

**United States Department of the Interior  
Bureau of Land Management**

---

**Pryor Mountain Wild Horse Range Fertility Control  
Preliminary Environmental Assessment  
DOI-BLM-MT-0010-2015-0006-EA  
Tiered to the  
Pryor Mountain Wild Horse Range Environmental Assessment  
MT-010-08-24  
And Herd Management Area Plan May 2009**



U.S. Department of the Interior  
Bureau of Land Management  
Billings Field Office  
5001 Southgate Drive  
Billings, Montana 59101  
Phone: 406-896-5013  
FAX: 406-896-5281



The Bureau of Land Management is responsible for the stewardship of our public lands. It is committed to manage, protect, and improve these lands in a manner to serve the needs of the American people for all times. Management is based on the principles of multiple use and sustained yield of our nation's resources within a framework of environmental responsibility and scientific technology. These resources include recreation; rangelands; timber; minerals; watershed; fish and wildlife; wilderness; air; and scenic, scientific and cultural values.

BLM/MT/PL-08/12

**Pryor Mountain Wild Horse Range Fertility Control Modification  
Preliminary Environmental Assessment  
DOI-BLM-MT-0010-2015-0006-EA  
Tiered to the  
Pryor Mountain Wild Horse Range Environmental Assessment  
MT-010-08-24  
and Herd Management Area Plan May 2009**

**TABLE OF CONTENTS**

	<b><u>Page</u></b>
<b>1.0 BACKGROUND INFORMATION.....</b>	<b>1</b>
1.1 Introduction.....	1
1.2 Location.....	2
1.3 Purpose and Need for the Proposal.....	4
1.4 Relationship to Planning.....	4
1.5 Scoping.....	5
<b>2.0 DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVES.....</b>	<b>5</b>
<b>3.0 AFFECTED ENVIRONMENT &amp; ENVIRONMENTAL CONSEQUENCES.....</b>	<b>7</b>
3.1 Critical Elements.....	7
3.2 Wild Horses.....	8
<b>4.0 CUMULATIVE IMPACTS.....</b>	<b>13</b>
<b>5.0 MITIGATION and SUGGESTED MONITORING.....</b>	<b>14</b>
<b>6.0 CONSULTATION AND COORDINATION.....</b>	<b>14</b>
<b>7.0 REFERENCES CITED.....</b>	<b>16</b>
<b>8.0 APPENDICES.....</b>	<b>18</b>
Appendix I Standard Operating Procedures	
Appendix II Table 3 Summary of PZP Use On the Pryor Mountain Wild Horse Range	

## **1.0 BACKGROUND INFORMATION**

### **1.1 Introduction**

Since the January 2011 Pryor Mountain Wild Horse Range (PMWHR) Fertility Control Decision Record was issued, porcine zona pellucid (PZP) has been approved by the Environmental Protection Agency (EPA) as ZonaStat-H. The current decision record for the use of fertility control expires in 2015, leaving one more darting season under the current decision. The current protocol treats mare's ages 2, 3, 4, 11 and older. Monitoring results from the fertility control program has shown BLM that numerous treated mares ages 2, 3 and 4 have foaled; most likely due to timing of treatments as a result of inaccessibility in the spring. The two year olds that foal are becoming pregnant as 1 year olds. Some older mares have shown to be non-responders. It has also showed BLM that an untreated cohort as large as 5-10 year olds has been over the past several years is too large a group to allow continuing to foal in order to stabilize herd growth. The recruitment rate has been reduced from 17.5% to 8%. Foal survivor rates have been as high as 88%. The population continues to exceed the capacity of the range, even with a bait trap gather in 2012.

The 90% efficacy rate of ZonaStat-H is accurate, but influenced by the difficulty in accessing the wild horses during late winter/early spring to maximize effectiveness, and the number of mares that are natural non-responders to treatment. Another part of the challenge is mares that have never been treated require a primer dose that utilizes Freund's Modified Adjuvant mixed with PZP. In order to render a mare infertile or "treated" they require a booster that consists of PZP mixed with Freund's Incomplete Adjuvant and an annual booster to keep the immune system titers elevated to remain treated. Another finding since 2011 has been that about 6 foals are born to either treated or 2 year old mares. Thus, an uncontrollable outcome is there are typically additional foals being born annually regardless of management actions.

In 2013 the BLM received numerous requests from the public for more use of fertility control to manage the wild horse population within the PMWHR, the Bureau of Land Management (BLM) Billings Field Office conducted public scoping and released a preliminary EA, but determined that monitoring the results of the current fertility control would be better suited to help determine a new protocol for the future.

This environmental assessment (EA) is tiered to the 2009 Pryor Mountain Wild Horse (PMWHR) Range/Territory Environmental Assessment (EA) (MT-010-08-24) and Herd Management Area Plan (HMAP) in accordance with the Council on Environmental Quality (CEQ) regulations, 40 CFR 1502.2, and incorporates by reference all the descriptions of the affected environment and impacts analyzed in the 2009 HMAP and EA and subsequent Finding of No Significant Impact (FONSI) and Decision Record (DR). This EA also incorporates by reference the Pryor Mountain Wild Horse Range Fertility Control Environmental Assessment DOI-BLM-MT-0010-2010-0004-EA December 2010. This EA has been prepared to analyze the impacts associated to wild horses from application of fertility control to wild horse mares within the PMWHR through 2015. The HMAP and EA with FONSI and DR along with the PMWHR Fertility Control EA with FONSI and DR are available on the Bureau of Land Management (BLM), Billings Field Office (BiFO) website at:

[http://www.blm.gov/mt/st/en/fo/billings\\_field\\_office/wildhorses/pryorherd.html](http://www.blm.gov/mt/st/en/fo/billings_field_office/wildhorses/pryorherd.html)

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

Tiering is a form of incorporation by reference that refers to previous EAs or EISs. Incorporation by reference is a necessary step in tiering, but tiering is not the same as incorporation by reference. Tiering allows for narrowing the scope of the subsequent analysis, and focuses on issues that are ripe for decision-making, while incorporation by reference does not. Only EAs or EISs may be tiered to, whereas one may incorporate by reference from any type of document.

Tiering is using the coverage of general matters in broader NEPA documents in subsequent, narrower NEPA documents (40 CFR 1508.28, 40 CFR 1502.20). This allows the tiered NEPA document to narrow the range of alternatives and concentrate solely on the issues not already addressed. Tiering is appropriate when the analysis for the proposed action will be a more site-specific or project-specific refinement or extension of the existing NEPA document.

The author may tier to a NEPA document for a broader action when the narrower action is clearly consistent with the decision associated with the broader action. In the tiered document, there is no need to reexamine alternatives analyzed in the broader document. Focus the tiered document on those issues and mitigation measures specifically relevant to the narrower action but not analyzed in sufficient detail in the broader document.

The BLM has determined through the 2009 EA and HMAP and subsequent FONSI and DR that 90 to 120 wild horses (excluding current year's foals) are needed in order to ensure and achieve a thriving natural ecological balance. The HMAP DR stated "The population will not be taken to the low range of the Appropriate Management Level (AML) when fertility control is utilized." The proposed action should help prevent deterioration of the rangelands and help maintain a thriving natural ecological balance and multiple use relationships as described in the HMAP. The method of fertility control would be through remote darting application utilizing liquid or native PZP into selected mares over one year of age.

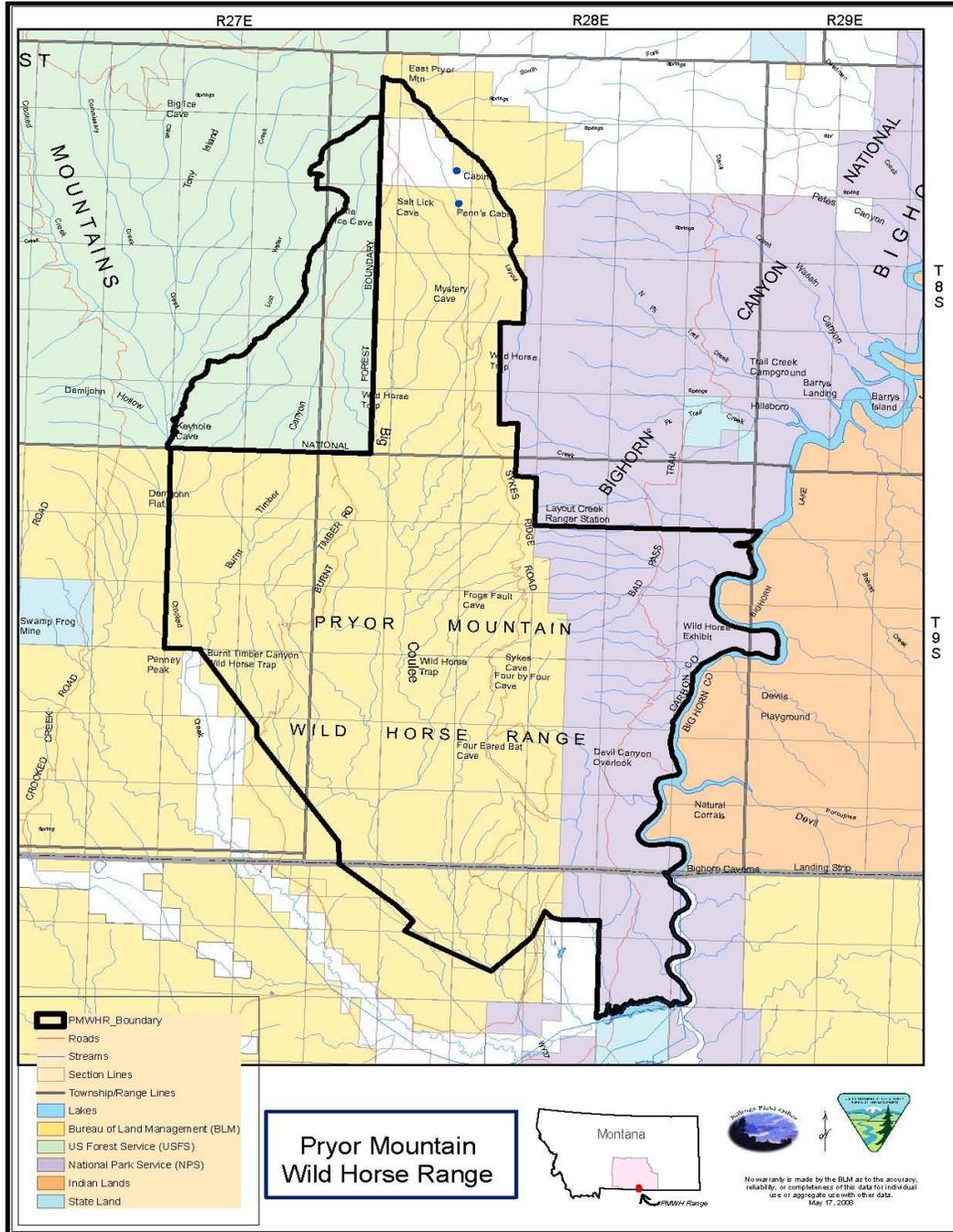
Eight separate EAs have analyzed the impacts of PZP fertility control to wild horses within the PMWHR. PZP has been utilized since 2001 in various prescriptions, applications, and in two forms; the liquid one year and 22 month pelleted version (see appendix I).

## **1.2 Location**

The project area is located in southeastern Carbon County, Montana, and northern Big Horn County, Wyoming, in the PMWHR (see Figure 1). The area is approximately 50 to 70 miles south of Billings, Montana, and 10 miles north of Lovell, Wyoming. Elevations range from 3,850 feet to 8,750 feet above sea level. Annual precipitation varies with elevation with six inches at the lower elevations to upward of 20 inches at the higher elevations. Plant communities also vary with elevation and due to precipitation from cold desert shrub to sub-alpine forests and meadows. Soils vary in depth from shallow (less than ten inches) to 20 to 40

inches deep depending on location. Live water is limited to five perennial water sources within the PMWHR. Nine water catchment sites consisting of 12 guzzlers are installed and collecting water along with one catchment trough system on Sykes Ridge. Various other water projects also provide limited seasonal water.

**Figure 1: Map - Pryor Mountain Wild Horse Range**



### **1.3 Purpose and Need for the Proposal**

The Proposed Action is needed to maintain the population in a thriving natural ecological balance by maintaining wild horse population within the confines of their habitat or the AML. The need is to develop a fertility control program that balances the recruitment rate with annual death loss. The need is also to analyze the impacts to the wild horses from utilization of a new fertility control prescription. The purpose of the Proposed Action is to further implement the 2009 PMWHR HMAP through the use of fertility control. The HMAP identified the AML at 90-120 wild horses as the carrying capacity in order to maintain ecological stability of the range. The HMAP DR stated “The population will not be taken to the low range of AML when fertility control is utilized.” The purpose is also to stabilize the population in order to reduce the need for gather and removal operations. The Proposed Action in this EA is needed to help maintain wild horse herd numbers at levels to be consistent with the AML, to make progress towards standards of rangeland health, and achieve objectives and decisions authorized in the 2009 PMWHR EA and HMAP.

Decision to be made: The BLM will decide whether or not to conduct a fertility control treatment prescription in order to stabilize the population based upon results of the fertility control program since 2011, while working towards the appropriate management level (AML) of 90-120 wild horses including remote darting application utilizing ZonaStat-H.

### **1.4 Relationship to Planning**

The proposed population control is in conformance with Billings Resource Management Plan Final EIS (1984) Record of Decision (ROD) objectives to manage for a balance between a healthy population of wild horses and improvements in range condition, wildlife habitat, and watershed condition.

The 2009 Pryor Mountain Wild Horse Range Environmental Assessment (MT-010-08-24) and Herd Management Area Plan and Finding of No Significant Impact (FONSI) Decision Record (May 2009) analyzed and documented the need to manage the wild horse population between 90-120 wild horses. The HMAP states “manage the herd within AML either through removals, fertility control, natural means, or a combination of methods.” The Decision Record states: “The population will not be taken to the low range of AML when fertility control is utilized.” The HMAP was affirmed by the Interior Board of Land Appeals in January 2010 after ruling on an appeal.

The proposed action is in conformance with the Wild Free-Roaming Horses and Burros Act of 1971 (PL 92-195 as amended) and with all applicable regulations at 43 CFR (Code of Federal Regulations) 4700, 36 CFR 222, and policies outlined by BLM and USFS. The BLM is the lead agency for coordinating and implementing wild horse management in the Pryor Mountains.

The Wild Free-Roaming Horses and Burros Act of 1971 (Public Law 92-195) as amended, Section 1333 (b) (1), states that the Secretaries of the Interior and Agriculture shall “determine appropriate management levels of wild free-roaming horses and burros on areas of public lands; and determine whether appropriate management levels should be achieved by the removal or destruction of excess animals, or other options (such as sterilization or natural controls on population levels).” According to 43 CFR 4700.0-6, “Wild horses shall be managed as self-

sustaining populations of healthy animals in balance with other uses and the productive capacity of their habitat.” In addition, 36 CFR 222.21 states that wild horses within USFS territories be administered to “maintain a thriving ecological balance considering them an integral component of the multiple use resources, and regulating their population and accompanying need for forage and habitat in correlation with uses recognized under the Multiple–Use Sustained Yield Act of 1960.”

### **1.5 Scoping**

The BLM Billings Field Office is utilizing the previous scoping comments from April 2013 and the August 2013 comments on the 2013 Pryor Mountain Wild Horse Range Fertility Control Modification Preliminary Environmental Assessment DOI-BLM-MT-0010-2013-0034-EA for the purposes of scoping the current proposal. Those comments are incorporated by reference for this EA.

Comments received were in two categories; place more mares on fertility control but not like Assateague National Seashore and continue with the current fertility prescription in place. Concern for animal welfare in relation to the use of PZP continues to be a concern and is addressed as part of the proposed action and Standard Operating Procedures (SOPs). No new information or studies were provided in the scoping comments or comments on the 2013 preliminary EA to the BLM to help form a new decision. No new issues were identified that were not addressed in the Proposed Action and No Action alternative or that had not already been addressed in the 2009 HMAP and EA. No issues were identified that have not already been addressed in the 2009 PMWHR HMAP. All public comments are available upon request.

## **2.0 PROPOSED ACTION and ALTERNATIVES**

This EA focuses on the Proposed Action and No Action alternatives. As no unresolved issues have been identified, there are no issues to resolve through other action alternatives. The No Action alternative is considered and analyzed to provide a baseline for comparison of the impacts of the Proposed Action.

### **2.1 Proposed Action**

The BLM Billings Field Office proposes a fertility control prescription that has treatments by age, but also incorporating thresholds to allow for adjustments to treatments based upon demographic and annual changes in recruitment. This action would begin in 2015 and last indefinitely. Mares would be approached on foot or possibly baited in (not trapped) to be treated with ZonaStat-H through remote darting applications.

Young mares in the one year old age class becoming two year olds (when they are approximately 18-21 months old or older) could begin primer treatments in the autumn instead of waiting until March 1. Mares ages 2, 3, and 4 would be treated. Mares ages 5-9 would not be boosted (unless they meet a threshold). Mares ages 10 would be brought back onto boosters and mares 10 and older would be treated continuously until twenty years of age. Mares 21 and older would no longer be treated. Any mare within a treatment age or meeting a threshold could be treated any time of year.

**Thresholds:**

- Mares ages 5-9 years old that have two offspring one year and older would be brought back onto treatments, unless both offspring have been removed by the BLM during gathers, not from natural management.
- If a mare has one surviving offspring one year and older on the range after having two offspring one year and older she would remain on treatments.
- Any mare that was missed as a young mare would be primed and given a booster regardless of age.
- When the AML is exceeded and another threshold isn't being met for an individual mare, reverse age treatment would be implemented based upon kinship representation (bloodline) beginning with the 9 year olds, then 8 year olds, and then 7 year olds until 90% of the total mares 20 and younger are treated.
- If the population falls below 100 animals then the open age class would increase first with the 10 year olds then with the 11 year olds until the population is within 5% of the high range of AML.

**2.2. No Action Alternative**

The No Action alternative is required by the National Environmental Policy Act (NEPA) to provide a baseline for impact analysis. The No Action alternative is the current fertility control program in place from 2011 through 2015. The No Action alternative consists of the administration of ZonaStat-H through remote darting in the one year liquid dose. The program is designed to treat mares ages 2, 3, 4, and ages 11 through 20+. Mares ages 5-10 are not treated to be infertile. Mares would be approached on foot or possibly baited in (not trapped) to be treated. The primary window for treatment would be March through June, although previously treated mares could receive a booster any time of the year.

**2.3 Alternative Considered but Eliminated from Further Analysis****2.3.1 Suspending the use of Fertility Control.**

Under this alternative, mares would not be treated with fertility control. This would require more frequent gathers, more wild horse congestion, and be inconsistent with the PMWHR HMAP which identifies fertility control as one tool for population management. This alternative was considered but eliminated from further analysis due to not meeting the need of developing a new fertility control prescription.

### **3.0 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES**

This chapter describes the affected environment and analyzes impacts on the components of the human environment either affected or potentially affected by the Proposed Action and No Action alternatives.

The analysis of the Proposed Action determined there are no impacts to any resources or resource uses other than to wild horses themselves as a result of the Proposed Action.

The 2009 PMWHR EA and HMAP identified and analyzed the effects to the environment. For a complete description of the affected environment and environmental consequences, see pages 44-85 of the Pryor Mountain Wild Horse Range/Territory Environmental Assessment and Herd Management Area Plan May 2009.

[http://www.blm.gov/mt/st/en/fo/billings\\_field\\_office/wildhorses/pryorherd.html](http://www.blm.gov/mt/st/en/fo/billings_field_office/wildhorses/pryorherd.html)

#### **3.1 Critical Elements of the Human Environment**

Certain resources are protected by specific laws, regulations, or policies (e.g., Executive Orders). BLM refers to these resources as “Critical Elements of the Human Environment” and addresses them in all EAs. Those Critical Elements that are identified below as being present and potentially affected would be analyzed further in this chapter. The affected environment and environmental impacts are described for all resources, including Critical Elements, which are potentially affected by the proposed action (Table 1).

**Table 1: Critical Elements of the Human Environment**

<b>CRITICAL ELEMENTS</b>		
<b>Determination*</b>	<b>Resource</b>	<b>Rationale for Determination</b>
NI	Air Quality	The proposed action would have no impact on these values
NI	Areas of Critical Environmental Concern	The East Pryor Mountains were designated as an ACEC in March 1999 to conserve the area for wild horses, paleontological values, recreational use, and fish and wildlife habitat The proposed action would have no impact on these values.
NI	Cultural Resources	The proposed action would have no impact on these values
NP	Environmental Justice	The proposed action would have no effect on minority or economically disadvantaged people or populations
NP	Farmlands (Prime or Unique)	There are no prime or unique farmlands within the area.
NP	Floodplains	There are no floodplains within the area.
NI	Invasive, Non-native Species	The proposed action would have no impact on these values
NP	Native American Religious Concerns	The proposed action would have no impact on these values

CRITICAL ELEMENTS		
Determination*	Resource	Rationale for Determination
NP	Threatened, Endangered or Candidate Plant Species	The proposed action would have no impact on these values
NP	Threatened, Endangered or Candidate Animal Species	The proposed action would have no impact on these values
NP	Wastes (hazardous or solid)	There are no hazardous or solid wastes located within the planning area.
NP	Water Quality (drinking/ground)	The proposed action would have no affect on ground or drinking water.
NI	Wetlands/Riparian Zones	The proposed action would have no impact on these values
NP	Wild and Scenic Rivers	There are no Wild and Scenic Rivers located within the project area.
NI	Wilderness	The BLM is prohibited from taking any actions within or adjacent to Wilderness Study Areas that would impair the wilderness characteristics or prevent an area from potentially being designated Wilderness. Actions could have minor, short term impacts on wilderness attributes but the effects would not be irreversible or irretrievable. If desired, these unnatural features could be removed.
* NP = not present in the area impacted by the proposed or alternative actions NI = present, but not affected to a degree that detailed analysis is required PI = present with potential for impact.		

### 3.2 Wild Horses

#### Affected Environment

The affected environment is described and incorporated by reference from the 2009 PMWHR EA and HMAP. The only new impacts that would occur from the proposed action are to the wild horses themselves. This section only analyzes the impacts to the wild horses as the 2009 PMWHR EA and HMAP already disclosed the impacts of management utilizing a combination of methods including fertility control.

Since the January 2011 Fertility Control Decision Record was issued, PZP has been approved by the EPA as ZonaStat-H. Monitoring results of 2011 protocol (see Table 2) shows too many foals are being born to balance the recruitment with the death rate of the wild horse population. This has been in part due to the number of mares in the 5-10 year class, which is large. Young treated mares are foaling, but mares when treated in the prime window (late winter/early spring) are having 90% efficacy rate from the ZonaStat-H. Difficulty in accessing the wild horses during late winter/early spring to maximize effectiveness of ZonaStat-H is resulting in more births than anticipated, and the natural number of mares that are non-responders to treatment is outside the biological control of ZonaStat-H.

**Table 2: Wild Horse Monitoring Results from 2011 Protocol**

Wild Horse Monitoring Results From 2011 Protocol					
Year	Mares Treated	Treated Mares that Foaled	Mares Untreated	Foals Born	Population *March 1 excludes foals
2011	36	N/A	18	N/A	159
2012	63	13	28	26 (7 removed 2 died)	172 (*134 post gather)
2013	52	6	24	17 (2 died)	145
2014	63	6 (2 two years olds also)	26	18 (3 died)	159

Environmental Impacts

Assumptions for analysis: ZonaStat-H is the same as PZP for terminology used throughout the analysis. This impact analysis assumes that observed treatment rates, non-responding mares and two year olds would produce at least 6 unplanned foals per year, and logistic limitations would remain the same. ZonaStat-H is at least 90% effective in preventing conception after a mare has been given a booster prior to estrous. The long term average death loss for the herd is six individuals per year and this would remain the same. Historical long term foal survival rates of 60% would continue, however recently survivor rates of foals has increased with PZP. The Standard Operating Procedures (Appendix I) for use and application of PZP are incorporated as part of the proposed action and no action. Impacts to the wild horses take the form of direct and indirect impacts and may occur on either the individual or the population as a whole.

Proposed Action

The proposed action incorporates proven Standard Operating Procedures (SOPs, Appendix I) which represent the “best methods” for ensuring quality results, minimizing risks and reducing impacts associated with this activity. All activity would be carried out in accordance with the use of ZonaStat-H label. Protocols have been specifically developed for remote-delivery techniques of the fertility control vaccine.

The proposed action is based upon observed outcomes of the 2011 fertility control treatments prescription, and designed to implement the 2009 PMWHR HMAP and continuing indefinitely, reducing the need for population wide gathers and large removals. The use fertility control would consist of the administration of remote darting of ZonaStat-H applied in the one year liquid dose mixed with either Freund’s Modified Adjuvant for the primer or Freund’s Incomplete Adjuvant to render mares treated. This fertility control modification is designed to limit herd growth, while still ensuring the continuation of the herd. One year old mares would be primed in the fall at approximately 18-21 months of age, mares ages 2, 3, 4, and 10 through 20 would continue to be given boosters. Mares ages 21 and older would no longer be treated. Mares ages 5-9 that currently have two offspring on the range that are at least one year old would be placed on treatment. Thresholds would be established in order to better adjust to population changes and demographics.

#### Thresholds:

- Mares ages 5-9 years old that have two offspring one year and older would be brought back onto treatments, unless both offspring have been removed by the BLM during gathers, not from natural management.
- If a mare has one surviving offspring one year and older on the range after having two offspring one year and older she would remain on treatments.
- Any mare that was missed as a young mare would be primed and given a booster regardless of age.
- When the AML is exceeded and another threshold isn't being met, reverse age treatment would be implemented based upon kinship representation (bloodline) beginning with the 9 year olds, then 8 year olds, and then 7 year olds until 90% of the total mares 20 and younger are treated.
- If the population falls below 100 animals then the open age class would increase first with the 10 year olds then with the 11 year olds until the population is within 5% of the high range of AML.

Mares would be approached on foot or baited using certified weed free feeds or by utilizing existing salt placements as analyzed in the 2009 HMAP and incorporated by reference. In order to maximize efficacy, the primary window for treatment would be prior to estrous, although treated mares would receive a booster any time of the year.

#### Impacts

The immunocontraceptive Porcine Zona Pellucida (PZP) vaccine meets most of the requirements (Singer and Coates-Markle, 2005) for an ideal contraceptive agent including criteria for safety and efficacy. When injected, PZP vaccine acts as an antigen and causes the mare's immune system to produce antibodies. These antibodies then bind to eggs in the mare's ovaries and effectively block sperm binding and fertilization (Zoo Montana, 2000). The vaccine is relatively inexpensive and can be remotely administered in the field. Research has demonstrated that contraceptive efficacy is 90% for mares treated twice in the first year and boosted annually (Turner and Kirkpatrick, 2002). Contracepted mares typically show improvements in body condition and may actually live longer (Turner and Kirkpatrick, 2002).

PZP contraception appears to be temporary (Kirkpatrick and Turner, 2002), does not appear to cause out-of-season births (Kirkpatrick and Turner, 2003), and has no ill effects on ovarian function if contraception is not repeated for more than five consecutive years on a given mare. If mares are already pregnant, the PZP vaccine has not shown to affect normal development of the fetus or hormone health of the mare.

A mare being primed does not result in infertility as they would not be infertile without a booster. A mare primed as a one year old but not given a booster until a two year may reduce the efficacy (Personal communication with Dr. Jay Kirkpatrick). Attempting to dart in the spring is

challenging to prime and booster in that window due to access and typical weather patterns that hinder operations. This is the most likely cause for young mares having foals. Priming in the fall when the wild horses are more easily accessible and giving a booster in the spring would afford the best opportunity for preventing conception.

Treated mares are monitored for any potential swelling, stiffness, muscle tremors, nodules, granulomas, abscesses, and/or behavioral depression which might develop subsequent to the darting procedures. A lump that appears or persists longer than two weeks after an injection is defined as a persistent nodule. In order for the swelling to be classified as an abscess, it would require the nodule to eventually open at the surface allowing for the drainage of pus, as a sign of infection at the site.

Direct individual impacts are those impacts that are immediately associated with implementation of the proposed action. These impacts include stress associated with the remote-darting activity for delivery of the vaccine. The intensity of these impacts varies by individual and is indicated by behaviors ranging from nervous agitation to physical distress. Impacts to individual mares for application of PZP (granulomas, nodules) are monitored on a regular basis under research protocol, do not appear to cause pain or discomfort to the mares, and typically subside with time. "Mortality and/or permanent injury of individuals from direct impacts due to darting is unlikely" according to Coates-Markle (BLM 2006). According to the USGS 2009 "Our results for frequency of occurrences of abscesses in mares darted at Pryor (0.8%) were very similar to those reported....but somewhat higher (5.5%) at Little Book Cliffs." Abscesses would be expected to develop in 0.8 to 5.5% of all mares treated. This should be minimized when utilizing the SOPs (Appendix I). In order to mitigate the impacts of fertility control, all vaccine would be controlled, handled and administered by trained, certified and experienced darters. These personnel would be on-site during all phases of the operation and would be responsible for the accurate identification of individual age-specific mares.

Population-wide direct impacts are immediate effects which would occur during or immediately following implementation of the proposed action or alternatives. Remote-delivery of the fertility control vaccine would result in fewer disturbances to the herd and support a minimum feasible level of management. Direct population-wide impacts might consist of a heightened awareness of human presence following the darting activity. This is likely to be temporary in nature but may persist for some time in some mares. Repeated (annual) remote-darting of older mares does not appear to cause cumulative horse/harem sensitivity or stress within the Pryor herd (Coates-Markle 2006).

Population-wide indirect impacts would not appear immediately as a tangible effect and may be difficult to quantify. These are primarily associated with the use of fertility control and reductions in fecundity in treated wild mares. Nearly every mare would conceivably be treated.

Use of fertility control can create a higher percentage of core-breeding age animals within the herd which offers genetic advantages to small populations. Reduced herd growth allows for longer periods of time between gathers, reduces the size and impact of gathers and limits the loss of genetic diversity through removals of horses. Economic modeling (Bartholow, 2004) indicates that the use of fertility control may also significantly reduce management costs for the PMWHR.

Indirect individual impacts are those impacts that occur after the initial stress event and may develop as a result of the application of fertility control vaccine. Impacts that may occur include increased social disorder among the horses and/or a prolonged foaling season. Impacts may also result in an opportunity for increased fitness and body condition in treated mares. Extended length between generations provides for lengthening generation time and slows the rate of genetic loss (Cothran personal communication 2010). All treated mares would be monitored for behavior, body condition and foaling under research protocol. Utilizing bait certified weed free-feed (if used) could result in crowding and congregation of animals that could lead to conflict between bands. Baiting would only be used on limited basis, for animals that are difficult to approach, and small amounts placed in areas previously disturbed.

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

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

Aggression between stallions and mares has also been studied in three wild horse populations and no difference was found between the treatment groups (Ransom et al. 2010). Data regarding level of competition and aggression between band stallions in relation to the presence and number of treated mares were also collected during this study, but analyses are incomplete. These results will be published upon completion. Harem tending by stallions, such as urine and fecal covering of mare excretion and active defense of mares against other stallions, was best explained by a model of mare body condition in the Ransom et al (2010) study. Stallions in this study tended higher condition mares more frequently than lower condition mares.

In June 2013, the National Academy of Sciences (NAS) findings in part identified PZP as one of the "most acceptable alternative for managing population numbers".

## No Action

The no action is the 2011 Fertility Control Prescription in order to implement the 2009 PMWHR HMAP starting in 2011 and lasting through 2015. The use fertility control would consist of the administration of remote darting of ZonaStat-H. The program is designed to treat mares ages 2, 3, 4, and 11 through 20+. Mares ages 5-10 would not be treated to be infertile. Mares would be approached on foot or baited using certified weed free feeds or by utilizing existing salt placements as analyzed in the 2009 HMAP and incorporated by reference. In order to maximize efficacy, the primary window for treatment would be March through June, although treated mares could receive a booster any time of the year.

## Impacts

The impacts to individual mares would be the same from fertility treatments as the proposed action except fewer mares would be treated annually. Under this alternative, fertility control would be given through 2015 and then additional treatment evaluated and implemented at a later time. Under this alternative the need to gather and remove excess wild horses would be greater than the proposed action as treatments would not be administered to 20-25% of the mares.

## **4.0 CUMULATIVE IMPACTS**

The cumulative impacts of implementing the 2009 PMWHR EA and HMAP and subsequent FONSI and DR have been analyzed and are incorporated by reference. Therefore, only the cumulative impact to the wild horses from the use of fertility control is discussed.

Cumulative impacts are impacts on the environment which result from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time. The cumulative analysis should be focused on those issues and resource values identified during scoping that are of major importance. Accordingly, the issues of major importance that are analyzed are maintaining rangeland health and proper management of wild horses within the established boundaries of the PMWHR.

Past, present, and reasonably foreseeable activities that would be expected to contribute to the cumulative impacts of implementing the proposed action or alternatives would include past, present and future wild horse selective removals, fertility control treatments, natural mortality including variable predation, disturbance due to recreation and hunting, and increased or decreased size and quality of rangeland available for wild horse use. BLM would identify these impacts as they occur and mitigate them as needed on a project specific basis to maintain a thriving natural ecological balance and maintain acceptable levels of herd health. The Proposed Action would contribute to the cumulative impacts of future actions by maintaining the wild horse population nearer AML. Monitoring and management actions would establish a process whereby biological and/or genetic issues would be identified and resolved over time.

The cumulative impacts of the proposed action and alternative including foal production and herd size and growth over the next two and one half year is discussed in the 2009 EA and HMAP and incorporated by reference. In addition, the proposed action has been evaluated for cumulative impacts to the demographics (size, age structure, sex ratio) of the herd over time using WinEquus. Parameters and output for these population modeling runs are in the 2009 HMAP (Appendix II). Modeling efforts forecast that the cumulative impacts for the proposed action would not be expected to reduce herd growth rates below a sustainable level under conditions of average natural mortality. In addition, the average adult herd size would not fall below the existing AML of 120 adult horses, an important consideration in terms of maintaining genetic diversity within the Pryor herd. Additionally, according to Eggert et al. 2010 “the higher the  $N_e/N$  ratio for the inbreeding effective size may indicate an avoidance of inbreeding.”

Due to the relatively long time between generations (~10 years) and the long reproductive life-span of individual horses, the loss of genetic material from the herd is relatively slow and able to be monitored and mitigated by management. There would be minimal impact to herd genetic diversity by restricting first time births to later in a mares life and reducing the lifetime contribution of older mares. Given the current levels of genetic diversity in the Pryor horses, suppressing herd growth rates, in combination with small-scale removals to reduce herd size, would not result in deleterious cumulative genetic impacts. According to Cothran 2010 “Genetic similarity results suggest a herd with mixed ancestry that includes Spanish blood.” The mix of breeds and historically introduced horses is directly responsible for the high level of genetic variation.

## **5.0 MITIGATION AND SUGGESTED MONITORING**

Proven mitigation and monitoring are incorporated into the proposed action and also through standard operating procedures (SOPs), which have been developed over time. These SOPs (Appendix I) represent the best methods for reducing impacts associated with remote application of PZP and collecting herd data.

## **6.0 CONSULTATION AND COORDINATION**

In February, 2013 the BLM mailed out notices asking people their desire to be included in the annual Montana wild horse and burro mailing list for participation in wild horse management activities that would begin by March 1, 2013. A lack of response did not preclude any interested party from being added at a later date. Interested parties are added throughout the year per request.

On April 1, 2013 the BLM issued a Scoping Notice “For Increased use of Fertility Control Vaccine of Wild Horses within the Pryor Mountain Wild Horse Range”. The public was asked to provide input that would help the BLM in development of a proposed action and alternatives, further identify issues, potential environmental consequences, mitigation opportunities, monitoring or provide information, data, or analysis to be used in development of an Environmental Analysis.

Scoping comments received were in two categories; (1) place more mares on fertility control but not like Assateague National Seashore and (2) continue with the current fertility prescription in place. Concern for animal welfare in relation to the use of PZP continues to be a concern and is addressed as part of the proposed action and SOPs. No new information or studies were provided that the BLM was not aware. No new issues were identified that were not addressed in the Proposed Action and No Action alternatives or that had not already been addressed in the 2009 HMAP and EA.

In August 2013 the Pryor Mountain Wild Horse Range Fertility Control Modification Preliminary Environmental Assessment DOI-BLM-MT-0010-2013-0034-EA was made available to the public for comment. Although a decision wasn't issued this allowed the public an opportunity to share with the BLM thoughts concerning the way fertility control is used.

## **7.0 REFERENCES CITED**

Bureau of Land Management 2010 BLM Handbook 1790-1 National Environmental Policy Act

Bureau of Land Management 2010 BLM Handbook 4700 Wild Horse and Burro Management

Bureau of Land Management 2010 BLM Manual 4700 Wild Free-Roaming Horse and Burros Management

Bureau of Land Management 1984 Billings Resource Area Resource Management Plan and subsequent Record of Decision Billings MT

BLM, BiFO (June 2001) Environmental Assessment and Gather Plan, Pryor Mountain Wild Horse Range, FY2001 Wild Horse Population Gather and Selective Removal.  
EA #MT-010-1-44

BLM, BiFO (April 2002) Environmental Assessment, Pryor Mountain Wild Horse Range, FY02 Humane-Use of Fertility Control on Select Young Wild Horse Mares.  
EA #MT-010-02-22

BLM, BiFO (April 2003) Environmental Assessment, Pryor Mountain Wild Horse Range, FY03 Fertility Control on Select Young Wild Horse Mares; Selective Removal of Young Wild Horse Stallions. EA #MT-010-03-14

BLM, BiFO (April 2004) Environmental Assessment, Pryor Mountain Wild Horse Range, FY04 Fertility Control on Age-Specific Wild Horse Mares. EA#MT-010-04-18

BLM, BiFO (May 2005) Environmental Assessment, Pryor Mountain Wild Horse Range, FY05 Use of FertilityControl on Mares 11 Years and Older to Suppress Herd Growth Rates.  
EA# BLM MT-010-05-16

BLM, BiFO (April 2006) Environmental Assessment, Pryor Mountain Wild Horse Range, FY06 Pryor Mountain Wild Horse Range Population Control. EA# BLM MT-010-06-19

- BLM, BiFO (May 2009, Affirmed January 2010) 2009 Pryor Mountain Wild Horse Range/Territory Environmental Assessment (MT-010-08-24) and Herd Management Area Plan.
- BLM, BiFO (January 2011) Pryor Mountain Wild Horse Range Fertility Control Preliminary Environmental Assessment DOI-BLM-MT-0010-2011-0004-EA and Decision Record (January 2011) Tiered to the Pryor Mountain Wild Horse Range Environmental Assessment MT-010-08-24 and Herd Management Area Plan May 2009.
- BLM, BiFO (August 2013) Pryor Mountain Wild Horse Range Fertility Control Modification Preliminary Environmental Assessment DOI-BLM-MT-0010-2013-0034-EA Tiered to the Pryor Mountain Wild Horse Range Environmental Assessment MT-010-08-4 and Herd Management Area Plan May 2009
- Code of Federal Regulations 2007. CFR part 4700-Protection, Management, and Control of Wild Free-Roaming Horses and Burros.
- Code of Federal Regulations 2007. 36 CFR Subpart B - 222.20-36. Management of Wild Free-Roaming Horses and Burros.
- Cothran, Gus E, 2010. Genetic Analysis of the Pryor Mountains HMA, MT. Department of Veterinary Integrative Bioscience, Texas A&M University
- Curtis, P.D., Pooler, R.L., Richmond, M.E., Miller, L.A., Mattfield, G.F., Quimby, F.W. 2002. Comparative effects of GnRH and porcine zona pellucida (PZP) immunocontraception vaccines for controlling reproduction in white-tailed deer (*Odocoileus virginianus*). Reproduction Supplement 60:131–141.
- National Research Council. Using Science to Improve the BLM Wild Horse and Burro Program: A Way Forward. Washington, DC: The National Academies Press, 2013.
- Eggert, Lori S et al. 2010. Pedigrees and the Study of the Wild Horse Population of Assateague Island National Seashore. Journal of Wildlife Management
- Heilmann, T.J., Garrott, R.A., Caldwell, L.L., Tiller, B.L. 1998. Behavioral response of free-ranging elk treated with an immunocontraceptive vaccine. Journal of Wildlife Management 62:243–250.
- Madosky, J.M., Rubenstein, D.I., Howard, J.J., Stuska, S. In press. The effects of immunocontraception on harem fidelity in a feral horse (*Equus caballus*) population. Applied Animal Behavior Science.
- Nunez, C.M.V., Adelman, J.S., Mason, C., Rubenstein, D.I. 2009. Immunocontraception decreases group fidelity in a feral horse population during the non-breeding season. Applied Animal Behavior Science 117:74–83.

- Powell, D.M. 1999. Preliminary evaluation of porcine zona pellucida (PZP) immunocontraception for behavioral effects in feral horses (*Equus caballus*). *Journal of Applied Animal Welfare Science* 2:321–335.
- Ransom, J.I., Cade, B.S., Hobbs, N.T. 2010. Influences of immunocontraception on time budgets, social behavior, and body condition in feral horses. *Applied Animal Behavior Science* 124:51–60.
- Shumake, S.A., Wilhelm, E.S. 1995. Comparisons of effects of four immunocontraceptive treatments on estrous cycle and rutting behavior in captive white-tailed deer. Denver Wildlife Research Center, Colorado, USA.
- Turner, A., Kirkpatrick, J.F. 2002. Effects of immunocontraception on population, longevity and body condition in wild mares (*Equus caballus*). *Reproduction Supplement* 60:187–195.
- Turner, A., Kirkpatrick, J.F. 2008 Achieving population goals in a long lived wildlife species (*Equus caballus*) with contraception.

## Appendix I

### 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 appropriate projectors designed for the dart.
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. Any smooth bore gun (projector) would not be used at ranges in excess of 30 m while rifled gun (projector) would not be used over 50 m, and no attempt would be taken when other non-darting 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.

## Appendix II

<b>Table 3 Summary of PZP Use On the Pryor Mountain Wild Horse Range</b>					
Year	Environmental Assessment	Number and age of mares identified for treatment	PZP Formulation	Total treated	Total Pop. (as officially reported)
2001	Pryor Mountain Wild Horse Range FY2001 Wild Horse Population Gather and Selective Removal EA Number MT-010-1-44	11 fillies of one and two year olds	One year liquid applied during a gather in the chute	11	160 post gather fall pop
2002	FY2002 Humane-Use of Fertility Control on Select Young Wild Horse Mares EA Number MT-010-02-22	12 one year olds and 7 two year olds	One year liquid remote dart	19	170 fall pop.
2003	FY2003: Fertility Control on Select Wild Horse Mares FY2003: Selective Removal of Young Wild Horse Stallions EA # MT-010-03-14	7 yearlings, 9 two year olds, and 8 over fourteen	One year liquid remote dart	24	161 post gather fall pop. (High foal mortality)
2004	FY2004: Fertility Control on Age-Specific Wild Horse Mares EA # MT-010-04-18	5 yearlings, 4 two year olds, and 7 over fourteen	One year liquid remote dart	16	142 fall pop. (Foal crop died)
2005	FY2005: Use of Fertility Control on Mares 11 Years of Age and Older to Suppress Herd Growth Rates EA # BLM- MT-010-FY05-16	mares over the age of 11	One year liquid remote dart	21	160 fall pop.
2006	Pryor Mountain Wild Horse Population Control 2006 EA # BLM- MT-010-FY06-19	Mares over 11	One year liquid remote dart	22	145 fall pop. post gather
2007	Pryor Mountain Wild Horse Population Control 2006 EA # BLM- MT-010-FY06-19	Mares over 11	One year liquid remote dart	27	154
2008	Pryor Mountain Wild Horse Population Control 2006 EA # BLM- MT-010-FY06-19	Mares over 11	No application, budget reduced	0	170
2009	Pryor Mountain Wild Horse Range 2009 Gather Plan and Environmental Assessment (EA) MT-C010-2009-35	42 mares over the age of one	22 month pellet applied during a gather in the chute	40	195 (125 post gather)
2010	Pryor Mountain Wild Horse Population Control 2006 EA # BLM- MT-010-FY06-19	Mares over 11	One year liquid remote dart	12	140-150 (11 from outside HMA horse returned)
2011	Pryor Mountain Wild Horse Range Fertility Control Environmental Assessment December 2010 DOI-BLM-MT-0010-2011-0004-EA	Mares 2,3,4 and 11 and older	ZonaStat-H remote dart	36	159
2012	Pryor Mountain Wild Horse Range Fertility Control Environmental Assessment December 2010 DOI-BLM-MT-0010-2011-0004-EA	Mares 2,3,4 and 11 and older	ZonaStat-H remote dart	63	172 (134 post gather)
2013	Pryor Mountain Wild Horse Range Fertility Control Environmental Assessment December 2010 DOI-BLM-MT-0010-2011-0004-EA	Mares 2,3,4 and 11 and older	ZonaStat-H remote dart	52	145
2014	Pryor Mountain Wild Horse Range Fertility Control Environmental Assessment December 2010 DOI-BLM-MT-0010-2011-0004-EA	Mares 2,3,4 and 11 and older	ZonaStat-H remote dart	63	159