form #9b: Transport at Trap Site: Handling Performance



Transport at Trap Site: Wild Horses _Burros

Assessment ID | Transport Group ID (New)

Assessment ID must be obtained from Assessment Day Info page once it has been entered into central database. Transport Group ID will be auto-assigned when uploaded to database

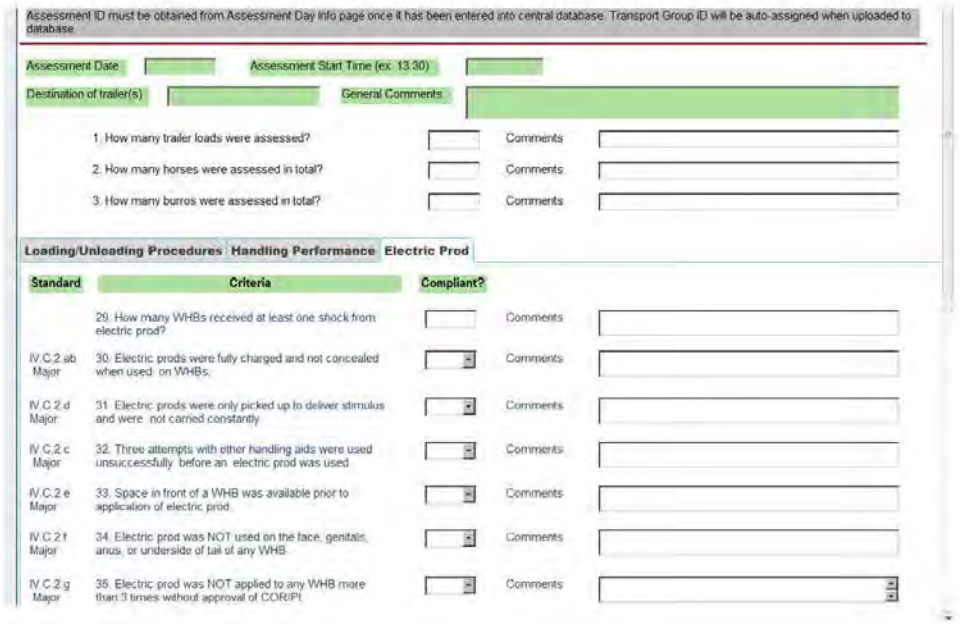
Assessment Date | Assessment Start Time (ex. 13:30) | Destination of trailer(s) | General Comments

1. How many trailer loads were assessed? Comments
2. How many horses were assessed in total? Comments
3. How many burros were assessed in total? Comments

Loading/Unloading Procedures | Handling Performance | Electric Prod

Standard	Criteria	Compliant?	
IV.A.1 Major	19. Hitting, kicking, striking, beating was not observed.		Comments
IV.A.2 Major	20. Dragging without sled, slide board, or slip sheet was not observed. Ropes used for moving animal were attached to sled, slide board or slip sheet, unless being loaded per Section II.C.8.		Comments
IV.A.3 Minor	21. Deliberate driving WHB into other animals, gates, panels, equipment was not observed.		Comments
IV.A.4 Minor	22. Deliberate slamming of gates or doors on WHB was not observed.		Comments
IV.A.5 Minor	23. Excessive noise or activity causing flighty, disturbed, agitated WHB was not observed.		Comments
IV.B.2 Minor	24. All WHBs entered runway/chute facing forward.		Comments
IV.B.3 Minor	25. WHBs should not remain in single-file alleyways, runways, or chutes longer than 30 min.		Comments
IV.B.4 Minor	26. Equipment, except for helicopters, was operated and located to minimize flighty behavior.		Comments
IV.A.5 IV.B.4 Minor	27. No WHB fell due to handling, excessive noise, sudden activity, or equipment operation. (select Yes if it did not occur)		Comments
IV.C.1 Major	28. Handling aids such as flags and shaker paddles were the primary tools for driving and moving WHBs.		Comments

Form #9c: Transport at Trap Site: Electric Prod



Assessment ID must be obtained from Assessment Day info page once it has been entered into central database. Transport Group ID will be auto-assigned when uploaded to database.

Assessment Date | Assessment Start Time (ex. 13:30) | Destination of trailer(s) | General Comments

1. How many trailer loads were assessed? — Comments
2. How many horses were assessed in total? — Comments
3. How many burros were assessed in total? — Comments

Loading/Unloading Procedures | Handling Performance | Electric Prod

Standard	Criteria	Compliant?	
	29. How many WHBs received at least one shock from electric prod?		Comments
IV.C.2.ab Major	30. Electric prods were fully charged and not concealed when used on WHBs.		Comments
IV.C.2.d Major	31. Electric prods were only picked up to deliver stimulus and were not carried constantly.		Comments
IV.C.2.c Major	32. Three attempts with other handling aids were used unsuccessfully before an electric prod was used.		Comments
IV.C.2.e Major	33. Space in front of a WHB was available prior to application of electric prod.		Comments
IV.C.2.f Major	34. Electric prod was NOT used on the face, genitals, anus, or underside of tail of any WHB.		Comments
IV.C.2.g Major	35. Electric prod was NOT applied to any WHB more than 3 times without approval of COR/PI.		Comments

Form #10a: Transport at Temporary Holding: Loading and Unloading Procedures

Transport at Temporary Holding: Wild Horses _Burros

Assessment ID: | Transport Group ID: (New)

Assessment ID must be obtained from Assessment Day Info page once it has been entered into central database. Transport Group ID will be auto-assigned when uploaded to database.

Assessment Date | Assessment Start Time (ex. 13:30)

Is assessment for unloading/arrival or loading/departure?

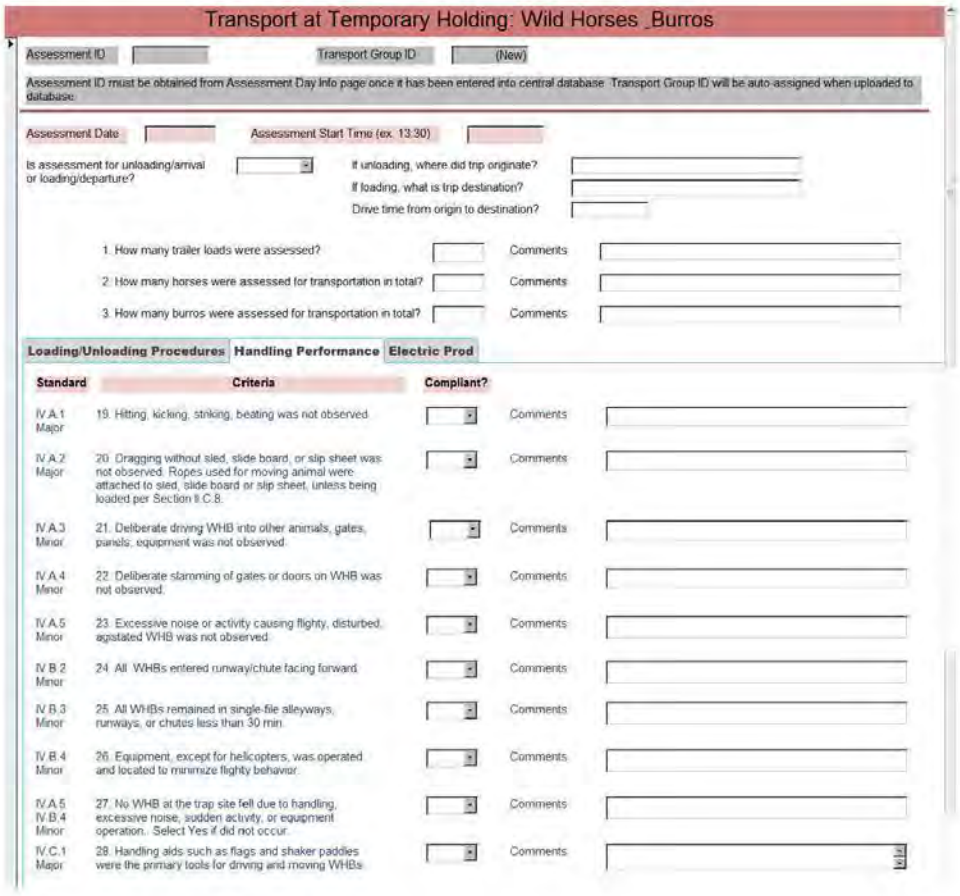
If unloading, where did trip originate?
If loading, what is trip destination?
Drive time from origin to destination?

1. How many trailer loads were assessed? Comments
2. How many horses were assessed for transportation in total? Comments
3. How many burros were assessed for transportation in total? Comments

Loading/Unloading Procedures | **Handling Performance** | **Electric Prod**

Standard	Criteria	Compliant?	
V.A.1 Major	4. Sorting and loading/unloading were performed during daylight hours.		Comments
V.C.3 Major	5. Trailer provided minimum space in all compartments, as follows: a. 12 sq ft per adult horse b. 6.0 sq ft per dependent horse foal c. 8.0 sq ft per adult burro d. 4.0 sq ft per dependent burro foal		Comments
V.A.2 Minor	6. WHBs were transported to the BLM preparation facility within 48 hours of capture.		Comments
V.A.2.a Major	7. Shipping delays (e.g. release to range, on-site adoption) were approved by COR/PI.		Comments
V.C.1.a Major	8. No nonambulatory, blind, or severely injured WHBs were loaded.		Comments
V.C.1.b Major	9. No weak or debilitated WHBs were loaded without approval of COR and veterinarian.		Comments
V.C.5 Major	10. No saddle horses were transported in same compartment as WHBs.		Comments
V.A.3 Minor	11. WHBs were shipped in order of priority: 1. debilitated 2. pairs 3. weanlings 4. dry mares and studs		Comments
V.C.2 Minor	12. WHBs were sorted for compatibility during travel to minimize possibility of injury.		Comments
V.B.2 Major	13. During loading and unloading, all WHBs had adequate headroom. No head contact with roof or gate openings.		Comments
V.B.2 Major	14. During transport, all WHBs had adequate headroom and were able to maintain normal posture with all four feet on floor and no contact with roof or overhead bars.		Comments
V.B.10 Minor	15. Partition gates were used to distribute load during travel in trailers longer than 18 feet.		Comments
V.A.4 Major	16. Planned drive time to BLM preparation facility/ destination did not exceed 10 hours.		Comments
V.C.4 Major	17. Any WHB that was non-ambulatory or recumbent on arrival was evaluated on the trailer, and euthanized or removed using sled, slide board, or slip sheet.		Comments
V.A.5 Minor	18. Vehicle holding WHBs did not exceed a combined period of 3 hours at a standstill during entire journey.		Comments

Form #10b: Transport at Temporary Holding: Handling Performance



Transport at Temporary Holding: Wild Horses _Burros

Assessment ID | Transport Group ID (New)

Assessment ID must be obtained from Assessment Day Info page once it has been entered into central database. Transport Group ID will be auto-assigned when uploaded to database.

Assessment Date | Assessment Start Time (ex. 13:30)

Is assessment for unloading/arrival or loading/departure?

If unloading, where did trip originate?

If loading, what is trip destination?

Drive time from origin to destination?

1. How many trailer loads were assessed? Comments

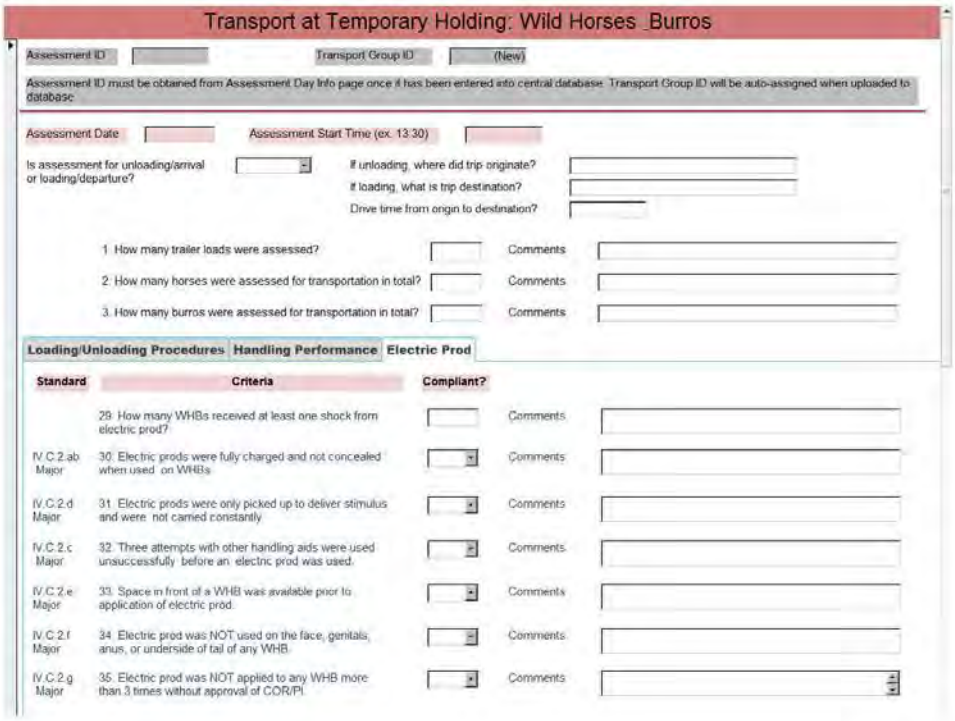
2. How many horses were assessed for transportation in total? Comments

3. How many burros were assessed for transportation in total? Comments

Loading/Unloading Procedures | Handling Performance | Electric Prod

Standard	Criteria	Compliant?	
IV.A.1 Major	19. Hitting, kicking, striking, beating was not observed.		Comments
IV.A.2 Major	20. Dragging without sled, slide board, or slip sheet was not observed. Ropes used for moving animal were attached to sled, slide board or slip sheet, unless being loaded per Section II.C.8.		Comments
IV.A.3 Minor	21. Deliberate driving WHB into other animals, gates, panels, equipment was not observed.		Comments
IV.A.4 Minor	22. Deliberate slamming of gates or doors on WHB was not observed.		Comments
IV.A.5 Minor	23. Excessive noise or activity causing flighty, disturbed, agitated WHB was not observed.		Comments
IV.B.2 Minor	24. All WHBs entered runway/chute facing forward.		Comments
IV.B.3 Minor	25. All WHBs remained in single-file alleyways, runways, or chutes less than 30 min.		Comments
IV.B.4 Minor	26. Equipment, except for helicopters, was operated and located to minimize flighty behavior.		Comments
IV.A.5 IV.B.4 Minor	27. No WHB at the trap site fell due to handling, excessive noise, sudden activity, or equipment operation. Select Yes if did not occur.		Comments
IV.C.1 Major	28. Handling aids such as flags and shaker paddles were the primary tools for driving and moving WHBs.		Comments

Form #10c: Transport at Temporary Holding: Electric Prod



Transport at Temporary Holding: Wild Horses _Burros

Assessment ID | Transport Group ID (New)

Assessment ID must be obtained from Assessment Day Info page once it has been entered into central database. Transport Group ID will be auto-assigned when uploaded to database

Assessment Date | Assessment Start Time (ex. 13:30)

Is assessment for unloading/arrival or loading/departure?

If unloading, where did trip originate?

If loading, what is trip destination?

Drive time from origin to destination?

1. How many trailer loads were assessed? Comments

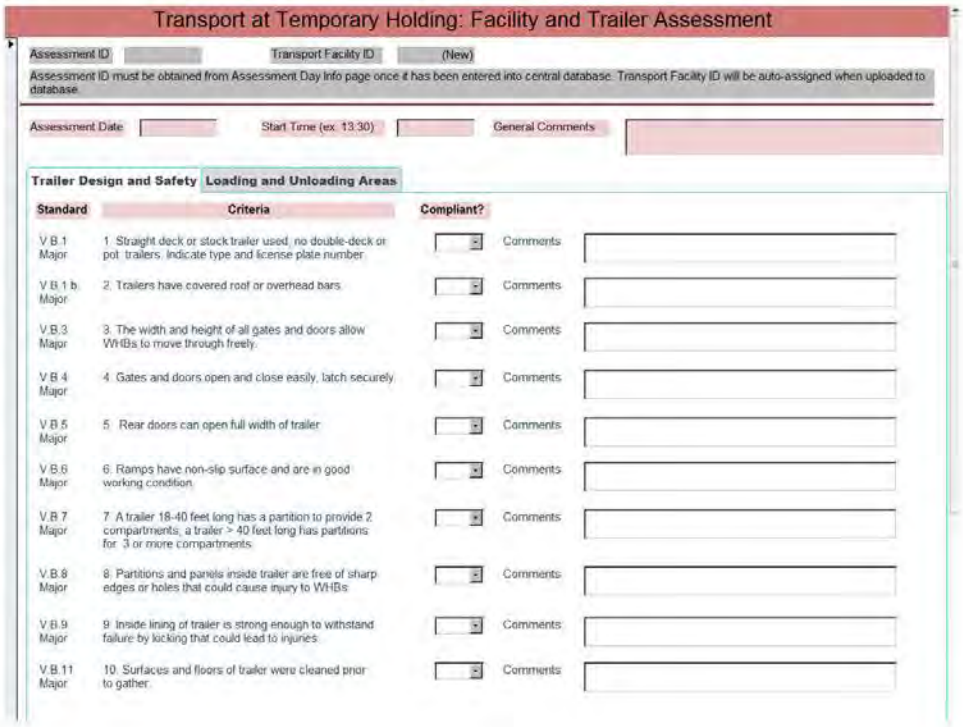
2. How many horses were assessed for transportation in total? Comments

3. How many burros were assessed for transportation in total? Comments

Loading/Unloading Procedures | Handling Performance | Electric Prod

Standard	Criteria	Compliant?	
	29. How many WHBs received at least one shock from electric prod?		Comments
IV.C.2.ab Major	30. Electric prods were fully charged and not concealed when used on WHBs		Comments
IV.C.2.d Major	31. Electric prods were only picked up to deliver stimulus and were not carried constantly		Comments
IV.C.2.c Major	32. Three attempts with other handling aids were used unsuccessfully before an electric prod was used.		Comments
IV.C.2.e Major	33. Space in front of a WHB was available prior to application of electric prod.		Comments
IV.C.2.f Major	34. Electric prod was NOT used on the face, genitals, anus, or underside of tail of any WHB.		Comments
IV.C.2.g Major	35. Electric prod was NOT applied to any WHB more than 3 times without approval of COR/PI.		Comments

Form #11a: Transport at Temporary Holding: Trailer Design and Safety



Transport at Temporary Holding: Facility and Trailer Assessment

Assessment ID | Transport Facility ID (New)

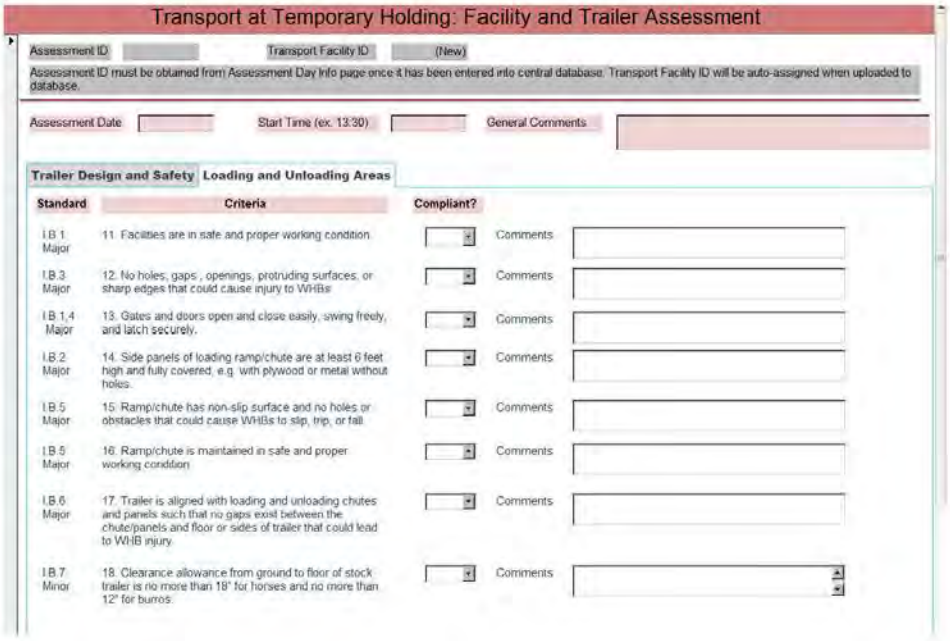
Assessment ID must be obtained from Assessment Day Info page once it has been entered into central database. Transport Facility ID will be auto-assigned when uploaded to database.

Assessment Date | Start Time (ex. 13:30) | General Comments

Trailer Design and Safety | Loading and Unloading Areas

Standard	Criteria	Compliant?	
V.B.1 Major	1. Straight deck or stock trailer used, no double-deck or pot trailers. Indicate type and license plate number.		Comments
V.B.1.b. Major	2. Trailers have covered roof or overhead bars.		Comments
V.B.3 Major	3. The width and height of all gates and doors allow WHBs to move through freely.		Comments
V.B.4 Major	4. Gates and doors open and close easily, latch securely.		Comments
V.B.5 Major	5. Rear doors can open full width of trailer.		Comments
V.B.6 Major	6. Ramps have non-slip surface and are in good working condition.		Comments
V.B.7 Major	7. A trailer 18-40 feet long has a partition to provide 2 compartments; a trailer > 40 feet long has partitions for 3 or more compartments.		Comments
V.B.8 Major	8. Partitions and panels inside trailer are free of sharp edges or holes that could cause injury to WHBs.		Comments
V.B.9 Major	9. Inside lining of trailer is strong enough to withstand failure by kicking that could lead to injuries.		Comments
V.B.11 Major	10. Surfaces and floors of trailer were cleaned prior to gather.		Comments

Form #11b: Transport at Temporary Holding: Loading and Unloading Areas



Transport at Temporary Holding: Facility and Trailer Assessment

Assessment ID | Transport Facility ID (New)

Assessment ID must be obtained from Assessment Day Info page once it has been entered into central database. Transport Facility ID will be auto-assigned when uploaded to database.

Assessment Date | Start Time (ex. 13:30) | General Comments

Trailer Design and Safety | Loading and Unloading Areas

Standard	Criteria	Compliant?	
I.B.1 Major	11. Facilities are in safe and proper working condition.		Comments
I.B.3 Major	12. No holes, gaps , openings, protruding surfaces, or sharp edges that could cause injury to WHBs		Comments
I.B.1,4 Major	13. Gates and doors open and close easily, swing freely, and latch securely.		Comments
I.B.2 Major	14. Side panels of loading ramp/chute are at least 6 feet high and fully covered, e.g. with plywood or metal without holes.		Comments
I.B.5 Major	15. Ramp/chute has non-slip surface and no holes or obstacles that could cause WHBs to slip, trip, or fall.		Comments
I.B.5 Major	16. Ramp/chute is maintained in safe and proper working condition		Comments
I.B.6 Major	17. Trailer is aligned with loading and unloading chutes and panels such that no gaps exist between the chute/panels and floor or sides of trailer that could lead to WHB injury.		Comments
I.B.7 Minor	18. Clearance allowance from ground to floor of stock trailer is no more than 18" for horses and no more than 12" for burros.		Comments

BUREAU OF LAND MANAGEMENT

UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
WASHINGTON, D.C. 20240
http://www.blm.gov
March 4, 2015

In Reply Refer To:
4750 (260) P

EMS TRANSMISSION 03/24/2016
Instruction Memorandum No. 2015-070
Expires: 09/30/2018

To: All Field Office Officials (except Alaska)

From: Assistant Director, Renewable Resources and Planning

Subject: Animal Health, Maintenance, Evaluation and Response

Program Area: Wild Horse and Burro (WH&B) Program

Purpose: The purpose of this Instruction Memorandum (IM) is to establish policy and procedures for the proactive and preventative medical care of animals managed by the WH&B Program including deworming, vaccination, evaluation of animal condition and determination of an appropriate end-of-life action when indicated for reasons of an act of mercy, health or safety.

Policy/Action: Effective immediately, all Bureau of Land Management (BLM) Washington DC, state, district, and field offices must comply with the policies described in this IM. The key contents of this policy are:

- Deworming and vaccination schedule, diseases to vaccinate against and frequency of treatment (Attachment 1).
- Animal evaluation and response that includes evaluating animal health, body condition scoring, and the authority, training, approved methods, reporting documentation and reasons for ending an animal's life as an act of mercy, health or safety (Attachment 2, 3 and 4).

Timeframe: All portions of this policy are effective immediately with the exception of the formal training requirements identified in Attachment 2. For a period of three months from the date of issuance of this policy, personnel who already have experience performing euthanasia but have not yet received formal training may continue to do so for emergency situations when a trained person is not immediately available, as a last resort. After this time, only personnel trained by a veterinarian may end an animal's life as an act of mercy, health or safety.

Budget Impact: This memorandum is a reissuance and an update of existing policy with minimal changes. This reissued guidance does not result in costs beyond those already incurred under existing policy except for the additional training requirements for personnel authorized to end an animal's life. The cost for the required training is about $250 per person depending on the training venue. The cost of vaccinations and deworming for animals in off-range corrals is $85 during the first year and $40 annually thereafter for booster vaccinations. Annual deworming and vaccinations are not administered to animals in off-range pastures. The cost to end an animal's life ranges from $50 to $250 depending on circumstances.

Background: The authority for ending a wild horse or burro's life is provided by Public Law 92-195, Wild Free-Roaming Horses and Burros Act of 1971 Section 1333 (b)(2)(A) and 43 CFR 4730.l. The policy contained in this IM amends and/or replaces previous policies contained in BLM Manual 4750-1 Wild Horse and Burro Preparation and Management Handbook and in BLM Manual H-4700-1 Wild Horses and Burros Management Handbook.

The administration of vaccines and dewormer to the wild horses and burros removed from the public lands and maintained at off-range corrals has been a long-standing practice within the Wild Horse and Burro Program and is a required health care standard operating procedure. Decisions to end a wild horse or burro's life for reasons related to acts of mercy, health, and safety require that the BLM evaluate individual animals affected by injury, physical defect, acute, chronic or incurable disease, severe tooth loss, poor condition, old age or behavior characteristics posing safety hazards to handlers. During gathers, the animal's ability to survive the stress of removal and its probability of surviving on the range, as well as the animal's welfare and potential for suffering if released or transported to a BLM off-range preparation facility, are all considered. Humane, long-term care of wild horses and burros located at off-range corrals, pastures, ecosanctuaries and other facilities require periodic evaluation of their condition by qualified BLM personnel or a veterinarian to provide for their well-being. These evaluations will, at times, result in decisions that require ending an animal's life.

Manual/Handbook Sections Affected: BLM Manual 4750-1 Wild Horse and Burro Preparation, Chapter III - Identification and Basic Health Care will need to be amended to provide for rabies and West Nile vaccinations required by this and previous IMs. The Wild Horses and Burros Management Handbook, H-4700-1 section 4.9 is superseded by this IM and replaced in its entirety.

Coordination: This IM was coordinated among WO-200, WO-260, WO-600, WH&B state leads, WH&B specialists, and WH&B facility managers.
Contact: Any questions regarding this IM can be directed to Joan Guilfoyle, Division Chief, Wild Horse and Burro Program (WO-260), at 202-912-7260.

Signed by:
Shelley J. Smith
Acting, Deputy Assistant Director
Resources and Planning

Authenticated by:
Robert M. Williams
Division of IRM Governance,WO-860

4 Attachments
1 - De-worming and Vaccination Schedule (1 p)
2 - Animal Evaluation and Response (9 pp)
3 - Henneke Equine Body Scoring Chart (1 p)
4 - Final Gather Data Report (2 pp)

Attachment 2: Animal Evaluation and Response

A. Euthanasia for Reasons Related to Acts of Mercy, Health and Safety

The Authorized Officer (AO) will euthanize or authorize the euthanasia of a wild horse or burro when any of the following conditions exist.

(1) A chronic or incurable disease, injury, lameness, or serious physical defect (includes severe tooth loss or wear, club foot, and other severe acquired or congenital abnormalities);

(2) A Henneke body condition score (Attachment 3) of less than three with a poor or hopeless prognosis for improvement;

(3) An acute or chronic illness, injury, physical condition, or lameness that cannot be treated or has a poor or hopeless prognosis for recovery;

(4) An order from a state or federal animal health official authorizing the humane destruction of the animal(s) as a disease control measure;

(5) The animal exhibits dangerous characteristics beyond those inherently associated with the wild characteristics of wild horses and burros; or

(6) The animal poses a public safety hazard (e.g., loose on a busy highway) and an alternative remedy (capture or return to a herd management area (HMA)) is not immediately available.

B. Authorized Delegations and Required Training

1. Authority to Authorize Euthanasia

Decisions regarding the euthanasia of a wild horse or burro rest solely with the Bureau of Land Management's (BLM's) AO, defined in 43 CFR 4700.0-5 as "any employee of the Bureau of Land Management to whom has been delegated the authority to perform the duties described herein," and further defined by BLM Manual – 1203 or the Authorized Officer's Representative (AR) (persons designated by the AO as described in 43 CFR 4730.1). In some cases, the decision to euthanize an animal must be made in the field and cannot always be anticipated. To minimize suffering by providing euthanasia in a timely manner, managers should have a sufficient number of individuals trained to perform euthanasia that meet the state director's firearm standards, the requirements outlined in 43 CFR 4700, and in this Instruction Memorandum. When possible, a veterinarian should be consulted prior to euthanasia unless circumstances necessitating euthanasia are obvious (e.g., a broken leg or other severe injury) and a logistical delay in obtaining this consultation would only prolong an animal's suffering.

II. Authorization to Perform Euthanasia

Authorized Officers may delegate the authority to perform euthanasia in writing to anyone known to the AO to have the required training, skill, experience, and equipment to perform euthanasia described in this policy (See Section D, How Euthanasia Will Be Performed). Individuals to whom the AO may consider delegating this authority include: BLM employees, veterinarians, individuals under contract with the BLM, individuals performing duties under assistance agreements with the BLM, federal or state wildlife management officers, animal control officers, and law enforcement officers.

On gathers, at preparation facilities (facilities where animals are prepared for transport or adoption), at short-term holding (STH) or long-term pasture (LTP) facilities, inmate training facilities and at eco-sanctuaries, the AO is responsible for ensuring trained personnel are available to perform euthanasia at appropriate times. This includes anytime when wild horses or burros are being captured, sorted, worked, or loaded for transportation, regardless of location. At adoptions and public events, the AO will ensure that a veterinarian is on-site or on-call to perform timely and discreet euthanasia if necessary as an act of mercy.

III. Training Requirements

Only persons trained by a veterinarian will be authorized to perform euthanasia. This training may be provided by any veterinarian known to the AO to have the necessary knowledge and experience to provide this guidance to lay persons. This training will not be required to be completed on an annual basis; however, the Washington Office (WO) may direct individuals to take refresher training if there are significant changes in the acceptable practices.

When a firearm is used to perform euthanasia by a non-BLM employee, that individual must have formal training or certification in firearms safety. Appropriate certification for non-BLM personnel would include a hunter or firearms safety qualification recognized as satisfying a state-mandated hunter safety requirement or a firearms safety class certified by the National Rifle Association, law enforcement, or military program.

BLM employees performing euthanasia must be authorized to use a firearm by the state director and meet all requirements specified in the state office firearms policy. If a state has not issued a firearms policy addressing Wild Horses and Burros (WH&B) euthanasia, the BLM employees performing euthanasia must complete annual training for certification in firearms safety and shooting proficiency in accordance with the BLM Handbook H-1112-2, Safety and Health for Field Operations.

C. Euthanasia Related to Specific WH&B Management Activities

I. Euthanasia During Gather Operations

This section sets euthanasia policy during WH&B gather operations. For a description of the Organizational Chain of Command at gathers as well as roles and responsibilities of all gather personnel and contractors, see IM No. 2013-060, Wild Horse and Burro Gathers: Management by Incident Command System.

During gather operations, the Lead Contracting Officers Representative (COR), as delegated by the AO prior to the gather, will authorize the release or euthanasia of any wild horse or burro that they believe will not tolerate the handling stress associated with transportation, adoption preparation, or holding. No wild horse or burro should be released or shipped to a preparation or other facility with a preexisting condition that requires immediate euthanasia as an act of mercy. The Incident Commander (IC) or COR should, as an act of mercy and after consultation with the on-site veterinarian, euthanize any animal that meets any of the conditions described in A1 through A6 above.

II. Euthanasia On-The-Range

This section sets euthanasia policy for the BLM in field situations associated with on-the-range WH&B management, including lands other than those administered by the BLM where WH&Bs are present.

The BLM WH&B specialist responsible for management of an HMA will evaluate the condition of wild horses and burros throughout the year during routine resource monitoring efforts. If an animal is found to be suffering from any of the conditions listed in A1 through A6 above, the animal should be euthanized, if possible, on the range as an act of mercy. If euthanasia is not possible, humane killing as described in Section D below may be performed as an act of mercy.

On the range, the euthanasia may be performed by any BLM employee or other qualified individual that has been delegated that authority by the AO, has had the required training in euthanasia and firearms safety as described above and has the appropriate equipment available.

III. Euthanasia at Short-Term Holding, and Preparation and Inmate Training Facilities

This section sets euthanasia policy for the BLM in short-term holding (STH) facilities. If euthanasia is necessary at a STH facility, it will be performed by a trained and qualified individual as authorized by the AO. The BLM employees and contractors follow comprehensive animal welfare guidelines to protect the health and welfare of wild horses and burros under their care. However, acute or chronic problems can develop during captivity and the handling of wild animals that are most humanely addressed by euthanasia. Some conditions may not immediately be apparent during gathers or other

points of origin, require additional assessment or evaluation over time, or may best be addressed after an animal is moved to a STH or preparation facility. Euthanasia at all STH and preparation facilities will be applied as follows:

(a) If an animal is affected by any of the conditions described in A1 through A6 above that causes acute pain or suffering and immediate euthanasia would be an act of mercy, the AO or AR must ensure the animal is immediately euthanized.

(b) If an animal is affected by any of the conditions described in A1 through A6 above, but is not in acute pain, the AO should first consult a veterinarian. For example, if the animal has a physical defect or deformity that would adversely impact its quality of life if it were placed in the adoption program or in long-term pasture facilities, but acute suffering is not apparent, a veterinarian should be consulted prior to euthanasia. If the consultation confirms the animal meets a condition described in A1 through A6 above, the animal will be euthanized in a timely manner.

(c) If the AO or AR concludes, after consultation with a veterinarian, that an animal in a STH facility is affected by any of the conditions described in A1 through A6 or cannot tolerate the stress of transportation to another facility or adoption preparation, then the animal will be euthanized.

IV. Euthanasia at Long-Term Pasture Facilities or Eco-Sanctuaries

This section sets euthanasia policy for the BLM at LTP and eco-sanctuary facilities.

For LTPs, the BLM COR or Project Inspector (PI), and for eco-sanctuaries, the Program Officer (PO) or PI responsible for oversight of the agreement will evaluate all horses and burros and establish their body condition periodically throughout the year, particularly if the facility is experiencing drought or some other event which might limit forage availability. During the year, if any animal is affected by any of the conditions listed in A1 through A6 above, the COR, PO, PI, contractor, partner or another person authorized by the AO and meeting the requirements found in Section B of this IM will euthanize that animal, if possible. On an annual basis, a team will formally evaluate the condition of each animal on the LTPs and eco-sanctuaries. The evaluation team will consist of a BLM WH&B specialist and a U.S. Department of Agriculture (USDA) Animal and Plant Health Inspection Service (APHIS) or other veterinarian acceptable to the BLM. The action plan for the formal evaluation is as follows:

(a) All animals will be inspected by field observation to evaluate their apparent health, overall condition and body condition, and identify animals that may need to be euthanized to prevent a slow death due to a deterioration of their condition. This evaluation will be based on a visual inspection and the Henneke body condition scoring system. The evaluations should be conducted prior to severe winter weather to identify horses with body condition scores of three or less.

(b) Animals with a body condition score of three or less that appear to be acutely suffering will be euthanized in the field by the PI or designated person such as the contractor, within 24 hours of the evaluation. Animals that are chronically affected with a body condition score of less than three will be euthanized within two weeks. Horses with a score of three will remain in the field and will be re-evaluated by the contractor and the PI for that contract in 60 days to see if their condition is improving, staying the same or declining. Those that are declining in condition will be euthanized as soon as possible after the second evaluation.

(c) Arrangements for carcass disposal for euthanized animals will be in accordance with applicable state and county laws and ordinances.

V. Euthanasia During Transportation

Problems can develop during transport, or become exacerbated by transportation, of an animal. If emergency euthanasia is necessary during transportation for any of the conditions described in A1 through A6 above, the truck driver will immediately contact the AO, the COR, or other identified BLM representative. Under these circumstances, a veterinarian should be contacted immediately to evaluate the animal and perform euthanasia if indicated as soon as possible. If necessary, the animal(s) may need to be off-loaded at the closest BLM or suitable livestock handling facility to ensure that euthanasia can be performed safely and effectively.

VI. Euthanasia at Adoptions or Public Events

The AO will ensure that a veterinarian is on-site or on-call and available to respond within two hours at any adoption or public event. If a veterinarian is unable to respond within that timeframe, the animal should be loaded on to a trailer and taken to the closest qualified veterinarian. The AO will consult with the veterinarian prior to deciding to euthanize an animal and the veterinarian will perform the euthanasia in a timely and discreet manner.

VII. Euthanasia of a Large Number of Animals

When the need for euthanasia of a large number of animals is anticipated for reasons related to acts of mercy, chronic or acute injury, disease or safety, the likely course of action should be identified and outlined in advance whenever possible. When field monitoring and pre-gather planning identify an increased likelihood that large numbers of animals may need to be euthanized during a gather, this should be addressed in the gather plan. In an on-the-range, preparation, STH, LTP, or eco-sanctuary facility situation, where a gather is not involved, advance planning should also be completed by the AO whenever possible. Arrangements should be made for a USDA APHIS or other veterinarian experienced with WH&B to visit the site and consult with the AO on euthanasia decisions. This consultation should be based on an examination of the animals by the veterinarian. It should include a detailed, written evaluation of the

conditions, circumstances or history of the situation and the number of animals involved. Where appropriate, this information should be specific for each animal affected. During this planning stage, it is critical that the AO include the state office WH&B program lead, appropriate state office, district office, and field office managers, and any contractors that may be involved.

VIII. Euthanasia of Unusually Dangerous Animals

Unusually aggressive wild horses and burros can pose an unacceptable risk of injury to personnel when maintained in enclosed spaces where some level of handling is required. In rare cases, animals on the range can also be dangerous to domestic animals and/or people. When a horse or burro is unusually dangerous, it is reasonable to conclude that an average adopter could not humanely care for the animal as required by the regulations (e.g., provide proper transportation, feeding, medical care and handling, 43 CFR 4750.1). The BLM cannot solve the problem by removing unusually dangerous animals from the adoption system and placing them in a LTP or eco-sanctuary facility because this resolution also poses significant risk of injury, both to animals in transport, and to the BLM personnel and LTP and eco-sanctuary operators.

When deciding to euthanize an animal because it is unusually dangerous, the AO, in consultation with a veterinarian or other individuals with expertise in animal care, handling and behavior (as designated by the AO), must determine that the animal poses a *significant and unusual danger to people or other animals beyond that normally associated with wild horses and burros.* The AO must document the aspects of the animal's behavior that make it unusually dangerous and include this documentation in a report which should be maintained in the appropriate HMA case file and recorded in the Wild Horse and Burro Program System (WHBPS).

D. How Euthanasia will be Performed

When necessary, euthanasia will be performed in a dignified and discreet manner that is recognized and approved by the AVMA in their Guidelines for the Euthanasia of Animals: 2013 Edition. Two methods will be used as follows: 1) injection of a lethal dose of a barbiturate derivative such as sodium pentobarbital solution, or 2) gunshot to the brain of an animal that is calm and still, or humanely-restrained.

- Injections
  Only commercially available pentobarbital products will be used for injectable euthanasia of conscious animals. Products will be administered by a veterinarian or technician working under the supervision of a veterinarian as may be dictated by state or federal regulations. Consideration must be given for timely and appropriate carcass disposal when animals are euthanized by injection of pentobarbital products. When injectable agents are used, the veterinarian supervising the euthanasia process is responsible for ensuring carcasses are properly disposed of so tissue residues do not threaten wildlife species that may be attracted to and consume blood or carrion from

euthanized animals.

- Gunshot
  A properly placed gunshot to the brain of an animal that is calm and still, or humanely-restrained, instantly produces an unconscious state followed quickly by a painless and humane death. This method of euthanizing wild horses and burros requires only a minimum of handling and restraint; and, when performed on the range, drug residues that may poison wildlife or enter the environment following carcass disposal are not a concern. Only qualified and experienced persons skilled in the safe handling and use of firearms and trained by a veterinarian will perform the procedure. The optimal placement of a gunshot is from the front of the animal, perpendicular to the skull at a point one inch above the intersection of two imaginary diagonal lines drawn like an "X" from the eyes to the base of the ears. Typically, when euthanizing a wild horse or burro in this manner, the animal will be approached to within five-to-six feet and the gun will be held within a few inches or up to two-to-three feet from the animal.

  For familiarity among operators, the preferred firearm for routine use will be a 22 magnum caliber revolver. A 22 long rifle caliber revolver may also be used and some other types and calibers of firearms typical for law enforcement or self-defense use (9mm, 38, 357, 40, or 45 calibers), if they are familiar to the operator. Carbine rifles in lieu of a handgun in these same calibers can also be effective when used at the same distances described above for handguns. The 22 magnum is highly effective, easily controlled and offers the lowest risk of ricochet or having the bullet exit the carcass. Only hollow point or other controlled expansion types of bullets should be used to maximize tissue destruction while minimizing the risk of ricochet or having the bullet exit the carcass. Animals may be euthanized while standing calmly on a trailer or confined in a small pen, portion of an alleyway or chute if the operator can get adequate visual and physical access to the animal. This is most easily and safely accomplished if the operator can be positioned above the animal. Animals that may be agitated, fractious or will not stand calmly may need to be placed in a chute or tied down for restraint; and this may be preferable for safety and reliability. Euthanasia should not be attempted when restraint is not adequate or the animal is not standing quietly. Animals moving freely in a large open pen are generally not adequately restrained and euthanasia should not be attempted. When more than one animal must be euthanized at one time, the procedure may be done at one time in the same trailer or chute, but they should be in separate compartments.

Following euthanasia, death must be verified prior to moving the carcass for disposal. The animal should be examined for cessation of vital signs including pulse and rhythmic breathing. Complete pupillary dilation and a lack of the corneal reflex are other indicators that death has occurred. Unconscious animals should only be restrained, handled and moved as if they were conscious until death is confirmed. Carcass disposal should be in accordance with state and local requirements, where applicable.

As recognized by the American Veterinary Medical Association (AVMA), circumstances exist with free-roaming wild animals where capture and chemical or physical restraint may not be practical prior to euthanasia and may only serve to prolong or exacerbate the distress of an injured or suffering animal. Under these conditions, and when an animal cannot be approached within a few feet, humane killing may be indicated to end the animal's suffering as quickly and humanely as possible. In these instances, methods typically used when hunting big-game animals of North America (e.g., elk, moose) in an ethical and responsible manner will be employed. It is not appropriate in these instances to use smaller caliber (e.g., 5.56 mm) rifles or other weapons targeted at the brain from longer distances. High-powered rifles targeted at the heart/lung or shoulder areas of an animal standing still and at typical hunting distances will be used in this circumstance. For familiarity among operators, the recommended firearm for this routine use is a bolt-action scoped rifle in a 30-06 caliber. Other firearm types and calibers with similar killing power typical for hunting large North American big-game animals (7mm magnum, .270, .308, .338 Win Mag, etc.) may be used if they are familiar to the operator; however a .30-06 bolt action scoped rifle sighted in for 200 yards offers a predictable and ethical means of quickly killing a large animal in the most humane manner possible under these circumstances. Only hollow point or other controlled expansion types of bullets should be used to maximize tissue destruction and minimize the risk of ricochet. It is not appropriate to substitute the use of a high-powered rifle from a distance for euthanasia using a gunshot to the brain when an animal can be restrained or in situations such as during gathers, or at temporary or STH facilities when restraint and use of a more conventional euthanasia technique can be applied.

As noted by the AVMA Panel on Euthanasia, the psychological response experienced by people when observing euthanasia or death in any form is an emotional one dependent on the background of the observer. Grief and distress over the loss of life are the most common reactions. Expert technique and maintaining a calm and professional atmosphere during the procedure can help minimize these reactions in the persons who must perform the procedures as well as co-workers or bystanders. For safety as well as discretion, only mission-critical persons should be nearby when euthanasia is performed. The BLM employees and contractors involved in or observing the process should behave in a dignified and discreet manner that avoids public spectacle. While these considerations should not outweigh the primary responsibility of using the most rapid and painless euthanasia method possible under the circumstances, animals should be euthanized and carcasses moved away from public view whenever possible; animals may need to be moved off-site prior to euthanasia. In some circumstances, the use of tarps or vehicles as a visual screen may also be appropriate.

As noted by the AVMA, circumstances may arise that are not clearly covered by any policy or set of guidelines for euthanasia. Whenever such situations arise, a veterinarian experienced with wild horses and burros should be consulted for their professional judgment of acceptable techniques for euthanasia. The animal's species-specific physiologic and behavioral characteristics, size, approachability and degree of suffering will be taken into consideration. In all situations, the method of euthanasia that

minimizes suffering and distress of the animal will be chosen.

E. Documentation and Reporting of Euthanized Animals

A record of an animal's death by euthanasia during a gather, during transport, at facilities or during an adoption event, will be maintained by the BLM within WHBPS. The death record will identify the animal by using a description and/or freeze mark if present, the date of the death, where the animal died and the reason(s) that euthanasia was performed. If the euthanasia was performed in the field or during a gather operation, then a copy of the death record should also be maintained in the appropriate HMA case file.

When euthanasia is performed at a gather, the lead COR or IC, in addition to the process detailed above, will report the actions taken during gather operations in the comment section of the Daily Gather Overview, and in the Final Gather Data Report (Attachment 4) in accordance with IM No. 2013-061, Wild Horse and Burro Gathers: Internal and External Communication and Reporting.

F. Planning and Communication

The WH&B specialist or the BLM employee responsible for an HMA, facility or public event is responsible for having a euthanasia plan of action in place at all times where there are federally protected wild horses and burros. The plan will address practical considerations such as (1) who will have designated authority to make decisions regarding euthanasia; (2) who will perform the procedure; (3) what method(s) of euthanasia will be used; and (4) how carcass disposal will be addressed.

When a large number of animals may need to be euthanized, a communications plan for internal and external contacts (including early alerts to state and Washington offices) should be developed in advance and implemented concurrently while addressing the situation at-hand. The communications plan should address the need for the action, as well as the appropriate messages to the public and the media, including why animals are being euthanized and how the action is consistent with the BLM's responsibilities and policy.

All operation plans for gathers, adoptions and public events where it is possible that animals may need to be euthanized will include contingency plans that address the capability for performing the function. Each state will develop and implement a training and certification plan for those employees that will be tasked with euthanizing animals. A veterinarian will be present or on-call for all gathers, adoptions, and public events.

Stinkingwater HMA Population Management Plan

DOI-BLM-ORWA-B020-2017-0002-EA

Affected Environment Table		
Identified Resource with Issue Question for Analysis	**Status** **Affected;** Not Affected; Not Present.	**Explanation or Issue Question** **If Affected (BOLD); Reference Applicable EA Chapter and Section; and State the Issue in a Question.** If Not Affected, explanation required. If Not Present, explanation required.
Air Quality (Clean Air Act)	Not Affected	None of the alternatives would have measureable impacts to air quality or significant discharges of regulated air pollutants.
American Indian Traditional Practices	**Affected**	**See Chapter III.B.2**
Areas of Critical Environmental Concern (ACEC)	**Affected**	**See Chapter III.B.3**
Cultural Resources	**Affected**	**See Chapter III.B.4**
Environmental Justice (Executive Order 12898)		
Fire Management	Not Affected	No fire or fuels treatments are proposed.
Fisheries	**Affected**	**See Chapter III.B.5**
Flood Plains (Executive Order 11988)	Not Present	There is no occupancy or modification of floodplains and no risk of flood loss.
Forestry and Woodlands	Not Affected	Although western juniper is present in the proposed area, no woodland treatments were proposed in any of the alternatives.
Grazing Management and Rangeland	**Affected**	**See Chapter III.B.6**
Hazardous Materials or Solid Waste	Not Present	No solid or hazardous waste would be created by implementation of any of the alternatives. There are no known or disclosed sites currently in the HMA

Affected Environment Table		
Identified Resource with Issue Question for Analysis	**Status** **Affected;** Not Affected; Not Present.	**Explanation or Issue Question** **If Affected (BOLD); Reference Applicable EA Chapter and Section; and State the Issue in a Question.** If Not Affected, explanation required. If Not Present, explanation required.
Migratory Birds (Executive Order 13186)	**Affected**	**See Chapter III.B.7**
Minerals	Not Affected	The project may utilize mineral or mineral materials (i.e. gravel for road maintenance) consistent with casual use and is not affected in any significant or material manner.
Noxious Weeds (Executive Order 13112)	**Affected**	**See Chapter III.B.8**
Paleontological Resources	Not Affected	Paleontological resources are known to occur in the Stinkingwater HMA. Generally, the effects of horse and livestock grazing on such localities are minimal because localities usually support little vegetation and are on steep hillsides. Trap areas would usually be confined to previously disturbed areas and new trap areas would be inventoried for paleontological resources prior to use. If paleontological resources were found in newly proposed trap locations, the traps would be reconfigured to avoid fossil sites.
Prime or Unique Farmlands	Not Present	There are no prime or unique farmlands in the HMA.
Reclamation (Engineering)	Not Affected	There are no proposed structures or improvements in any of the alternatives analyzed.
Realty and Lands	Not Affected	The project would not conflict with any possible rights-of-way (ROW) in the area. Maintenance of roads would only occur on public lands managed by BLM, or if the road is private an easement would be in place prior to any significant funds being expended on private lands.
Recreation and Off-highway Vehicles (OHV)	**Affected**	**See Chapter III.B.9**

Affected Environment Table			
Identified Resource with Issue Question for Analysis		**Status** **Affected;** Not Affected; Not Present.	**Explanation or Issue Question** **If Affected (BOLD); Reference Applicable EA Chapter and Section; and State the Issue in a Question.** If Not Affected, explanation required. If Not Present, explanation required.
Social and Economic Values		**Affected**	**See Chapter III.B.10**
Soils and Biological Crusts		**Affected**	**See Chapter III.B.11**
Special Status Species (SSS) and Habitat for BLM	**Fish**	**Affected**	**See Chapter III.B.5**
	Wildlife	**Affected**	**See Chapter III.B.5**
	Plants	Not Present	There are no documented SSS plants or designated critical habitat within the Stinkingwater HMA; however, if SSS plants are found during botanical clearances, these sites would be flagged and avoided.
Threatened or Endangered (T&E) Species or Habitat	Fish	Not present	There are no known T&E species or their habitat found within the project area.
	Wildlife	Not Affected	There are no known T&E species or their habitat found within the HMA.
	Plants	Not Present	No known T&E species or designated critical habitats are found within the HMA.
Transportation and Roads		Not Affected	Gathering and removing wild horses would not change the route category (i.e. road, primitive road, trail) or the assigned maintenance intensity level of roads within the HMA nor the access roads used by horse transport vehicles. Spot maintenance may need to be completed on existing roads to ensure safe passage for the vehicles and horses.
Upland Vegetation		**Affected**	**See Chapter III.B.12**

Affected Environment Table		
Identified Resource with Issue Question for Analysis	**Status** **Affected;** Not Affected; Not Present.	**Explanation or Issue Question** **If Affected (BOLD); Reference Applicable EA Chapter and Section; and State the Issue in a Question.** If Not Affected, explanation required. If Not Present, explanation required.
Visual Resources	Not Affected	The Stinkingwater HMA falls within Visual Resource Management (VRM) Classes III and IV. The objectives for VRM III are to partially retain the existing character of the landscape, and the level of change to the landscape can be moderate but should not attract the attention of the casual observer. The objectives for a VRM Class IV area are to provide for activities that require major modifications of the landscape and may dominate the view and be the major focus of attention. All bait and water traps would be temporary and placed in previously disturbed areas where feasible. Any new disturbed areas will be rehabilitated. No new permanent structures or features are proposed. Objectives for both VRM Classes would be met.
Water Quality **(Surface and Ground)**	**Affected**	**See Chapter III.B.5**
Wetlands and Riparian Zones **(Executive Order 11990)**	**Affected**	**See Chapter III.B.5**
Wild Horse and Burro	**Affected**	**See Chapter III.B.1**
Wild and Scenic Rivers (WSR)	Not Present	No wild and scenic rivers designations occur within the HMA.
Wilderness/Wilderness Study Areas (WSA)	Not Present	There is no wilderness or WSA in the HMA.
Lands with Wilderness Characteristics	Not Present	There are no lands with wilderness characteristics in the HMA

Affected Environment Table		
Identified Resource with Issue Question for Analysis	**Status** **Affected;** Not Affected; Not Present.	**Explanation or Issue Question** **If Affected (BOLD); Reference Applicable EA Chapter and Section; and State the Issue in a Question.** If Not Affected, explanation required. If Not Present, explanation required.
Wildlife/Special Status or Locally Important Species and Habitat	**Affected**	**See Chapters III.B.5 and III.B.7**

MEMORANDUM

To: Rob Sharp, Paul Griffin (BLM)
CC: Bob Hopper, James Price, Bea Wade, Jared Bybee (BLM)
From: Bruce Lubow, IIF Data Solutions
Date: 22 October, 2016
RE: Statistical analysis for 2016 horse survey of horse populations in Warm Springs HMA and Stinkingwater HMA, Oregon

I. Summary Table

Survey areas and Dates:	September 27, 2016 Warm Springs HMA (OR0007) September 28, 2016 Stinkingwater HMA (OR0008)
Type of Survey	Simultaneous Double-observer
Aviation Company	John Kelly, pilot, El Aero Services (Elko, NV); Bell 206l3 Long Ranger, N226GM
Agency Personnel	Rob Sharp, James Price, Kyle Jackson (BLM), Paul Wiel, helicopter manager (BLM)

Table 1. Estimated population sizes (Estimate) are for the numbers of horses in the surveyed areas at the time of survey. 90% confidence intervals are shown in terms of the lower limit (LCL) and upper limit (UCL). The coefficient of variation (CV) is a measure of precision; it is the standard error as a percentage of the estimated population. Number of horses seen (No. Seen) leads to the estimated percentage of horses that were present in the surveyed area, but that were not recorded by any observer (% Missed). The estimated number of horses associated with each HMA but located outside the HMA's boundaries is already included in the total estimate for that HMA.

Area	Age Class	Estimate (No. Horses)	LCL[a]	UCL	Std Err	CV	No. Horses Seen	% Missed	Estimated # of Groups	Estimated Group Size	Foals per 100 Adults	Est. No. Horses Outside HMA
Warm Springs HMA[b]	Total	586	538	649	29.6	5.1%	566	3.4%	64	9.2	14.2	12
	Foals	73	67	81	3.9	5.3%						
	Adults	513	472	570	26.4	5.2%						
Stinkingwater HMA	Total	252	219	289	21.1	8.4%	235	6.6%	35	7.1	18.0	41
	Foals	38	33	44	3.6	9.3%						
	Adults	213	186	244	17.9	8.4%						

[a] 90% confidence interval based on percentiles of bootstrap simulation results. The lower 90% confidence interval limit (LCL) is actually less than the number of horses sighted during the survey for these estimates. This is a normal statistical result and reflects the fact that a confidence interval expresses what would likely happen if the survey were repeated. If repeated many times, some surveys would miss more horses and produce lower estimates, even after corrections, than were actually observed during this survey. Clearly, I conclude that there are at least as many horses as were observed during this survey, rather than using the lower confidence limit as a minimum number.

[b] 19 adult burros and 8 foal burros were also observed in Warm Springs HMA, but those data were not analyzed to estimate total burro abundance.

II. Narrative

In September of 2016, Bureau of Land Management (BLM) personnel conducted simultaneous double-count aerial surveys of the wild horse populations in Warm Springs HMA and Stinkingwater HMA, and some adjacent lands (Figure 1). These 2 HMAs are not contiguous, and are not managed as a complex.

The helicopter surveys addressed here were conducted using survey methods recommended by BLM policy (BLM 2010) and a recent National Academy of Sciences review (NRC 2013). I analyzed the combined set of these data to estimate sighting probabilities for horses, which I then used to correct the raw counts for systematic biases (undercounts) that are known to occur in aerial surveys (Lubow and Ransom 2016), and to provide confidence intervals (which are measures of uncertainty) associated with the estimated population sizes.

Population Results

The estimated total horse populations (Table 1) within or associated with the HMAs that were the focus of the surveys were adequate for analysis, resulting in 94 observed horse groups (Table 2, Figure 1). Of these, 88 horse groups in 2016 had data recorded in a way so that they were suitable to be used in estimating statistical estimates of sighting probability. All 94 observations made during 2016 aerial surveys were used to inform the total estimates of population size. Confidence intervals and coefficients of variation are within acceptable levels of precision for management purposes (Table 1).

I estimate the mean size of detected horse groups, after correcting for missed groups, to be 8.5 horses/group across surveyed areas with a median of 6 horses/group. I note that the detected groups may have been composed of more than one social band. I estimate a composition of 15.3 foal horses per 100 adults at the time of these surveys (Table 1). Given the September survey date, this number is likely to be close to the total foaling rate for 2016, though some foals may have died after birth but before the start of the surveys.

In addition to observed horses, the survey crew detected six groups of burros within Warm Springs HMA, along with one group of horses that contained 1 adult burros. This number of burro group observations was too few to analyze with double-observer methods, to generate an estimate of burro abundance. Observed burro groups sizes of burros (adults, foals) were (1, 1), (2, 1), (6, 2), (6, 2), (1, 0), (2, 2), and the single adult that was with horses. Thus, the total number of observed burros in Warm Springs HMA was 19 adults and 8 foals. The actual number of burros in the HMA is likely to be larger than the observed numbers.

Sighting Probability Results

The front seat observers saw 86.2% of the horse groups (86.8% of the horses) seen by any observer, whereas the back seat observers saw 71.3% of all horse groups (78.2% of horses) seen (Table 2). These results demonstrate that simple raw counts do not fully reflect true population size, without statistical corrections for missed groups made possible by the double observer method and reported here.

Accumulation of more data from future helicopter surveys of these areas or comparable areas in Oregon using a consistent set of observers, aircraft, transect spacing, and field protocol could further increase confidence in the statistical estimates, providing that observers and their seating, the approximate seasonal timing of surveys, and methodology remain relatively constant. The 2016 surveys used 1 front seat observer and 2 back-seat observers, and the position of the back seat observers was properly shifted between flights. This is the optimal seating arrangement should

continue into the future. The back seat observers that contributed to these surveys were experienced and had high sighting abilities, which is commendable.

Informed by preliminary analyses, past analyses for this survey area, and *a priori* reasoning, I considered 48 alternative models. In these alternatives, I include an intercept and an additive effect for front observers' sighting probability for groups located on the pilot's side of the flight line in all models, plus combinations of 5 additional covariates believed *a priori* to be likely predictors of sighting probability: (1) horse group size; (2) horse group activity; (3) percent vegetation cover; (4) distance from the transect to the group; and (5) one of 3 alternates for back-seat observer effects: an average effect, individual effects for each back-seat observer, or no incremental back seat effect (i.e., no difference from the front-seat observer). Due to the small sample size of observations with each covariate value (n), I could not consider several additional parameters: terrain type, vegetation cover type, and lighting conditions.

Of the covariates tested, support (% of AIC_c model weight) was moderate for: average back-seat effect (65.3%), horse activity (57.5%), and vegetation cover percent (39.0%). Support was minimal for the effects of: front-seat sightability of horses on the pilot's side (28.2%), distance (27.3%) and individual back-seat observer effects (24.7%). As expected, estimated sighting probability was higher for groups that were larger, closer, or active, and lower for groups in greater vegetation cover or on the pilot's side. Sighting probability was lower, on average, for back-seat observers, but differed slightly among the individual observers (Table 3).

The estimated sighting probabilities for the combined observers ranged across horse groups from 80.2-100%. Comparing actual horses seen to the estimated population size computed from the estimated sighting probabilities, I estimate that 4.4% of the horses in these surveys were never seen by any of the observers (Table 1). A combination of skilled observers, low vegetation cover for most (<50% cover for >95% of groups observed), and closely spaced transects were primarily responsible for these high sighting probabilities. Group size was as high as 57 horses. There were 28 horse groups with ≥10 horses (29.8% of groups, containing 59.3% of the horses), therefore large group size was likely a contributor to high sighting probabilities.

Assumptions and Caveats

Given several potential sources of bias, listed below, it is more likely that the estimates are somewhat lower, rather than higher, than the true population. Considering the relatively high sighting probabilities and precision estimated for these surveys, the population estimates I present here appear to provide a sound and reliable basis for management decisions. Although the sample size available for this analysis was adequate, a larger survey would provide additional information about sighting probability and the effect of various covariates, thereby increasing confidence in the results.

The reliability of results from any population survey that is based on the simultaneous double-observer method rests on several important assumptions. First, the results obtained from these surveys are estimates of the horses present in the areas surveyed at the time of the survey and should not be used to make inferences beyond this context. I must presume that pre-flight planning by the district specialists and the BLM aerial survey coordinator led to the surveyed areas including as much as possible of the areas used by each population of horses using the surveyed HMAs. These HMAs are largely enclosed by fencing or natural barriers, except for a portion of the southern boundary of Stinkingwater HMA. Although fences and topographic barriers can provide deterrents to animal movement that help to contain them within the areas surveyed, these barriers may not present either a continuous, unbroken barrier or an impenetrable one. It is always possible that the surveys did not necessarily extend as far beyond the boundary as horses might move. Consequently,

there is the possibility that temporary emigration from the surveyed areas may have contributed to some animals of a given population not being present in the surveyed areas and the numbers of animals found within the survey areas at another time could differ substantially.

Second, the validity of the analysis rests on the assumption that all groups of animals are flown over once during a survey period, and thus have exactly one chance to be counted by the front and back seat observers, or that groups flown over more than once are identified and considered only once in the analysis. Groups counted more than once would constitute 'double counting,' which would lead to estimates that are biased higher than the true number of groups present. Each of these surveys was completed on a single day, which should have helped to reduce the risk of double counting. The identification of 'marker' horses (horses with unusual coloration) in observed group was recorded on paper in a few cases, and variation in group sizes probably helped the observers to reduce the risk of double counting during aerial surveys. Most importantly, observers took photographs of many observed groups, and used those photos after landing to identify any groups that might have been inadvertently recorded twice. Additionally, groups that were never available to be seen (for example, due to temporary emigration from the study area or due to moving, undetected, from an unsurveyed area to one already surveyed) can lead to estimates that are negatively biased compared to the true population size. A substantial network of fencing within these HMAs likely reduced movements during this survey, thus minimizing this risk. The results presented here are based on a survey design and methods that assume that any unobserved movements were random, so the effects of missed and double counted groups would cancel each other out, on average over time given a sufficient sample size, but not necessarily during a single survey.

Third, this method assumes that all horse groups with identical sighting covariate values have equal sighting probability. If there is additional variability in sighting probability not accounted for in the sighting models, such heterogeneity could lead to a negative bias (underestimate) of the population. The relatively good sighting conditions that led to very high predicted sighting probabilities during this survey suggest that this issue may be of minimal importance.

A fourth assumption is that the number of animals in each group is counted accurately. In very large groups it may be common to miss a few animals unless photographs are taken and scrutinized after the flight. Relying on raw counts made from a fixed wing aircraft could lead to biased estimates of population size. Observers in this survey circled over large groups to get as accurate a count as possible and used photography for most of the observed groups, thereby minimizing the risk of undercounting group size.

Recommendations for Future Surveys

This survey was well designed and generally followed the specified protocols. Nevertheless, several observations about the data may offer opportunities to improve future surveys.

1. Planned transect spacing was good and was followed closely by the pilot. Spacing over the open terrain and sparsely vegetated areas of Warm Springs HMA should continue to be 1.75 miles, and spacing over the more rugged and vegetated terrain at Stinkingwater HMA should continue to be 0.5 to 1 mile, depending on local topography and vegetation.
2. The number and ability of the observers was generally good, with back seat observer positions rotated correctly between only two observers. Future survey flights in these HMAs should continue to use the same single front seat observer and the same two back seat observers as were used in 2016, if possible.
3. More reliable estimates would be possible by pooling data across additional or expanded surveys so that common sighting characteristics estimated across the larger data set.

However, to realize the benefits of pooling across years (temporal pooling) or across additional HMAs (spatial pooling), it is important to use the same observers, pilots, aircraft, flight speed, and survey season as much as possible to reduce the uncertainty introduced by observers with minimal data history and to minimize the number of unique parameters in the sightability models that need to be estimated. Numerous nearby HMAs provide ample opportunity to combine larger areas into a single survey.

4. I emphasize the importance of continuing to use photography for large horse groups (>10) to ensure that such groups are counted accurately. The current draft of the standard operating procedures for aerial surveys requires use of photography for all groups of >20 horses; however I advise that it be used for groups of ≥10 horse. Given the potential for animals in these HMAs to form large groups, it is important to have accurate counts of group size for each large group. Surveys should continue to use a reliable, high-resolution camera with an adequate telephoto or zoom lens for the distance between observer and horses for this purpose.

Table 2. Tally of raw counts of horses and horse groups by observer (front, back, and both) for combined data from Warm Springs HMA, and Stinkingwater HMA surveyed in September, 2016.

Observer	Groups Seen (Raw Count)	Horses Seen (Raw Count)	Actual Sighting Rate[a] (groups)	Actual Sighting Rate[a] (horses)
Front	81	695	86.2%	86.8%
Back	67	626	71.3%	78.2%
Both	54	520	57.4%	64.9%
Combined	94	801		

[a] Percentage of all groups seen that were seen by each observer.

Table 3. Effect of observers and sighting condition covariates on estimated sighting probability of horse groups for both front and rear observers. Baseline case (**bold**) for horses presents the predicted sighting probability a group of 6 horses (the median group size observed) that are not moving, in 0% vegetation cover, ¼-½ miles from the transect, and with the average back-seat observer. Other example cases vary a covariate or observer, one effect at a time, as indicated in the left-most column, to illustrate the relative magnitude of each effect. Sighting probabilities for each row should be compared to the baseline (first row) to see the effect of the change in each observer or condition. Baseline values are shown in bold wherever they occur. Sighting probabilities are weighted averages across all 48 models considered (Burnham and Anderson 2002).

	Sighting Probability, Front Observer	Sighting Probability, Back Observer
Baseline	**89.2%**	**77.3%**
Effect of group size (N=1)	88.9%	76.7%
Effect of active group	93.1%	84.7%
Effect of vegetation cover (50%)	85.5%	70.8%
Effect of vegetation cover (100%)	80.8%	63.4%
Effect of distance (0-¼ mile)	89.5%	77.9%
Effect of Pilot's Side	51.6%	**77.3%**
Effect of observer JP in back	**89.2%**	94.8%
Effect of observer KJ in back	**89.2%**	86.0%
No back seat effect	**89.2%**	89.2%

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Lubow, B. C., and J. I. Ransom. 2016. Practical bias correction in aerial surveys of large mammals: validation of hybrid double-observer with sightability method against known abundance of feral horse (*Equus caballus*) populations. PLoS-ONE 11(5):e0154902. doi:10.1371/journal.pone.0154902.

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Figure 1 (following pages). Maps of survey tracks flown (white lines), fences (black lines), locations of observed horse groups (black and white circles), and surveyed HMA boundaries.

Panel A. Warm Springs HMA (magenta, surveyed) and nearby HMAs shown for reference: Palomino Buttes HMA (green), Kiger HMA (red), Riddle Mountain HMA (yellow), and South Steens HMA (purple).

Panel B. Stinkingwater HMA (turquoise, surveyed) and nearby HMAs shown for reference: Hog Creek HMA (light blue) and Cold Springs HMA (dark blue).

A.

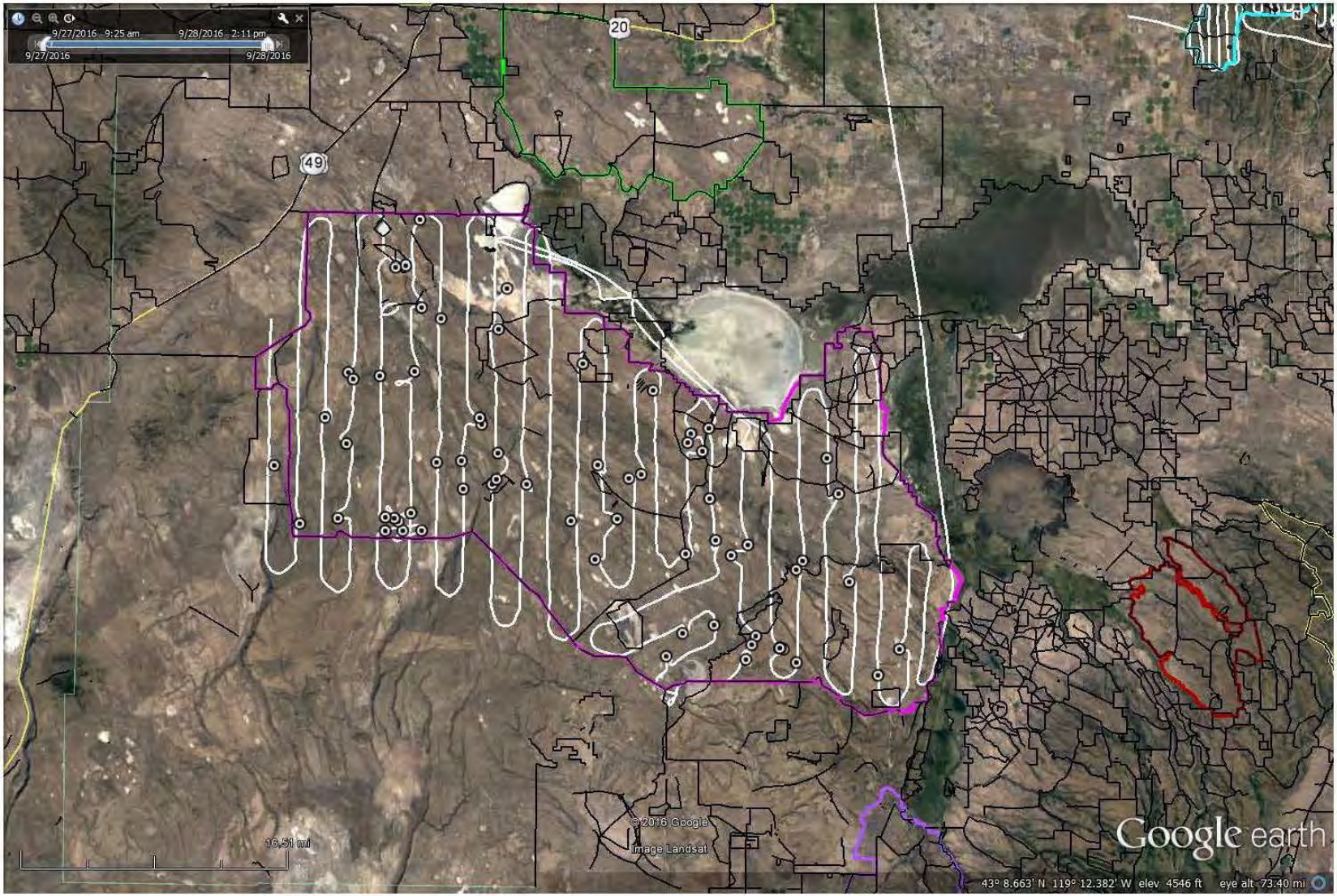
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Image Landsat
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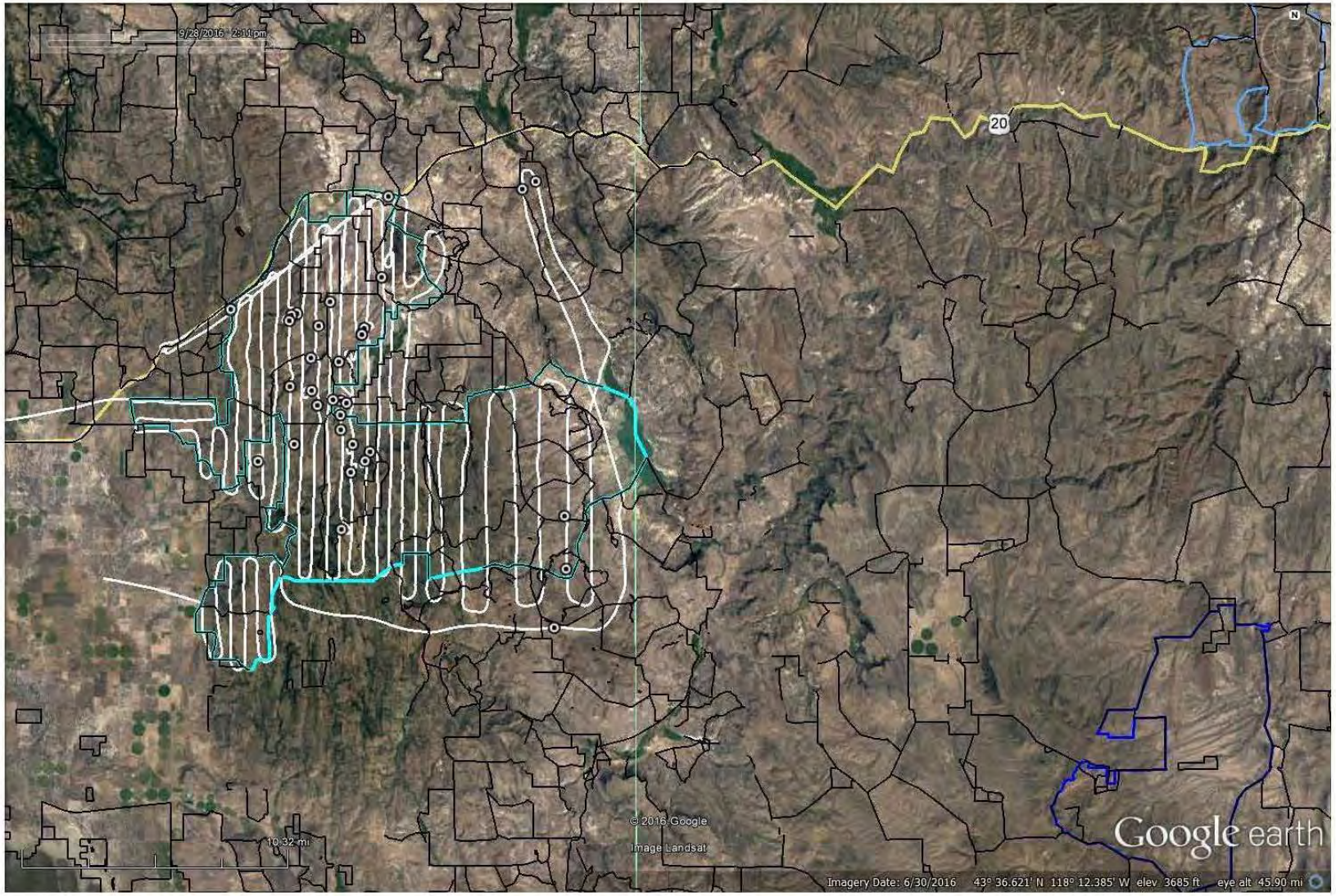
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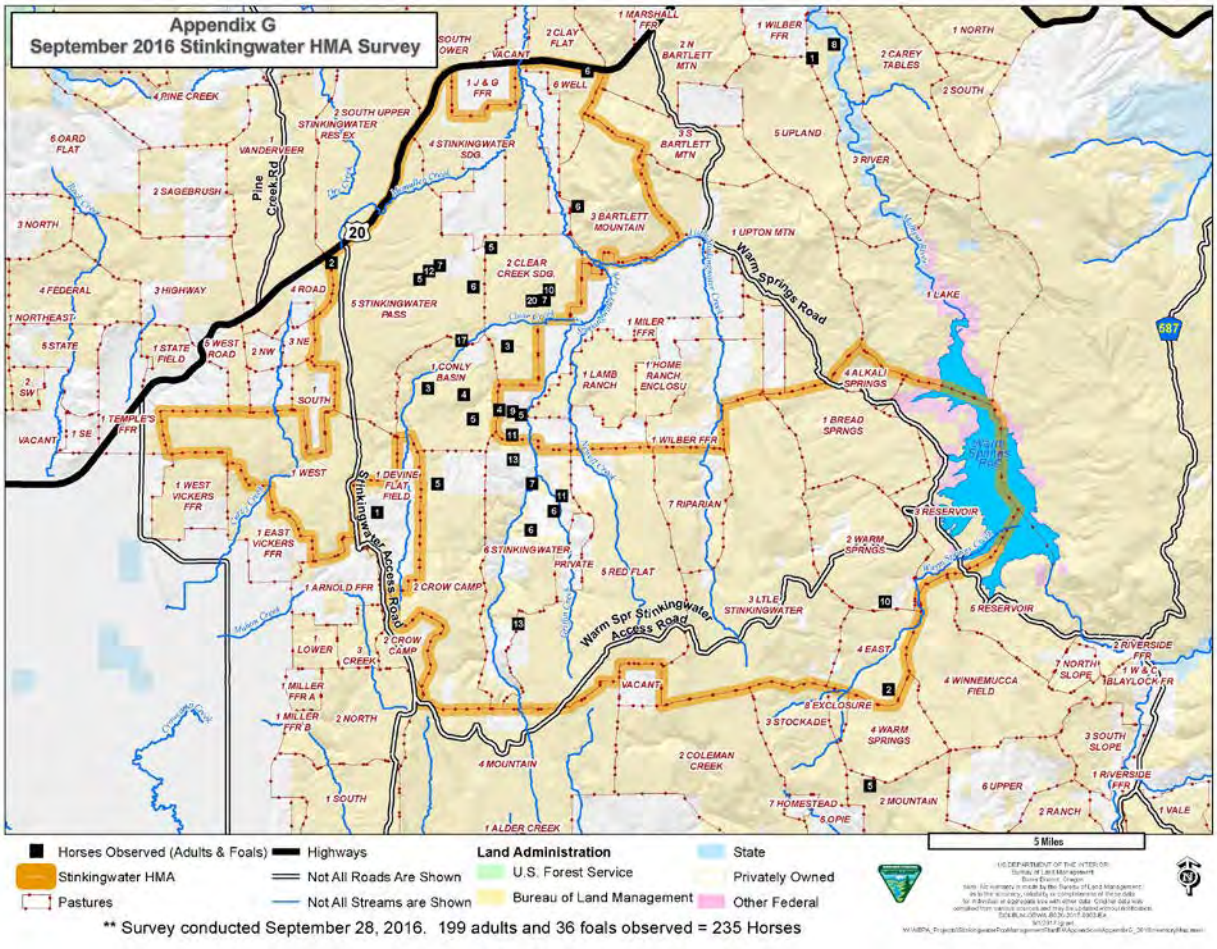
Appendix G
September 2016 Stinkingwater HMA Survey
Pine Creek Rd
Warm Springs Road
Stinkingwater Access Road
Warm Spr Stinkingwater Access Road
20
687
5 Miles
Horses Observed (Adults & Foals)
Stinkingwater HMA
Pastures
Highways
Not All Roads Are Shown
Not All Streams are Shown
Land Administration
U.S. Forest Service
Bureau of Land Management
State
Privately Owned
Other Federal
** Survey conducted September 28, 2016. 199 adults and 36 foals observed = 235 Horses

APPENDIX H
2017 Stinkingwater HMA
WinEquus Population Modeling
February 28, 2017

These population models were run based on the September 2016 aerial inventory estimates of 213 adult horses. Based on a 20% annual population growth rate to account for the 2016 and 2017 foal crop, there would be an estimated 301 total horses in the Stinkingwater HMA by fall 2017, which would be the first gather in this model.

Below are the summaries of the trials run per alternative. In the WinEquus model, the only alternatives available to run are No Management (No Action), Removals Only, Fertility Control Only, and Both Removal and Fertility Control. Therefore only Alternative A – No Action; Alternative B – Proposed Action – Selective Removal Gather to Low AML and Apply Available Temporary Fertility Treatment; and Alternative C – Selective Gather and Removal to Low AML without Applying Temporary Fertility Control could be run through the model.

Alternative A – No Action

Average Growth Rate in 10 Years	
Lowest Trial	10.0
10th Percentile	16.1
25th Percentile	18.0
Median Trial	**19.4**
75th Percentile	20.7
90th Percentile	21.7
Highest Trial	23.2

Population Sizes in 11 Years*			
	Minimum	Average	Maximum
Lowest Trial	228	454	831
10th Percentile	314	758	1449
25th Percentile	322	854	1723
Median Trial	**334**	**959**	**1982**
75th Percentile	350	1031	2234
90th Percentile	378	1114	2487
Highest Trial	400	1288	2933

Alternative B – Proposed Action – Selective Removal Gather to Low AML and Apply Available Temporary Fertility Treatment

Average Growth Rate in 10 Years	
Lowest Trial	3.0
10th Percentile	11.3
25th Percentile	13.8
Median Trial	**16.3**
75th Percentile	18.4
90th Percentile	20.0
Highest Trial	24.4

Population Sizes in 11 Years*			
	Minimum	Average	Maximum
Lowest Trial	27	81	307
10th Percentile	38	86	315
25th Percentile	41	88	320
Median Trial	**44**	**92**	**335**
75th Percentile	47	96	350
90th Percentile	48	102	374
Highest Trial	53	113	484

* 0 to 20+ year-old horses

Totals in 11 Years*			
	Gathered	Removed	Treated
Lowest Trial	397	256	14
10th Percentile	408	305	18
25th Percentile	420	315	21
Median Trial	**444**	**342**	**24**
75th Percentile	462	363	28
90th Percentile	489	394	32
Highest Trial	594	513	37

* 0 to 20+ year-old horses

Alternative C – Selective Gather and Removal to Low AML without Applying Temporary Fertility Treatment AND Alternative D – Gate Cut Removal Gather to Low AML

Average Growth Rate in 10 Years	
Lowest Trial	11.8
10th Percentile	15.1
25th Percentile	18.2
Median Trial	**20.3**
75th Percentile	22.0
90th Percentile	24.5
Highest Trial	27.5

Population Sizes in 11 Years*			
	Minimum	Average	Maximum
Lowest Trial	30	79	309
10th Percentile	41	87	315
25th Percentile	43	89	322
Median Trial	**46**	**94**	**331**
75th Percentile	47	99	344
90th Percentile	49	106	366
Highest Trial	52	116	401

* 0 to 20+ year-old horses

Totals in 11 Years*		
	Gathered	Removed
Lowest Trial	304	292
10th Percentile	325	314
25th Percentile	356	342
Median Trial	**374**	**361**
75th Percentile	402	388
90th Percentile	428	411
Highest Trial	464	447

* 0 to 20+ year-old horses

llotment	Pasture	BLM Acres [1]	Burns District Carrying Capacity Calculation Table Results (Cumulative) (AUMs)	ESD Reference State Plant Community Grass/Grasslike Community Production (AUMs) [3]		1/2 (50%) of Low ESD [4]	Estimate of Average Livestock AUM Authorizations[5]	Three Rivers RMP (1992) Allocated Wild Horse AUMs
Stinkingwater HMA			**Baseline [2]**	**Low**	**High**			
Mountain	1 West	6,000	1,002	4,141	7,566	2,071	381	620
	2 Crow Camp	5,706	812	2,262	4,792	1,131	375	
	3 Little Stinkingwater	10,940	1,999	4,938	10,601	2,469	903	
	4 East	2,193	451	1,171	2,950	586	229	
	5 Red Flat	9,535	1,763	3,987	8,185	1,994	606	
	6 Stinkingwater	5,613	inadequate data available	1,924	3,719	962	250	
	7 Riparian	2,628	inadequate data available	644	1,498	322	132	
Stinkingwater	1 Conley Basin	3,493	794	1,373	2,925	687	387	240
	2 Clear Creek Seeding	3,751	1,784	2,225	5,417	1,113	906	
	3 Bartlett Mountain	3,519	818	1,639	3,791	820	574	
	4 Stinkingwater Seeding	3,745	942	2,764	6,230	1,382	618	
	5 Stinkingwater Pass	9,183	2,317	2,039	5,250	1,020	989	
	6 Well	1,134	246	548	1,291	274	170	
Texaco Basin	1 Bread Springs	3,775	895	1,978	4,803	989	497	100
	2 Warm Springs	3,986	806	2,064	4,994	1,032	538	
	3 Reservoir	5,943	998	1,469	3,646	735	580	
	4 Alkali Springs	854	inadequate data available	317	810	159	70	

[1] All BLM acres within the HMA are not accounted for in this table as they are either in pastures that are managed on a custodial basis (i.e. Mountain Allotment/private pasture) and horses do not have access or the BLM-managed acres have no associated forage production data as they are steep escarpments or low production sites.

[2] Baseline calculations use "normal" (1.0) precipitation for each year calculated. Actual yield index measurements were unavailable for the area.

[3] These are the low and high production ranges for the *reference state community*. Some areas of the pastures may be in transition from the reference state due to an aged crested wheatgrass seeding, wildfire and/or medusahead invasion, and therefore produce less forage.

[4] BLM has an annual target utilization level of 50 percent on native communities, which is calculated into the Burns District CC Calculations. During forage management planning one should base their plans on the low end of the potential stocking rate to be prepared for drought conditions and low forage production years on the range. This column was created to compare the Burns District CC Calculations to half (50 percent) of the low end of the ESD AUM Calculations. It is also important to consider the fact that livestock and horses do not cover every acre of a pasture for various reasons including distance from water sources and topography. Therefore, each acre producing forage is not necessarily accessible.

[5] These AUMs per pasture include active permitted and exchange-of-use AUMs.