U.S. Department of the Interior
Bureau of Land Management

Lake Pleasant Herd Management Area Plan and Population Control

ENVIRONMENTAL ASSESSMENT

DOI-BLM-AZ-P010-2025-0019-EA

September 2025

U.S. Department of the Interior
Bureau of Land Management
Phoenix District
Hassayampa Field Office
2020 E. Bell Rd. Phoenix, AZ 85022
(602) 867-5400

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Acronyms and Abbreviations

ACEC	Area of Critical Environmental Concern
AML	Appropriate Management Level
AZGFD	Arizona Game and Fish Department
BCS	Body Condition Score
BLM	Bureau of Land Management
CAWP	Comprehensive Animal Welfare Program
CESA	Cumulative Effects Study Area
CFR	Code of Federal Regulations
EA	Environmental Assessment
FLPMA	Federal Land Policy and Management Act of 1976
GPS	Global Positioning System
HA	Herd Area
HFO	Hassayampa Field Office
HMA	Herd Management Area
HMAP	Herd Management Area Plan
HSUS	Humane Society of the United States
ID	Interdisciplinary Team
IM	Instruction Memorandum
MLRA	Major Land Resource Area
NEPA	National Environmental Policy Act of 1969
NRCS	Natural Resources Conservation Service
PIM	Permanent Instruction Memorandum
RFFA	Reasonably Foreseeable Future Action
RMP	Resource Management Plan
SOP	Standard Operating Procedures
TGA	Taylor Grazing Act
T&E	Threatened and Endangered species
TNEB	thriving natural ecological balance
UHF	Ultra High Frequency
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
WFRHBA	Wild and Free-Roaming Horses and Burros Act of 1971
WSR	Wild and Scenic River

CHAPTER 1 INTRODUCTION

This Environmental Assessment (EA) has been prepared to analyze the Bureau of Land Management's (BLM), Phoenix District Office, and Hassayampa Field Office (HFO) proposal to, 1) update the 1999 Lake Pleasant Herd Management Area Plan (HMA, HMAP), 2) establish an Appropriate Management Level (AML[1]) range for the Lake Pleasant HMA, 3) remove excess wild burros to achieve and maintain the proposed AML range, and 4) implement fertility control for wild burros on lands within the Lake Pleasant HMA.

This EA was prepared to thoroughly examine the potential environmental impacts of the proposed action and alternatives to support informed decision-making. This EA is consistent with the purpose and goals of the National Environmental Policy Act (NEPA); longstanding Federal, judicial, and regulatory interpretations; the Department of the Interior's NEPA regulations (43 CFR Part 46).

1.1 Background and Project Setting

The Lake Pleasant HMA[2] and Herd Area (HA) lies approximately 30 miles northwest of downtown Phoenix, Arizona, and 17 miles east/southeast of Wickenburg, Arizona (Appendix A). Communities in the surrounding HMA area include the City of Peoria and Phoenix to the south and New River and Anthem, unincorporated communities, to the east. The HMA and HA boundary, an administrative boundary, encompasses to the north the southern foothills of the Bradshaw mountains and includes all of Lake Pleasant (formed by New Waddell Dam) on the Agua Fria River. The HMA consists of rugged mountains, numerous small canyons, and open rolling foothills. Also, included within the HMA is the 10,656-acre Hells Canyon Wilderness area. Within the HMA boundary, land ownership consists of public lands, state, private, and other federal lands (Table 1). Although the Lake Pleasant HMA boundary includes various land ownerships, the free-roaming behavior of wild burros makes it challenging to confine them solely to BLM public lands. The HMA/HA boundary indicates the area where the BLM is responsible for managing burros. Consequently, managing the Lake Pleasant wild burro population involves collaboration and communication with local governments, other federal agencies, and private landowners to effectively oversee burro populations.

Table 1. Lake Pleasant HMA/HA Surface Management

Surface Management	Acres[1]	Percentage[1]
Bureau of Land Management	61,031	59%
Bureau of Reclamation	22,563	22%
Private	6,021	6%
State	13,863	13%
Total	103,478	100%

[1]Subject to change over time

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

[2] HMAs are areas that the BLM manages for wild horse and/or burro populations on federal lands. HAs are areas where feral burro and/or horse herds existed at the time of the passage of the Wild and Free-Roaming Horses and Burros Act of 1971. In the case of the Lake Pleasant HA and HMA, they are the same administrative boundary.

The Bradshaw-Harquahala Approved Resource Management Plan (RMP) signed in 2010 was prepared to provide guidance in management decisions for the HFO. The RMP, under wild burro management (section 2.3.14), provides guidance on desired future conditions, land use allocations, and management actions for the Lake Pleasant HMA. The RMP specifically states the following as it relates to the Lake Pleasant HMA:

Desired Future Conditions
HB-1. BLM manages wild burros in the Lake Pleasant HMA at the minimum population level needed to ensure the herd's free-roaming character, health, and self-sustaining ability.

Management Actions
HB-3. Management of burros within the Lake Pleasant HMA will continue in accordance with the provisions of the Lake Pleasant Herd Management Plan and managed to achieve the AML set in that plan (Current Plan is the 1999 Lake Pleasant HMAP).

In 1999, the Lake Pleasant Burro Herd Management Area Plan, Environmental Assessment, and Decision Record / Finding of No Significant Impact (AZ-020-092) was approved. The plan discusses issues, goals, monitoring, and herd area objectives and actions; however, the plan did not establish AML. Under Management Actions of Management Objective 1 in the HMAP the following is provided:

> "Establish an appropriate management level by December 31, 2000, based on forage allocation, population levels, and actual use of key forage species established through monitoring data."
>
> "Rationale: A minimum number of animals is necessary for effective breeding with genetic diversity. A maximum number is what the habitat can sustain without degradation. An AML will be established once sufficient monitoring data of population and habitat conditions are obtained."

After approval of the 1999 plan, the goal of establishing AML by the year 2000 was not achieved and has not been set to date.

Prior to the 2010 Bradshaw-Harquahala RMP, the 1988 Phoenix RMP and Final Environmental Impact Statement was the RMP in place. At a minimum, the 1988 RMP provided for the management of no less than a herd size of 80 burros to increase breeding interaction and halt the population decline at that time.

Publicly available population estimate data and the Lake Pleasant HMA information website[3] estimate an AML for the Lake Pleasant HMA of 166-208. This range has been used over the years to provide a potential range and as a basis for reporting annual population estimates, however, this is not an official AML range that has been established through a decision record.

Updating the 1999 Lake Pleasant HMAP, which would include the establishment of an AML range, is needed for efforts in achieving a self-sustaining healthy burro population in balance with other uses and growing urban populations.

Setting AML for the Lake Pleasant HMA is in accordance with 43 CFR 4710.3-1 which states:

[3] https://www.blm.gov/programs/wild-horse-and-burro/herd-management/herd-management-areas/arizona/lake-pleasant

> "Herd management areas shall be established for the maintenance of wild horse and burro herds. In delineating each herd management area, the authorized officer shall consider the appropriate management level for the herd, the habitat requirements of the animal, the relationships with other uses of the public and adjacent private lands, and the constraints contained in 4710.4."

Limiting the wild burros to herd areas is in accordance with 43 CFR 4710.4 which states:

> "Management of wild horses and burros shall be undertaken with the objective of limiting the animal's distribution to herd areas. Management shall be at the minimum level necessary to attain the objectives identified in approved land use plans and herd management plans."

Additionally, the authority for the adjustment of wild burro populations is contained in the Wild Horse and Burro Act of 1971, the Federal Land Policy and Management Act of 1976 and the Public Rangelands Improvement Act of 1978.

1.2 Purpose and Need for Action

The purpose of the proposed action is to update the Lake Pleasant HMAP, gather and remove excess wild burros from within and outside the Lake Pleasant HMA to achieve and maintain the herd within the AML range as proposed in this analysis, achieve a thriving natural ecological balance (TNEB), and address public safety and private property damage concerns.

The need for the action is based on the BLM's obligations established by the provisions of Section 1333(a) of the Wild Free-Roaming Horses and Burros Act of 1971, as amended (WFRHBA) which mandates management of wild burros in a manner that is designed to achieve and maintain a TNEB on the public lands, protect rangeland resources from deterioration associated with overpopulation, and address nuisance complaints and public safety concerns.

1.3 Decision to be Made

The authorized officer will 1) determine whether to implement all, part, or none of the proposed action to update the HMAP which would include a determination of AML range for the Lake Pleasant HMA and 2) determine whether to implement all, part, or none of the proposed gather plan and/or population control measures.

1.4 Land Use Plan Conformance

The proposed action and alternatives described below are in conformance with the 2010, Bradshaw-Harquahala Record of Decision and Approved RMP, and are consistent with the following management actions and goals:

Desired Future Conditions

HB-1. BLM manages wild burros in the Lake Pleasant Herd Management Area at the minimum population level needed to ensure the herd's free-roaming character, health, and self-sustaining ability.

Management Actions

HB-3. Management of burros within the Lake Pleasant HMA will continue in accordance with the provisions of the Lake Pleasant Herd Management Plan and managed to achieve the AML set in that plan.

HB-4. Burros will be removed from the Lake Pleasant HMA when the population exceeds the AML or if burros are determined to be nuisance animals as defined by the Wild Horse and Burro Act of 1971.

1.5 Relationship to Statutes, Regulations, Other NEPA Documents

The proposed action and action alternatives are consistent with the following Federal laws, policies, and regulations. These include, but are not limited to the following:

- The WFRHBA,
- The Federal Land Policy and Management Act of 1976,
- Fundamentals of Rangeland Health (43 CFR 4180),
- Taylor Grazing Act of 1934, as amended,
- The National Environmental Policy Act, as amended and
- The BLM Wild Horses and Burros Management Handbook (H-4700-1).

The proposed action and action alternatives are consistent with the applicable regulations at 43 CFR 4700 and are also consistent with the WFRHBA, which mandates that BLM "protect the range from the deterioration associated with overpopulation," and remove excess wild burros from an area "in order to preserve and maintain a thriving natural ecological balance and multiple use relationships in that area." Additionally, federal regulations at 43 CFR 4700.0-6 (a) state that wild burros "shall be managed as self-sustaining populations of healthy animals in balance with other uses and the productive capacity of their habitat."

1.6 Issue Identification

The following issues were identified by the BLM interdisciplinary team (ID) in relation to the BLM's management of wild burros in the planning area:

<u>Wild Burros</u>

- Potential impacts to population size and annual growth rate,
- Potential impacts to individual wild burros from handling stress,
- Potential impacts to herd social structure,
- Effectiveness of proposed fertility control applications,
- Potential effects to genetic diversity, and
- Potential impacts to animal health and condition.

<u>Vegetation, Soils</u>

- Potential impacts to vegetation from trap and holding sites associated with wild burro gather activities,
- Potential impacts to the distribution and density of non-native or noxious plants,
- Potential impacts to soil resources at trap and holding sites, and
- Potential impacts to forage used by wildlife and permitted livestock.

<u>Water Resources</u>

- Potential impacts to springs and riparian vegetation,
- Potential impacts to functionality of springs and water availability.

<u>Wildlife, Migratory Birds, and Special Status Species</u>

- Potential for temporary displacement, trampling or disturbance,
- Potential impacts to habitat/forage, and
- Potential competition for forage and water.

Human Health and Safety
- Potential impacts to public safety
- Potential impacts to public property

Livestock Grazing
- Potential impacts to individual animals from trapping operations.

CHAPTER 2 PROPOSED ACTION AND ALTERNATIVES

2.1 No Action Alternative

Under the no action alternative, individual nuisance gathers on lands not managed by the BLM would continue to occur through land-owner permission to address nuisance complaints and public safety concerns. The Lake Pleasant HMA would continue to be guided by the 1999 HMAP and AML would not be established under this analysis. The no action alternative would continue to present population management challenges. Negative impacts on resources (chapter 3) under the no action alternative would continue to impact burro themselves, not achieve TNEB, or more immediately address public health and safety concerns.

There would be no active management (AML type gathers nor fertility control methods) to control the size of the wild burro population, control growth rates, or manage the wild burro population within an established AML low and high range. Wild burros residing outside the HMA would remain in areas not designated for management of wild burros and overall population numbers would continue to increase. Wild burros crossing highways and impacting private lands would intensify the current wild burro and public safety concerns described in section 3.2.7.

The no action alternative would not be in conformance with existing laws and regulations which require the authorized officer to remove animals immediately upon determination that excess wild burros are present and their removal is necessary. Although the no action alternative does not comply with the WFRHBA and does not meet the purpose and need for the action in this EA, it is included as a basis for comparison with the action alternatives, and to assess the effects of not removing burros at this time.

2.2 Alternative A (Proposed Action)

Under alternative A, the BLM proposes to 1) update the HMAP, 2) establish AML, 3) implement a gather plan designed to reach the proposed low AML range, and 4) implement fertility control management strategies.

2.2.1 Lake Pleasant Herd Management Area Plan

The purpose of the Lake Pleasant HMAP is to guide management of the Lake Pleasant burro HMA and remain effective until revised.

Management Objectives

A. Population Control: Manage adult wild burro populations in the Lake Pleasant HMA within the 140-250 AML range [see Appendix C for AML assessment].

Monitoring Objective:

- Conduct population inventories of a minimum of once every 3-4 years; additional inventories as funding and time allows. Determine annual population growth rate based on consistent population inventories. Consider population inventory surveys to extend beyond the HMA boundaries to document distribution outside of the HMA.
- Utilize, when practicable, radio telemetry and or GPS collaring methods to monitor distribution and use behaviors.

Implementation Objective:

- Schedule gathers to remove excess wild burros when the total wild burro population exceeds the high AML range for the HMA, when animals permanently reside on lands outside the Lake Pleasant HMA boundaries (i.e. use is more than seasonal drift), or whenever animal health/condition is at risk.
- The use of population growth suppression (fertility control) methods should be considered as an option to aid in slowing population growth. This type of tool can reduce the frequency of gathers needed once populations reach over the AML high range.

B. Sustain Healthy Populations of Wild Burros: Manage for healthy wild burros.

Monitoring Objective:

- Observe wild burro health and body conditions during HMA site visits. Document during gather and population inventory operations.

Implementation Objective:

- Maintain wild burro populations within the AML Range to sustain resources utilized by wild burros and other users.
- Conduct emergency removals when needed if animal body condition is less than Henneke condition class score 3 due to drought, wildfire, or other unforeseen event.
- Euthanasia is to occur on wild burros that meet criteria related to acts of mercy, health, or safety as provided in Permanent Instruction Memorandum 2021-007 or as amended.

C. Assure Genetic Diversity: Maintain genetic variability within the herd to avoid negative effects of inbreeding depression.

Monitoring Objective:

- Collect hair samples as needed to monitor genetic diversity within the Lake Pleasant Wild Burro Herd.

Implementation Objective:

- Burros selected to be returned to the HMA would be based on phenotypic diversity including color, conformation (body type), and size.
- If observed heterozygosity is determined through genetic sample analyses to be lower than a nationally determined critical threshold, introduce 3-5 wild burros into the herd from other HMAs to increase observed heterozygosity.

D. Assure Rangeland Health: Manage populations to meet or maintain rangeland health standards as outlined in the *Arizona Standards for Rangeland Health and Guidelines for Grazing Administration*. Evaluate and consider adjustments to AML to achieve a thriving natural ecological balance; manage a population size capable of ensuring available forage and habitat in harmony with the needs of wildlife and livestock.

Monitoring Objective:

- Continue to monitor trend studies at existing key monitoring areas and continue establishing new key monitoring areas within the HMA as needed to obtain data to be used in evaluating burro management (including the AML). Utilization studies should occur annually while trend monitoring may occur every 3-5 years.

Implementation Objective:

- Evaluate rangeland health for the HMA. Summarize trend, precipitation, riparian conditions, use pattern mapping and utilization. Based upon data results and rangeland health conditions, if rangeland standards are not being met, consider an AML adjustment or identify management actions to address/resolve rangeland health issues.

E. Partnership: Involve stakeholders, organizations, other agencies, impacted landowners, and interested public. Conduct outreach efforts to inform the public of appropriate practices when encountering wild burros. Resolve nuisance burro issues at the request of the public.

Implementation Objective:

- Lake Pleasant HMA management is encouraged to develop community communication and maintain a presence both within and outside the HMA.
- Develop agreements/partnerships as appropriate with local agencies to accomplish BLM management objectives and resolve wild burro urban interface issues.
- Respond whenever possible to calls/reports of burro related issues and hazards.

2.2.2 Population Control

The BLM proposes to reduce the Lake Pleasant HMA herd size to the low AML range (140 adult burros) using a range of tools, and when feasible, apply the use of fertility control methods (section 2.2.3) to slow down the rate of reproduction towards high AML. According to the current projected population estimates (table 4) the BLM, for example, would need to gather a total of 2,163 burros in 2026 to reach the low AML immediately upon implementation of the management plan. Though the BLM would strive to reach low AML with the initial gather, it is expected that gather efficiencies, funding, and availability of corral holding space during the initial gather would not allow for the attainment of low AML; therefore, subsequent gathers would occur as necessary throughout multiple years to remove additional wild burros to reach low AML. Once the initial burro population has reached the low AML range, additional NEPA (e.g., Determination of NEPA Adequacy (DNA), EA) would occur for maintenance gathers. Maintenance gathers are defined in this document as the gather and removal of excess burros over the high AML range in addition of burros within the AML range to be brought back down to the low AML range.

The estimated population of wild burros outside of the HMA during the 2023 surveys were 858 (table 3). Nuisance gathers outside the HMA in 2024 and 2025 removed 861 burros combined. However, burros are still known to reside outside the HMA. Populations outside the HMA can fluctuate during seasonal changes. Under this gather plan, wild burros residing in areas outside of the HMA boundary would be prioritized for removal (to the extent possible). Following the removal of wild burros outside of the HMA (to the extent possible), the BLM would then remove excess burros in the HMA to reach the initial low AML. The BLM would set up temporary holding corrals and bait/water traps on BLM managed lands only; except if and when permission through coordination is granted by other landowners. Landowners would also be notified (to the best of the BLM's ability) prior to operations as wild burros moved during drive (helicopter) operations or bait/water operations could traverse through lands other than BLM managed lands.

Once within the AML range, any need for future gathers would be based off population estimates, herd health, and range condition. These factors would be used to determine the number of individuals that would need to be removed to keep the population within the AML range. Even with populations within the AML range, it is reasonably foreseeable that wild burros may drift outside of the HMA. Any burros outside the HMA may be gathered to be relocated back to the HMA or removed but not to the amount that would reduce the overall population (inside and outside the HMA) below the low AML.

For the protection of wildlife and fish species, and conformance under the Endangered Species Act, the Bald and Golden Eagle Protection Act, and the Migratory Bird Treaty Act, certain gather activities would occur within spatial and temporal restrictions. Helicopter assist gather activities would preferably occur between October 15 to February 15, for the protection of nesting migratory birds and threatened and endangered (T&E) bird species. Bait trapping would not occur within riparian habitats for the protection of T&E fish species. Any flights for population assessment and gather activities would not occur in the bald eagle closure areas in Lake Pleasant Regional Park or within 2 miles of a known bald eagle nest during the breeding season, from December 15 through June 15. Flights for population assessments would preferably occur between October 15 to February 15. These actions are necessary to protect sensitive biological resources in the Lake Pleasant HMA. As stated, the time frames described above are preferred, however, should helicopter assist gather activities and populations surveys be considered outside of these time frames, coordination with the HFO biologist would occur prior.

Additionally, trap locations and/or temporary holding facilities would, to the extent possible, be located in previously disturbed areas or open desert washes in order to minimize impacts to resources.

Burros removed from the Lake Pleasant HMA would enter into the WHB adoption program and be shipped to the Florence, Arizona, short-term preparation facility or other BLM/BLM contracted short-term facilities. As with gather activities, transportation from the Lake Pleasant HMA to short-term preparation facilities would comply with the Comprehensive Animal Welfare Program[4] (CAWP) standards.

2.2.3 Fertility Control

Under the proposed action, the BLM would include the application of approved immuno-contraceptive vaccines[5] (with initial doses and booster doses) to gathered and release females over the course of multiple gathers. Vaccine injections would be administered via dart or hand-injection. Growth suppression methods can slow population growth rates and help maintain wild burro populations within the AML for longer periods of time. In this way, population growth suppression methods can help with resource recovery and reduce the number of excess animals that ultimately have to be removed from public lands over time.

Fertility control vaccines may be applied even if AML is not reached during an initial gather. If this happens, the herd's annual growth rate may be somewhat decreased by the time populations are within AML. The goal of applying immuno-contraceptive vaccines in the Lake Pleasant burro herd would be to reduce the annual population growth rate to approximately 10% from 15%. Projecting herd growth based on a 15% annual growth rate and starting at the low AML of 140 leads to the expectation that the population would reach the high AML of 250 in about five years; this would likely initiate the need to remove burros during year six. In contrast, reducing the annual growth rate by one third, to approximately 10%, is expected to increase the time needed for the herd to grow from low AML to high AML, by an additional two years. High AML would therefore be projected to be reached within seven years likely triggering a need to remove burros during year eight. This outcome of the expected effects of using immuno-contraceptives would reduce ecological effects of burros on rangeland resources over time, and the frequency and cost of gathers. The fraction of effectively contracepted females has also been called the 'fertility control index' (Schulman et al. 2024). Though the goal of reducing annual herd growth rates by a third, from approximately 15% to 10%, may be seen as relatively modest, achieving that level of herd growth reduction would, intuitively, require a fertility control index of approximately one third, which could require a high degree of effort in this herd.

Adjustments to the actual number of females treated with fertility control and returned to the range would be made in response to the actual number of animals captured during a gather event, but with the goal of maintaining an average herd growth rate of approximately 10% per year. It is more likely that some females would not be gathered in any given gather event, in which case those females would not be treated with any hand-injected fertility control vaccine at that time.

Female burros that are gathered and selected for fertility control, along with their dependent foal (if any) would be transported and held for approximately 30 to 60 days in a holding facility. Females selected for fertility control would be microchipped and assigned an identification number which may include being

[4] BLM PIM 2021-002 *Wild Horse and Burro Comprehensive Animal Welfare Program*
[5] Vaccine examples: GonaCon-Equine, ZonaStat-H, PZP-22 or latest formulation

freeze marked (neck and/or hip) for tracking. Once treated and prepared, female burros and their dependent foals would be released back into the HMA in the same area that they were captured. Any foals that can be weaned will not be returned to the range and will be prepped for private care placement.

2.3 Alternative B – Gather and Removal Only

Alternative B is the same as the Proposed Action but would not include fertility control. BLM would only conduct gathers to remove excess wild burros to low AML. The population would then be controlled within AML through gathers. Compared to the Proposed Action, gather frequency would need to be increased under Alternative B to maintain the population within AML. The increase in gather frequency due to a lack of population growth suppression methods would result in an increase of wild burros entering the BLM adoption program over time.

2.4 Management Actions Specific to Alternatives A and B

The BLM would utilize all approved gather methods, including bait/water trapping, helicopter drive trapping, and roping via horseback, if necessary, to gather wild burros. The BLM would follow the Standard Operating Procedures (SOPs) found in Appendix D, E, and BLM Handbook 4700-1 Wild Horse and Burros Management Handbook. Gather methods would be determined on a case-by-case basis depending on access, time of year, funding, personnel availability, and the difficulty of gathering the burros (i.e. due to terrain, weather, water and forage availability, and/or number of burros to be gathered).

The most efficient gather technique would be chosen as determined by the gather needs of the specific area. Any trapping activities would be scheduled in locations and during time periods that would be most effective to gather enough animals to achieve management goals. The BLM may determine that helicopter gathers are necessary in all areas to increase gather efficiencies. Helicopter gathers are typically conducted due to size of the area being gathered, number of burros being gathered, and the need for efficiency or quickness of the gather for the health of animals and public safety.

The primary focus under alternatives A and B would be on gathering burros from areas where public safety is a concern (such as roadways where burro-vehicle collisions have occurred), heavily concentrated areas within the HMA with the most severe resource impacts, and nuisance burros on private lands within and outside the HMA.

Implementation of any action alternative would allow the herd to continue to grow. Excess wild burros over high AML would be removed to maintain the herd within AML.

- Various circumstances/factors make it impossible to remove all of the estimated excess burros at one time. As a result, multiple gathers (combination bait and helicopter) would likely need to occur potentially over several years before reaching populations even below high AML. The amount of time to get the population to at or near AML is difficult to predict and would be based on funding, the amount of space in BLM short-term holding facilities, environmental conditions and other circumstances that may arise.

- The BLM would begin with an initial gather to remove excess wild burros to try to achieve the AML range. Several factors such as initial herd size, animal condition, herd health, weather

conditions, or other considerations could affect scheduling of the initial gather and the necessity to conduct follow-up gathers to achieve populations within the AML range.

- Genetic samples would be used to monitor genetic diversity in the HMA, as measured by observed heterozygosity. If the genetic diversity is determined through the analysis of baseline genetic monitoring samples, or through results of any future genetic monitoring, to be lower than a nationally determined critical threshold of more than one standard deviation lower than the mean value across feral burros (BLM 2010, H-4700-1 section 4.4.6.2), then fertile burros from other HMAs could be introduced into the Lake Pleasant herd to augment genetic diversity throughout the HMA.

- Range rehabilitation (such as reseeding, vertical mulching, scarification, etc.) may occur as needed at trap sites and/or temporary holding facilities to prevent the introduction of invasive species.

- Gather operations could involve non-HMA areas, such as State lands, private lands and areas near communities where wild burros have been known to reside and become a hazard/nuisance.

- While in the temporary holding corral, burros would be identified for removal or released based on age, gender and/or other characteristics in order to maintain a diverse age structure, herd characteristics, and confirmation (body type).

- BLM will continue rangeland health and population monitoring for the HMA.

2.5 Management Actions Specific to Alternative A

In addition to the management actions discussed in section 2.4, alternative A would include the following:

Fertility Control Treatment, Field Darting

- Fertility control treatment would be administered through remote darting and or hand injections.

- All burros that are selected to be treated with fertility control by hand-injection would be transported to a BLM holding facility or off-range corral, aged, microchipped (in the nuchal ligament) and potentially freeze marked (numerical hip number left and right hips) for identification prior to being released. Freeze marking and microchipping will help identify the animals for future record keeping about vaccine treatment histories. Marking may also help with future assessments of fertility control treatment efficacy, though that is not a requirement of these alternatives.

- Female burros would be held and treated with an approved fertility control vaccine as per the respective schedule or treatment plan and then be released back into the HMA near where they were gathered. To help improve the efficacy and duration of the fertility control vaccine, females could be held for an additional 30 days and given a booster shot prior to release. Females selected for fertility control that have foals that are not old enough to be weaned would be returned to the HMA together with their foal.

- All females selected for fertility control treatment would meet the age requirement of 2-15 years old.

- Immuno-contraceptive treatments would be conducted in accordance with approved standard operating and post-treatment monitoring procedures (as described in Appendix G, or future updates). Male and female burros returned to the range would be selected to maintain a diverse age structure, herd characteristics and conformation (body type).

- Implementation of fertility control vaccines would ideally be conducted between November through February which is identified as the period of maximum effectiveness for fertility control vaccine application in equines. Funding limitations, competing priorities, or logistical considerations might impact the timing and population control components of the action alternative.

- Additional females may be selected for fertility control treatment to take the place of females lost due to natural mortality or females that are not responsive to the vaccine by the time of those gathers and animals that no longer meet the age requirement (older than 15 years old).

2.6 Alternatives Considered but not Analyzed in Detail

Different Appropriate Management Level Range
Based on the analysis and information presented in Appendix C, it has been determined that the recommended AML range is suitable for managing the health of the Lake Pleasant wild burro herd and protecting resources while balancing other uses such as wildlife and livestock. Maintaining a population range of no less than 140 is believed to be necessary for the successful growth and sustainability of the herd, while limiting their impact on the rangeland. Managing the population within the range of 140-250, over an extended period, is seen as a reasonable and effective strategy to reduce rangeland impacts while limiting the burros from leaving the HMA and causing risks to human safety. Although it is anticipated that some burros may move outside the HMA at times, maintaining a population range of 140-250 is considered achievable and manageable, with the expectation of limiting the number of wild burros outside the HMA on a permanent basis.

Use of Fertility Control Only, No Removals
Contraception by itself does not remove excess horses or burros from an HMA's population, so if a wild horse or burro population is in excess of AML, then contraception alone would not fully address the continuing environmental effects of horse or burro overpopulation. Successful contraception reduces future reproduction.

The current burro herd size in the Lake Pleasant HMA is many times greater than what would be considered appropriate levels. High population levels are causing public health concerns, resource damage, and wildlife competition associated with overpopulation of one species. Contraception alone would not reduce ongoing impacts until after many years in which deaths on the range outnumber surviving foals. Unless approximately 80% or more of females are vaccinated every year, the burro herd would continue to grow (based on Garrott 1991, assuming that burro demography is reasonably comparable). Depending on the vaccine used, maintaining such high vaccination rates would require

annual gathers of nearly the entire herd, which would be costly and logistically difficult. Even if BLM gathered the majority of the herd every year in order to maintain that vaccination rate, some removals would still be needed in order to reach AML within a decade.

This alternative would not meet the purpose and need for action. The wild burro population would not be brought to AML soon enough to prevent current public concerns and heavy resource damage. Even if reproduction was brought to zero through the use of fertility control (an outcome that is extremely unlikely), resource concerns would continue to escalate. Implementation of this alternative would result in increased gather and fertility control costs without achieving a thriving natural ecological balance or resource management objectives.

Manage a Portion of the Male Population through Gelding
Gelding has been excluded from further consideration for the Lake Pleasant Herd Management Area (HMA) at this time. This decision was made because there are currently more effective methods available to reduce female fertility rates within the HMA. Additionally, gelding alone is unlikely to achieve the desired population management objectives, such as reducing population growth rates or achieving the AML range. This is because a single jack (male) can impregnate multiple jennies, making it difficult to control the population solely through gelding unless an exceedingly high fraction of jacks in the herd are all gelded. Therefore, this alternative was not considered for further analysis.

Use of Bait and/or Water Trapping Only
Much of the Lake Pleasant HMA consists of rugged terrain and is limited to a few main roads to permit access for equipment needed for bait trapping. Bait trapping also requires specific conditions (limited forage and water sources on the range) that are conducive to capturing burros via trap. If these conditions do not exist, or are impacted by precipitation, the trapping success rate is significantly reduced. Bait trapping, while effective in specific conditions, would not be cost-effective or practical as the only trapping method to meet gather criteria relative to range conditions in the Lake Pleasant HMA. This method alone would not succeed in reducing the number of excess burros in the area as a large portion of the HMA would be inaccessible and thus would not meet the purpose and need for action.

Remove or Reduce Livestock within the Lake Pleasant HMA
This alternative would remove or reduce authorized livestock grazing from grazing allotments found within the HMA instead of gathering and removing wild burros within the HMA. This alternative was not considered in detail because it is outside of scope of this project and contrary to previous decisions which allocated forage for livestock use. Changes in livestock management would not be in conformance with the RMP or the WFRHBA, which directs the Secretary to immediately remove excess wild horses and burros once BLM has determined removal is necessary to achieve TNEB. Livestock grazing can only be reduced or eliminated through provisions identified within the grazing regulations (43 CFR 4100) and must be consistent with multiple use allocations set forth in the RMP. This alternative would be contrary to the BLM's multiple-use mission as outlined in Federal Land Policy and Management Act of 1976 (FLPMA) because this alternative would exchange use by livestock for use by wild burros. The BLM is required to manage wild burros in a manner designed to achieve a TNEB between wild horse and burro populations, wildlife, livestock, and other uses.

Designation of the HMA to be Managed Principally for Wild Burros
Under 43 CFR 4710.3-2, this action would require amendment of the resource management plan, which is an action outside the scope of this EA. Only the BLM Director or Assistant Director (as per BLM Manual 1203: Delegation of Authority) may establish a Wild Horse and Burro Range after a full assessment of the impact on other resources through the land-use planning process. Wild Horse and Burro Range is not an "exclusive" designation. Designation would not necessarily exclude livestock or other public multiple-use uses; therefore, levels of livestock grazing permitted could remain the same. Changes to or the elimination of livestock grazing cannot be made through a wild horse or burro gather decision.

Release and Relocation of Burros to New Areas
HMAs and HAs are limited to areas of public lands that have been designated as habitat for wild horses and burros at the time of the passage of the WFRHBA. Relocating animals to areas outside of existing HMAs and HAs would violate BLM policies and other federal regulations.

Relocating nuisance/excess wild burros to other areas within the Lake Pleasant HMA or other HMAs in Arizona is not currently a viable population management alternative since all HMAs in Arizona are currently overpopulated based on current population estimates. Introducing a small number of Lake Pleasant burros into a different HMA to augment genetic diversity in that HMA(s) is possible but would not accomplish management goals in the Lake Pleasant HMA.

Use of Wrangler on Horseback Drive-Trapping
BLM considered the use of wranglers on horseback to conduct drive-trapping to remove excess wild burros. The use of wranglers can be somewhat effective on a small scale, but due to the number of excess wild burros, the large geographic size of the HMA and extent that burros are outside in the HMA, this technique would be ineffective and impractical as a substitute for helicopter or bait trapping. Helicopter assisted roping is typically only used if necessary and when wild burros are in close proximity to the gather site. For these reasons this alternative was eliminated from further consideration.

CHAPTER 3 AFFECTED ENVIRONMENT & ENVIRONMENTAL CONSEQUENCES

3.1 Resources and Uses
The BLM is required to consider many authorities when evaluating a federal action. Table 2 below summarizes the resources and uses that have been reviewed by the BLM Interdisciplinary (ID) Team to determine whether or not they would be affected by the proposed project and rationale for whether the topic will be carried forward for detailed analysis. Those resources or uses determined not present or present but not affected by the Proposed Action need not be carried forward or discussed further. Resources or uses determined to be present and may be affected are carried forward in the document if there are issues which necessitate a detailed analysis.

Table 2: Resources and Uses

Resource or Use	Present Yes/No	May Be Affected Yes/No	Rationale for non-analysis	Analyzed in Section
Access	Yes	No	Some temporary access restrictions in areas could occur while gathers are being conducted. These are expected to be of a short duration (typically less than 12 hours at a time) and possibly for consecutive days in some areas. During temporary restrictions, alternative access options would be provided by the BLM on-site as necessary. As these access restrictions would be sporadic and temporary in nature, and alternative access would be provided, the effects to access would be negligible.	--
Air Quality	Yes	No	Activities associated with the action alternatives except for the no action alternative would temporarily contribute towards air quality impacts; however, areas of disturbance would be small and temporary. Fugitive dust from travel on dirt/gravel roads and burro movement would occur, but no air quality standards would be exceeded nor significantly contribute to degradation of air quality standards when combined with current travel activities by the public.	--
Areas of Critical Environmental Concern (ACEC)	Yes	No	Tule Creek ACEC is the only ACEC within the HMA. No other ACECs are designated near the HMA where trapping operations would occur. Trap site locations would be located outside of Tule Creek ACEC. Removing burros from the Tule Creek ACEC would likely occur via helicopter drive trapping towards a gather site located outside of the ACEC. A wildlife biologist would be consulted as to the timing of the gather to avoid or address any undue disturbance or impacts to wildlife.	--
Special Status Species	**Yes**	**Yes**	**Analyzed in document.**	**3.2.5**
Cultural Resources	Yes	No	A number of known prehistoric and historic cultural resources exist within the Lake Pleasant HMA that would be avoided during the gather in accordance with gather SOPs. Trap sites and holding facilities located in areas that have not been surveyed would be surveyed before to prevent any effects to cultural resources. If unanticipated cultural resources are discovered during the trapping process at the capture sites, trapping would cease immediately, and the Authorized Officer would be notified.	--
Farmlands (Prime and Unique)	No	No	Resource not present.	--
Fire Management	No	No	No impacts to fire management activities would occur.	--
Fish Habitat	Yes	No	Project area does contain suitable fish habitat; however, trapping would not occur in these areas.	--
Floodplains	Yes	No	While floodplains exist within the project area (mainly around Lake Pleasant), they would not be impacted by the proposed activities.	--

Resource or Use	Present Yes/No	May Be Affected Yes/No	Rationale for non-analysis	Analyzed in Section
Forestry Resources and Woodland Products	No	No	Resource not present.	--
Human Health and Safety	**Yes**	**Yes**	**Analyzed in document.**	**3.2.7**
Land Use Authorizations	Yes	No	Other land use authorizations would not be impacted. Access (see Resource or Use: Access; above) and other use activities would continue.	--
Lands with Wilderness Characteristics	Yes	No	Lands with wilderness characteristics have been identified and inventoried within the project area. However, the action alternatives would not impact these characteristics or change the finding of wilderness characteristics, therefore lands with wilderness characteristics would not be affected.	
Livestock Grazing Management	**Yes**	**Yes**	**Analyzed in document.**	**3.2.6**
Migratory Birds	**Yes**	**Yes**	**Analyzed in document.**	**3.2.5**
Mineral Resources	Yes	No	Mining/minerals actions would not be impacted by the alternatives as no gathers would occur in active mining areas, without mine operator's permission, and/or coordination with BLM geologist.	--
Native American Religious Concerns/ Traditional Values	Yes	No	The Lake Pleasant HMA encompasses a variety of prehistoric and historic cultural resources, including sites of traditional, religious and cultural value to local Native American Tribes. The project area includes the ancestral lands of numerous Indian tribes. Consultation has been initiated with the local tribes to determine the level of interest in this project and desire for formal consultation on the project. Trap sites would completely avoid known cultural resources and areas of known cultural significance.	--
Paleontological Resources	Yes	No	The alternatives would not impact paleontological resources as there would be minimal surface disturbance associated with any alternative. In addition, there are currently no known paleontological resources; the geology of the area is not conducive to the preservation of paleontological materials	--
Recreation	Yes	No	Activities associated with the action alternatives would not impact recreational opportunities such as motorized touring, hunting, non-motorized uses, and other dispersed recreational opportunities as capture operations would be dispersed in isolated locations throughout the HMA. Activities would take place over a short duration and be in conformance with the Bradshaw Harquahala RMP (2010) for the management of recreational resources. Users of public lands would still have access to use their public lands with little to no interruption. Although users may be temporarily displaced, there are public lands located	--

Resource or Use	Present Yes/No	May Be Affected Yes/No	Rationale for non-analysis	Analyzed in Section
			nearby that provide similar or substantially the same opportunities as those available on temporarily inaccessible public lands. Therefore, recreational opportunities are not affected nor are the beneficial outcomes for which BLM is managing.	
Socioeconomics	Yes	No	The action alternatives would not contribute to the local populations or tax-base of local communities on a long-term basis, therefore there would be negligible socioeconomic impacts.	--
Soil Resources	**Yes**	**Yes**	**Analyzed in document.**	**3.2.2**
Threatened or Endangered Species	**Yes**	**Yes**	**Analyzed in document.**	**3.2.5**
Travel and Transportation Management	Yes	No	All vehicular or off-highway vehicle travel would be along existing or designated roads, trails, and navigable washes. No cross-country travel would be authorized under any alternative and therefore no impacts would occur to the existing transportation network or decisions associated with that network.	--
Vegetation Resources: Including Non-Native and Invasives	**Yes**	**Yes**	**Analyzed in document.**	**3.2.2**
Visual Resources	Yes	No	The alternatives would not include any long-term ground-disturbing activities. Impacts would be minimal (short term) and would not impact the characteristic landscape and therefore would comply with visual resources management Class I, II, III, and IV management objectives.	--
Wastes, Hazardous or Solid	No	No	The alternatives would not use or introduce any hazardous or solid wastes.	--
Water Resources and Quality	**Yes**	**Yes**	**Analyzed in document.**	**3.2.3**
Wild and Scenic Rivers	No	No	No proposed or designated wild and scenic river segments occur within the project area.	--
Wild Burros	**Yes**	**Yes**	**Analyzed in document.**	**3.2.1**
Wilderness	**Yes**	**Yes**	**Analyzed in document.**	**3.2.4**
Wildlife	**Yes**	**Yes**	**Analyzed in document.**	**3.2.5**

3.2 Resources Brought Forward for Analysis

The ID Team evaluated potential impacts from the Proposed Action and Alternatives to determine which resources, and resource uses (as listed in the table above) required detailed analysis. Through this process, the ID team determined the resources described below warrant detailed analysis in this EA.

The description of the affected environment for the no action and other alternatives would be the same as that for the proposed action.

3.2.1 Wild Burros

Affected Environment

Habitat and predation

Wild burros are medium-sized ungulates that can use a variety of flat and steep terrain. Typically, wild burros are opportunistic grazers that can efficiently use coarse, lower quality forage (BLM 1996, Esmaeili et al. 2023). Wild burros are a long-lived species with documented survival rates that may exceed 92% for all age classes, and they do not self-regulate their population size; periodic die-offs could occur when resource availability is extremely low (NRC 2013). Although burros are known to live up to 40 years in captivity, it is not common to find wild burros over 12 years old on Arizona rangelands. This observation is based on age data collected by the BLM during the adoption preparation process at the Florence Prison facility. Across the southwest desert, mountain lions are thought to be the only predators that predates on wild burros with any notable frequency (Lundgren et al. 2022), but that predation frequency is thought to be relatively low (reviewed in Douglas and Hurst 1993). Coyotes are not prone to prey on wild burros unless young, or extremely weak. No information exists to suggest that disease would substantially reduce burro herd growth now or in the future. Further review on the interactions between wild burros and their environment, including a review of scientific papers noting positive and negative ecological effects of wild burros, is included in Appendix F. Wild burros are protected, managed, and controlled by the federal government under the authority of the WFRHBA, as amended, to ensure healthy herds thrive on healthy rangelands. The WFRHBA and FLPMA require that the BLM care for wild burros as part of its multiple-use and sustained yield mission.

Population

Wild burro management has expanded to place more emphasis on achieving rangeland health as measured through the Arizona Standards for Rangeland Health. BLM Resource Advisory Councils developed standards and guidelines for rangeland health (BLM 1997) that are the basis for grazing administration on public lands within Arizona. Adjustments in population numbers are based on evaluating progress toward reaching the standards.

Population surveys in the Lake Pleasant HMA have occurred in 1990, 2008, 2014, 2017, and 2023 (see appendix B for the 2023 population survey). The time series of estimated wild burro herd size shows a continuous population increase (Table 3). Gather event records provide that since at least 2009, approximately 1,182 burros have been gathered and removed from areas outside the Lake Pleasant HMA. Removal efforts have occurred through numerous small gathers (10-100 individuals) to address nuisance burros. More recently (2024 and 2025) larger nuisance/emergency gathers of over 400 burros were conducted to address increasing burro issues and public safety on private, state lands, and along public highways and roads. AML type gathers on public lands within the HMA have not occurred due to

the lack of an established AML. Fifty-five burros within the HMA were removed in 2017, incidental to gather operations that took place to support a radio collar-based study effort (Arizona Department of Transportation Research Center 2022, Hennig et al. 2022, Esmaeili et al. 2023, Esmaeili et al. 2024). Otherwise, available records do not provide that AML type gathers have taken place in the past.

Table 3. Lake Pleasant Burro Population Survey Summaries

MM/YY of Survey	Direct Count	Estimate
September, 1990	80	178[a]
September, 2008	102	344[b]
April, 2014	228	460[b]
June, 2017 (survey extended several miles outside HMA)	384	467[b] (196 of which outside of the HMA)
May, 2023 (survey extended several miles outside HMA)	1,260 adults 86 foals 1,346 Total	1,769[b] (858 of which outside of the HMA)

[a] Lincoln-Peterson Index method used in calculation.

[b] Simultaneous double observer method used in calculation.

The Lake Pleasant wild burro population was last surveyed by helicopter in May 2023 with BLM personnel. The survey was conducted using methods recommended by BLM policy (BLM 2010) and the National Academy of Sciences Review (NRC 2013) with detailed field methods described in Griffin et. al. (2020). Data collected during the survey (appendix B) was analyzed by the BLM using standard methods for analysis of simultaneous double-observer data (Ekernas and Lubow 2019). The survey area extended several miles outside of the HMA to document the extent of wild burros outside of the HMA.

The 2023 population survey resulted in an estimated 1,769 adult burros in the area of survey. However, double observer aerial surveys of burros typically contain unmodeled heterogeneity in detection probabilities that cause abundance estimates to be biased too low. Results are then a conservative estimate of abundance. True values are likely to be at least 25% higher (Hennig et al. 2022). Based on these estimates and probabilities, population estimates indicate that by the year 2029, Lake Pleasant wild burro populations could reach about 3,500 (Table 4) if left unchecked.

The Annual growth rate can vary based on environmental conditions and population sizes; however, an approximate 15% annual growth is a typical expectation that accounts for births and mortalities and is also used for many other BLM-managed burro herds. Ransom et. al. (2016) conducted a meta-analysis of equid population dynamics and found 19% per year herd growth rate for burros, on average. However, Gedir et. al. (2021) used a selection of average demographic rates in a projection model and found an expected 9% per year herd growth rate. Without additional information, there is no clearly correct approach to weighing those different values to derive a universal average for wild burros. For consistency across other HMAs and states, BLM Arizona considers that an annual growth rate of 15% is a reasonable expectation at a minimum for the Lake Pleasant herd. More accurate growth rates can be acquired with consistent population surveys.

Table 4: Population Growth Estimates and Projections

Year	Population Estimate (Adults)	15% Net herd Growth (Births minus Deaths)[1]
2023, May (pop. Survey)	2,211[a]	332
2024, March	2,543	-401[b]
2024, April[2]	2,142	321
2025, March	2,463	-460[b]
2025, May[2]	2,003	300
2026, March	2,303	345
2027, March	2,648	397
2028, March	3,045	457
2029, March	3,502	525

[1] The assumption is that these animals (births minus deaths) are added to the herd over the course of the year.
[2] Month burro gather concluded.
[a] Population estimate of 1769 with an additional 25%.
[b] Burros removed. The gathers occurred before the peak foaling season. Therefore, the growth rate was applied to the expected population size of burros present after the gather concluded.

Foals born each year (typically spring/summer) are considered adults on January 1 of the following year (BLM 2010, H-4700-1 section 4.2.1), and the BLM reports estimated population size for each HMA as of March 1 of each year. Based upon all information available at this time, the BLM has determined that there would be a minimum of approximately 2,163 adult wild burros over the proposed low AML range of 140 by March 2026 in areas within and outside the HMA. Therefore, 2,163 is the estimated number of adult burros that would need to be removed to achieve the proposed low AML, strive for a TNEB, and address human safety concerns.

A population inventory flight is not planned prior to the initial gather contemplated under the action alternatives since the HMA is known to be at least 1,000 wild burros over the proposed low AML range. A population inventory flight would be conducted after the initial gather to update the population estimate to reflect management actions. Large groups of wild burros are also permanently residing outside HMA boundaries in search of resources (forage and water). Some groups reside around and on private property, as well as near Highway 74, North New River Road, Lake Pleasant Parkway, Lone Mountain Parkway, as far south of State Route 303, as far west as near Morristown, Arizona, and along the west side of Interstate-17 located east of the HMA. Lately, there have been reports of wild burros east of Interstate-17 which is not typical and is indicative of further drifting. Future surveys would continue to monitor these areas outside the HMA to acquire further accurate estimates.

Genetic Variability

Samples of genetic material (i.e., from hair follicles) from wild burros of the Lake Pleasant HMA were collected from the February 2024 gather to begin establishing baseline measurements of genetic diversity, as a start of long-term genetic diversity monitoring in this herd. The samples where provided to the Department of Veterinary Integrative Bioscience of Texas A&M University. The genetic analysis (Cothran and Juras 2025) reported that genetic variability of the Lake Pleasant HMA herd is relatively high compared to the feral burro mean (i.e., other BLM managed HMAs). The BLM wild horse and burro herd management handbook (2010; section 4.4.6.2) clarifies that observed heterozygosity (Ho) should be used as the most important measure of genetic diversity in management decisions, and notes

that a management goal should be to ensure wild horse and burro herds lose less than 1% of heterozygosity per generation. Based on the 2024 samples, this herd had observed heterozygosity levels of 0.457-0.472, which is higher than the mean for feral burros (0.415). In addition, the allelic diversity in this herd was 2.392-2.544, which is higher than the mean for feral burros (2.212). Cothran and Juras (2025) recommended that the Lake Pleasant HMA burro population had high genetic diversity and that no action is needed with respect to genetic diversity at this time.

Heterozygosity is expected to decline at a rate of 1/(2*Ne) per generation (e.g., Hartl and Clark 2007 equation 3.14, pg. 117), where Ne is the genetic effective population size. The higher the effective population size the lower the expected loss Ho per generation. While wild horse generation time is approximately 10 years (BLM 2010), approximately 6-7 years is a reasonable expectation for burro generation time (i.e., Folch and Jordana 1998). Effective genetic population size can be estimated by the following formula, where Nm is the number of breeding males and Nf is the number of breeding females: Ne = 4NmNf/(Nm + Nf). For example, in a population with 95 breeding males and 95 breeding females, Ne would be 190. If the population size of the Lake Pleasant wild burro herd were held constant at 190 and that number is used as Ne, then the rate of expected loss of heterozygosity per generation would be 0.0026, or 0.26% per generation (1/(2*190)).

Ne can be lower than the actual number of animals present in a population. For wild horses, if herds are isolated and long-term herd size is lower than 150-200 then the BLM wild horse and burro management handbook (2010) implies that such herds could have Ne values below 50 and suggests management techniques that can be used to augment observed heterozygosity, such as introducing additional wild horses into the herd from other HMAs. That handbook does not include guidelines for burro herd size, but some inferences can be made from population genetics. Some small, isolated burro herds may have low starting values for genetic diversity (NAS 2013) and that could reduce Ne. The lowest known population size in recent times (1990) for the Lake Pleasant herd was estimated at 178 (Table 3) and the herd has grown since that time.

Health and Condition

The Henneke Body Condition Chart provides a standard for assessing equine health by using a scale of 1 to 9, with 1 being poor condition, 9 being extremely fat, and 5 being moderate (ideal weight). Body Condition Scores (BCS) vary within the HMA depending on annual precipitation. During the February 2024 gather, burros were observed by BLM staff with a body score of mainly 3 with a few animals near 2 based on the Henneke Body Condition Chart.

Diet/dietary Overlap with Other Species

The dietary overlap between wild burros and cattle is much higher than with wildlife, and averages between 60 and 80% (Hubbard and Hansen 1976, Hansen et al. 1977, Hanley 1982, Krysl et al. 1984, McInnis and Vavra 1987). Ruminants, especially cattle, must graze selectively, searching out digestible tissue (Olsen and Hansen 1977). As cecal digesters, burros are one of the least selective grazers in the west because they can consume high fiber foods and digest larger food fragments (Hanley 1982, and Beever 2003).

Environmental Consequences

No Action

The no action alternative would not result in gather-related or fertility-control related impacts to wild burros (except for occasional nuisance gathers), but impacts resulting from high herd densities and reduced per-capita resource availability would be exacerbated. Guidance would continue through the 1999 HMAP that provides no AML. The 1999 HMAP is no longer relevant as conditions and resources, including wildlife, has changed.

Under the no action alternative, no gathers to remove excess wild burros would occur. There would be no active management to control the size of the wild burro population or to bring the wild burro population within an AML range as required to ensure a TNEB and address human safety concerns. The wild burro population would continue to increase at an approximate rate of at least 15% per year. Competition for the available water and forage between wild burros, domestic livestock, and native wildlife would increase.

The increase of burro competition amongst themselves would create resource availability conflicts within the burro population affecting females and foals most severely. Social stress would increase. Fighting among male burros would increase as they protect their position at scarce water sources, as would injuries and death to all age classes of animals. Heavy to severe utilization of available forage would continue to be expected and available waters would become increasingly deteriorated. Plant communities would continue to be damaged in the uplands and near riparian areas to the extent that any natural processes already impacted would continue to degrade and expand throughout the HMA. Thus, impacting wildlife and wild burros themselves; this result would be expedited under continued drought conditions.

A potential major loss of the wild burros in the HMAs due to starvation or lack of water may cause an immediate die-off in the short term. However, such mass mortality events do not typically cause a population to reach or stay at carrying capacity; usually, herds continue to grow after such events, again potentially outstripping available resources (NRC 2013). Emergency removals could be expected in order to prevent individual animals from suffering or death as a result of insufficient forage and water. During emergency conditions, competition for the available forage and water increases. This competition generally impacts the oldest and youngest burros as well as lactating females first. These groups could experience substantial weight loss and diminished health, which could lead to their prolonged suffering and eventual death. If emergency actions are not taken when emergency conditions arise, the overall population could be affected by severely skewed sex ratios towards males as they are generally the strongest and healthiest portion of the population. An altered age structure would also be expected.

As the HMA's population would continue to increase beyond the already exceeded capacity of the available habitat, even more bands of burros would leave the boundaries of the HMA and even beyond from where burros are currently residing outside the HMA in search of forage and water. This alternative may result in increasing numbers of wild burros in areas not designated for their use resulting in an increase in human interactions and therefore an increase in the occurrence of animal and human health safety issues.

Alternative A: Proposed Action

Under the Proposed Action, BLM would remove excess wild burros within, adjacent to, and outside the Lake Pleasant HMA boundaries to achieve and maintain populations within the proposed AML range of 140-250 adults as provided under the proposed HMAP. All wild burros residing outside the HMA boundaries or in areas where they are creating public safety nuisance issues would be removed through coordination with the landowner. Successful implementation of fertility control requires the HMA be gathered to the low range of the AML. Populations would then be expected to make their way up to the high AML range within a 4-6-year period.

Removal of excess animals, coupled with reduced reproduction because of fertility control, would result in an overall improved herd health, as measured by the body condition of females, foals, and jacks in the wild. Competition for forage and water between burros, livestock, and wildlife would be reduced. Less competition for forage and water resources would reduce stress and promote healthier animals. Additionally, reduced reproduction rates would be expected to extend the time interval between gathers and reduce disturbance to individual animals as well as burro social structure (that is, female and foal) over the foreseeable future. With reduced stress on resources and a controlled population (maintained within AML range) burros may not wander as much into the nearby roadways or communities thereby increasing burro and public safety.

Helicopter/ Bait and Water Trap Impacts to Wild Burros

The following activities, when conducted as part of the proposed action, could lead to stress (defined here as emotional distress or physical discomfort) for individual burros:

- Capture and/or re-capture,
- Sorting, separation between males and females and transportation to temporary holding facilities,
- Identification process, to include freeze marking (neck and/or hip) and microchipping,
- Administering fertility control vaccines and/or the booster vaccine, and
- Holding in captivity for approximately 30 to 60 days for vaccination and booster treatments.

All gather operations would be conducted in accordance with CAWP standards for Wild Horses and Burro Gathers. Handling of the wild burros, such as during sorting and freeze marking, could result in stress or injury to the animal(s). By utilizing the measures included in the CAWP, the likelihood of stress or injury to burros is minimized. The rates of certain impacts to herds and individual animals resulting from wild horse and burro gathers can vary and have been summarized in published studies (Hansen and Mosley 2000, Ashley and Holcomb 2001, GAO 2008, Greene et al. 2011). Since the time of those studies, BLM adopted the CAWP to minimize impacts to gathered wild horses and burros. Burros are generally thought to be calmer than horses (Burden and Thiemann 2015). The most important social groups for burros are mother-foal pairs. More transient burro social groups may be split when female burros and their foals are separated from males with whom they were temporarily associating; as a result, burros may interact with a large number of other burros, but with the exception of mother foal pairs, burro interactions are relatively more transient than those of horses (King and Schoenecker 2025). Regarding separating burros from temporary social groups, Boyd et. al. (2016) wrote that there are "…no permanent or long-lasting bonds between any two individuals other than between an adult female and her current foal." Mothers would not be separated from their attendant foal once captured. The proposed bait and/or water trapping method is a low stress approach to gathering wild burros, such

trapping can continue into the foaling season without harming the females or foals. Stress on the males and/or the mother/foal pairs is expected to be minor and temporary.

Indirect impacts can occur to burros after the initial stress event (capture) and could include miscarriages/or kicking bruises. Burros may potentially strike or kick gates, panels or the working chute while in corrals or traps, which may cause injuries. Additionally, the capture and release method of burros could result in capture-avoidance behaviors from the animals.

Additional indirect individual impacts may include events such as the brief skirmish which occurs among males following sorting and release into the stud pen, which typically lasts less than a few minutes and ends when one stud retreats. Traumatic injuries usually do not result from these conflicts. These injuries typically involve a bite and/or kicking with bruises. Like direct individual impacts, the frequency of occurrence of these impacts among a population varies with the individual animal.

Sometimes, foals are gathered that were orphaned on the range (prior to the gather) because the mother rejected it or died, or for other unknown reasons. These foals are usually in poor body condition. Also depending on the time of year, reproductive cycle and the individual female, the foal may have already been weaned by its mother. Any orphans encountered during gathers are cared for promptly and rarely die or need to be euthanized.

A few foals may be orphaned during gathers. This may occur due to:

- The mother rejects the foal. This occurs most often with young mothers or very young foals,
- The foal and mother become separated during trapping, and cannot be matched,
- The mother dies or must be humanely euthanized[6] during the gather,
- The foal is ill, weak, or needs immediate special care that requires removal from the mother, or
- The mother does not produce enough milk to support the foal.

In private industry, domestic burros are normally weaned between four and six months of age. If a foal less than 4 months old is orphaned for some reason, BLM would immediately place the burro into foster care followed up with adoption.

Gathering wild burros during the summer months can cause heat stress and dust exposure. Heat stress does not occur often, but if it does, death can result. Despite precautions to reduce/control dust, it is possible for some animals to develop complications from dust inhalation and contract dust pneumonia. This is rare and usually affects animals that are already weak or otherwise debilitated due to older age or poor body condition. Since summer gathers pose increased risk of heat stress, BLM or its contractors use techniques that minimize heat stress, such as conducting gather activities in the early morning, when temperatures are coolest, and stopping well before the hottest period of the day. If there are extreme heat conditions, gather activities are suspended during that time. The CAWP prohibits gathering wild burros with a helicopter (unless under emergency conditions) in temperatures over 105 degrees Fahrenheit. Most temperature related issues during a gather can be mitigated by adjusting daily gather times to avoid the extreme hot or cold periods of the day. Gathering wild burros during the fall/winter months reduces risk of heat stress, although this can occur during any gather, especially in older or weaker animals. As a

[6] BLM IM 2021-007 *Euthanasia of Wild Horses and Burros Related to Acts of Mercy, Health or Safety*

result of adherence to SOPs and care taken during summer gathers, potential risks to wild burros associated with summer gathers can be minimized or eliminated.

Across all BLM burro gathers in 2010-2019, total gather-related mortality averaged less than 0.1%, which is very low when handling wild animals (Scasta 2020); this rate reflects acute mortality at gathers. Another 0.2% or less of the burros captured were humanely euthanized due to pre-existing conditions and in accordance with BLM policy (Scasta 2020). Data summarized by Scasta (2020) supports the conclusion that the use of helicopters, motorized vehicles, and bait/water traps are all safe, humane, effective and practical means for gathering and removing excess wild horses and burros from the range.

Transportation to Temporary Gather Holding Facilities and Fertility Control Treatment
All transporting operations would be conducted in accordance with the CAWP for wild horse and burro gathers and facilities.

Female burros selected for fertility control, would be held for approximately 30 to 60 days and may experience some stress during the holding period at the holding facility, until their re-release at the site of capture. Stress may be indicated by behaviors such as a burro's election to refrain from eating and/or drinking temporarily, nervous agitation, and kicking. Should any female burros selected for fertility control have a foal, they would be held but not be treated and released until the foal is weaned.

Burros could experience short-term discomfort during the identification, chipping, and freeze marking processes (neck and/or hip). This process would be completed as quickly as possible, and stress on these animals is expected to last less than a few hours after processing is completed.

Transportation to Short-Term Holding and Adoption Preparation
It is expected that transportation of burros from gather sites to short-term holding facilities would range from two to eight hours. Transportation time would not exceed 8 hours. During transport, potential impacts to individual burros can include stress, as well as slipping, falling, kicking, biting, or being stepped on by another animal.

Upon arrival at the short-term holding facility, most wild burros begin to eat and drink immediately and adjust rapidly to their new surroundings. Recently captured wild burros, generally females, in very thin condition may have difficulty transitioning to feed. A small percentage of animals may die during this transition; however, some of these animals that do die during transition are in such poor condition that it is unlikely they would have survived if left on the range.

After the wild burros have transitioned to their new environment in the holding facility, they are prepared for adoption or sale in accordance with BLM policy. Likelihood of injury or mortality during the preparation process is low but can occur. Mortality of wild horses and burros at short-term holding facilities averages approximately 5% (Government Accountability Office 2008), and includes animals euthanized due to a pre-existing condition, animals in extremely poor condition, animals that are injured and would not recover, animals which are unable to transition to feed; and animals which die accidentally during sorting, handling, or preparation.

Use of Contraception in Wild Burro Management

Application of population growth suppression techniques (i.e. PZP, PZP-22, and GonaCon) are expected to slow total population growth rates, and to result in fewer gathers with less frequent disturbance to individual wild burros and the herd's social structure. Direct reductions in foaling rates can be expected for vaccinated jennies and population-wide indirect impacts from contraception methods can be inferred based on available scientific literature. Direct impacts are discussed in detail in Appendix F, Literature Review Effects of Fertility Control Vaccines, Sex Ratio Manipulations, Sterilization, and Equids on Rangeland Ecosystems. Direct effects would be primarily associated with the use of fertility control and longer-term reductions in fecundity in treated wild females. Treating females with fertility control vaccine, as described in the proposed action, has the potential to cause indirect impacts such as changing the age structure of the population so that there are relatively more of the older-aged animals in the herd. This potential change in age structure is a result of non-reproducing females potentially surviving longer and having fewer foals. Shifting the herd age structure to have more older animals would not represent a failure of the vaccine but simply would reflect the expected higher survival rate for females that are having fewer foals.

Preliminary data from the Humane Society of the U.S. (HSUS) Pilot Project indicates that burros can be vaccinated successfully in a remote setting via darting (Kahler and Boyles-Griffin 2022). In that project, all the fertility control vaccine treated females were captured, individually marked, and given at least their first (primer) dose of vaccine via hand-injection, in a chute. For PZP-ZonaStat-H vaccination, it is expected that annual vaccinations would be required to maintain a given burro's infertility, although jennies that receive more than 4-5 doses may be expected to have longer-lasting immunological effects that may last longer than their remaining lifespan. For GonaCon-Equine vaccination, two doses may be expected to confer several years of infertility (Baker et. al. 2018, 2023); longer durations between the first and second doses may confer longer-lasting immunological effects (Baker et al. 2023). BLM or its authorized designee could administer follow up fertility control vaccine (booster doses) via darting. The number of these booster doses that would be administered to the burros may depend on the effort required to effectively deliver the fertility control vaccine. If there is an opportunity to remotely dart a female(s), BLM may choose remote delivery rather than capture for booster vaccines. After the initial gather, the BLM could use a population modeling software such as PopEquus (Folt et al. 2023), assuming that model's capabilities will be expanded to include burro population projections, to help inform expectations about how many animals in future gathers or actions should be removed, or females treated, in order to achieve herd management goals. Management decisions about how much remote darting would be used as opposed to hand-injections of captured animals would depend on available funding and staff time. Both of the currently available dart-based delivery and hand-injection delivery of fertility control vaccines are registered with the EPA for use (EPA 2012, 2025) and is being used by BLM in other HMAs on horses and burros.

Genetic Variability within the Proposed AML Range and Fertility control

Use of fertility control vaccines is not expected to substantially reduce the number of breeding jennies even though it should reduce the number of foals over the course of treated jennies' lifetimes. Those vaccinations are not expected to interrupt pregnancies already in progress at the time of immunization, and most jennies would be expected to return to fertility after immunological effects of the vaccine wear off (see literature review in Appendix F).

For populations that change in abundance over time, effective population size estimates should use the harmonic mean (Hartl and Clark 2007). Under the proposed action, herd size would be expected to fluctuate within AML with no fewer than 140 adults and up to 250 adults; the harmonic mean of those is 179. If 179 is used as Ne, then the expected rate of observed heterozygosity (Ho) loss per generation would be 0.28% (1/(2*179)). Depending on how low the effective population size is, the loss of Ho per generation could exceed a management goal of 1%. However, even if the value used for Ne in calculations of Ho loss was as low as one third of this harmonic mean (that is, 59), the implied heterozygosity loss per generation would be 0.85% per generation for the Lake Pleasant burro herd.

Continuing to periodically collect and analyze genetic samples from the Lake Pleasant burros would provide empirical estimates of current and future observed heterozygosity levels. Those results would help to determine whether wild burros from other HMAs should be introduced into the Lake Pleasant HMA in the future to augment genetic diversity. The BLM handbook H-4700 suggests adding 1-2 young mares every generation (about 10 years) from other HMAs in similar environments to mitigate genetic concerns. As suggested in the proposed updated HMAP (section 2.2.1), introducing 3-5 wild burros (females and/or males) every generation (6-7 years; e.g., Folch and Jordana 1998) from other HMAs would be a conservative approach to mitigate genetic concerns if any. When considering the above discussion, the proposed action alternative is not expected to cause substantial loss of genetic diversity in this herd.

Wild Burros Remaining or Released into the HMA following Gather

Direct impacts to burros that are not gathered, or to those which are released back into the HMA after fertility treatment is administered, would consist primarily of temporary disturbance and displacement of burros in response to human activities associated with the gather and/or treatment. Typically, the natural survival instinct of wild animals to this type of disturbance is to avoid the perceived danger. These impacts would be minimal, temporary, and of short duration. BLM has instituted guidelines (CAWP) to reduce the sources of handling stress in captured animals (BLM 2015). It is difficult to compare that level of temporary stress with long-term stress that can result from food and water limitation on the range (e.g., Creel et al. 2013).

As a result of lower density of wild burros across the HMA following the removal of excess burros, competition for resources would be reduced. Because there would be lower levels of competition for forage resources, burros that remain on the HMA would have relatively more access to preferred, quality habitat. Confrontations between jacks would also become less frequent, as would fighting among wild burros at water sources. Achieving the AML range and improving the overall health and fitness of wild burros could also increase foaling rates and foaling survival rates over those current conditions. Injuries and death to all age classes of animals would be expected to be reduced as competition for limited forage and water resources is decreased.

Over time, so long as the burro herd size can be maintained within the proposed AML range, forage and habitat quality should improve. The reduced burro population size would help ensure that competition for forage resources would be relatively low, which should lead to the remaining wild burros being healthy and vigorous, and at less risk of death or suffering from starvation even during instances of drought (lack of forage and water).

The primary effects of the proposed action to the wild burro population would be to herd population dynamics, age structure or sex ratio, and subsequently to the growth rates and population size over time. The foaling rate should decrease in proportion to the percentage of females that are successfully treated with fertility control vaccine. The expected age structure may shift so that the ratio of older females in the herd would be relatively greater than what is currently found. The annual growth rate would decrease, and the population size would be lower as a result of the combined effects of removals and fertility control methods.

The uncaptured wild burros would maintain their social structure (primarily in the form of mother-foal pairs) and herd demographics (age and sex ratios). No observable effects to the remaining population associated with the gather impacts would be expected except a heightened shyness toward human contact.

Alternative B: Gather and Removal Only
Under Alternative B, impacts would be the same as the Proposed Action, however, any impacts associated with fertility control would not occur as fertility control measures would not be implemented under Alternative B. Without fertility control, the population would continue to grow at current rates (approximately 15%) and gathers and removals would need to be conducted at higher frequency.

3.2.2 Vegetation and Soil Resources: Including Invasive, Non-Native, and Noxious Species

Affected Environment
The Lake Pleasant HMA is primarily located in what is characterized by the Natural Resource Conservation Service (NRCS) as the Major Land Resource Area (MLRA) Sonoran Basin and Range (040X). The northern boundary area of the HMA may also include a slight transition into the MLRA Mogollon Transition South (038X). In the Sonoran Basin and Range MLRA, biological diversity is greatest at higher elevations and precipitation zones (p.z.) and diminishes at the lowest elevations and precipitation zones. Trees grow across uplands at high p.z., they are restricted to water courses such as drainages and washes in the mid p.z., and are limited to grow within the largest washes as annual precipitation and elevation decrease in a west ward progression (NRCS 2022). Common plant species within the HMA include but are not limited to creosote bush (*Larrea tridentata*), bursage (*Ambrosia spp.*), cat claw acacia (*Senegalia greggii*), mesquite (*Prosopis spp.*), ocotillo (*Fouquieria splendens)*, paloverde (*Parkinsonia spp.*), desert ironwood (*Olneya tesota*), wolfberry (*Lycium spp.*), brittlebush (*Encelia farinosa*), jojoba (*Simmondsia chinensis*), eastern Mojave buckwheat (*Eriogonum fasciculatum*), fairy duster (*Calliandrea eriophylla*), saguaro (*Carnegiea gigantea*) and other cacti species (*Ferocactus spp*., *Cylindropuntia spp*., *Opuntia spp*., and *Echinocereus spp*.). Big galleta (*Hilaria rigida*), needle grama (*Bouteloua aristidoides*), tobosa grass (*Pleuraphis mutica*) are common perennial grasses on the uplands and lower elevations. Several invasive and non-native plant species are found in the HMA with red brome (*Bromus rubens*) being the most dominant across soil and vegetive monitoring plots with stinknet, also known as globe chamomile (*Oncosiphon pilulifer*) proliferating in areas of the HMA. All key area monitoring sites presented invasives species, though some sites more than others.

Generally, surrounding and adjacent vegetation communities or ecological sites will tend to change evidently with differences in species presence, but the majority of the difference is in vegetation

densities of one common species versus another. Ecological sites in the HMA will interchange and mix between paloverde-shrub and cacti-shrub communities, and desert washes/drainages where the majority of desert tree diversity (mesquite, paloverde, catclaw) communities can be found, yet the most common plants in the area will be found across such as brittlebush and creosote.

The climate associated with the surrounding area of the Lake Pleasant HMA are typical of the Sonoran Basin and Range Ecological Region and characterized as having dry, hot, summers and cooler winters. Monsoon rains in the relative months of July-September are expected and typically produce short duration but high intensity rain events. Winter rains, though less intense, provide the necessary precipitation for spring growth. The NRCS characterizes ecological areas in the HMA at ranges of 3-7", 7-10", and mostly 10-13" p.z. Summer peak temperatures typically reach over 100°F while winters can drop to low 40°F.

Like much across the state of Arizona, since the year 2000, the HMA and surrounding areas have experienced periods of intense, prolonged, and impacting drought with very short periods of relief since that time. In the Agua Fria watershed (HUC8, Agua Fria 15070102) (1,755,996.12 acres)[7] which encompasses the HMA, the United States Drought Monitor[8] (accessed 5/7/2025) characterized conditions from abnormally dry to extreme drought through the entirety of the watershed area for several years (figure 1). Within the last few years, after periods of extreme drought in 2018 there was a short year and a half of relief between 2019 and mid-2020 (only a few months of abnormal to moderate drought). Only to be followed by periods of extreme to exceptional drought in late-2020 and 2021. The year 2023 began with normal conditions and shifted towards abnormal to severe drought starting around August 2023. Drought conditions worsened throughout the 2024 year with conditions categorized as moderate (April-August) to severe (January-March, September-December). The 2024 year ended with areas in the watershed experiencing extreme drought and the 2025 year reaching categories of exceptional drought in February and into May 2025.

[7] Data from: https://apps.nationalmap.gov/viewer/
[8] Data from: https://droughtmonitor.unl.edu/CurrentMap.aspx

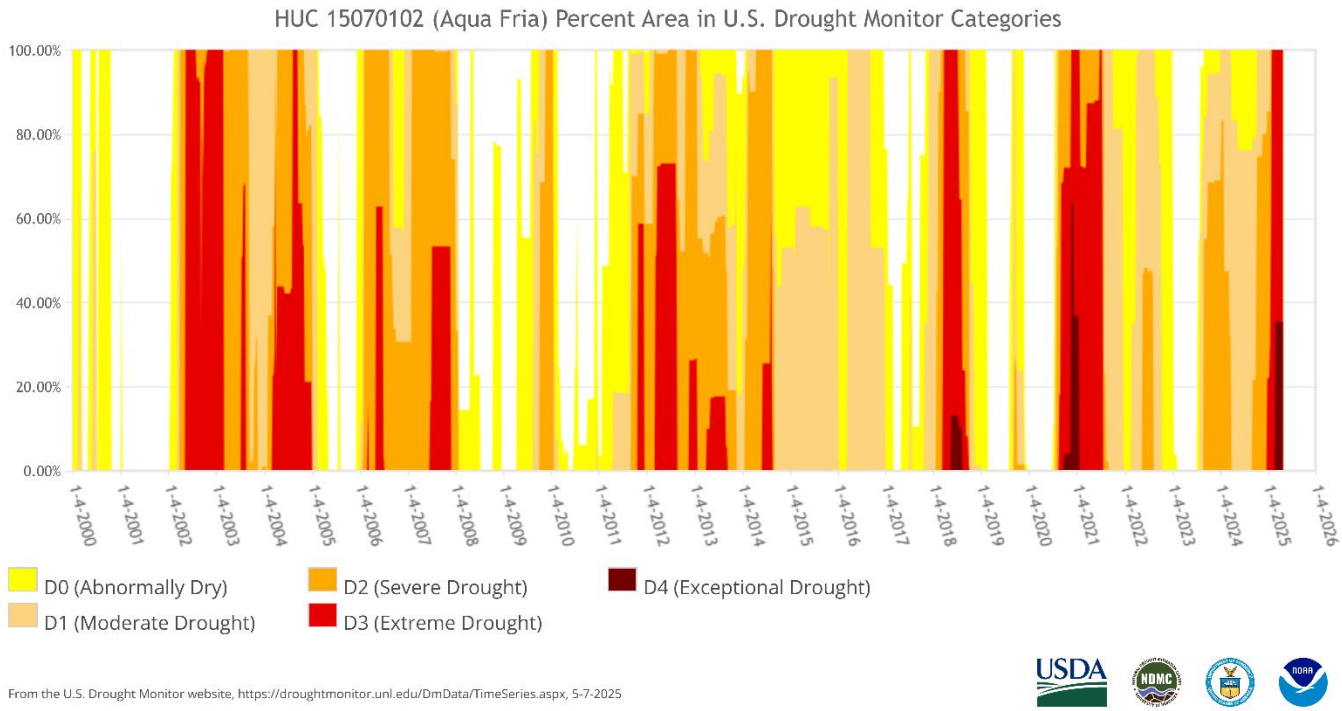

Figure 1: Percent Area of the Auga Fria watershed experiencing drought

The Arizona Standards for Rangeland Health of 1997 is useful criteria to determine soil and vegetation conditions and the causal factor(s) for any potential rangeland degradation. Standards set goals for the desired condition of biological and physical components and characteristics of rangelands including 1) Upland Health, 2) Riparian – Wetland Health, and 3) Desired Resource Conditions. Soil and vegetation monitoring data from Key Areas or other monitoring plots are evaluated to determine the achievement of Standards at each monitoring location and/or the area the monitoring location represents. Monitoring data and observations at monitoring sites can be used to determine the causal factor(s) for areas failing to achieve Standards.

Burros can be more destructive to the range than cattle due to their differing digestive systems and grazing habits. Wild burros can exploit poor quality forage (reviewed in Douglas and Hurst 1993), as they have a similar digestive system to horses. However, the equine digestive system requires that horses and burros consume 20-65% more forage than a cow of equal body mass (Hanley 1982, Menard et. al. 2002). Unlike cattle, wild horses and burros use their flexible lips and upper front incisors to trim vegetation more closely to the ground (Symanski 1994, Menard et. al. 2002, Beever 2003). As a result, areas grazed by horses and burros may retain fewer plant species and may be subject to higher utilization levels than areas grazed by cattle or other ungulates. Although seeds can pass through equid digestive systems without being digested, this potential benefit has negative consequences when invasive species germinate from feces (i.e., King et al. 2018); germination of invasive species from burro feces can be assumed to be comparable. During times of greatest physiological stress (i.e., increased temperature and decreased precipitation), horses and burros can monopolize access to water sources, leaving limited time for other species. This raises concern for native species in water-limited environments (Crist et. al. 2019) such as those which exist throughout the HMA away from Lake Pleasant itself. In the immediate vicinity of the lake, water is probably not a limiting factor (Esmaeili et al. 2024).

Environmental Consequences

No Action

No direct impacts from gather operations would occur on vegetative resources. There would not be a concentration of human activities or ungulates at approved bait/trap locations to cause the crushing or removal of vegetation. Continuation of nuisance gathers on lands outside of public lands would occur only through landowner request and permission and in areas already disturbed or with minimal vegetation as is the general practice. The potential for red brome or other invasive species to increase as a result of bait trapping, bait stations, or temporary holding facilities would not occur. However, due to permitted uses such as livestock grazing coupled with an unchecked growing burro population size, plant communities already water stressed would continue to deteriorate. Even if livestock was ever considered for reduction in a separate decision to accommodate increasing burro populations, adjusting livestock numbers would only temporarily mitigate issues as burro populations would continue to increase overtime.

High burro numbers would likely lead to continued over-utilization of vegetative resources, causing more decadence in plant species. The number of areas experiencing severe utilization by wild burros would increase over time. Impacts of the no action alternative include foregoing the opportunity to improve rangeland health and to properly manage wild burros in balance with the available resources and other multiple uses. Attainment of site-specific vegetation management objectives and standards for rangeland health would not be achieved. High utilization on vegetation would reduce reproductive capabilities and may cause loss of species and further increase the presence and establishment of invasives.

Alternative A and B

Under these alternatives, regardless of whether fertility control is approved or not, traps, bait stations, or temporary holding facilities, including those set up for applying fertility control, would be located in previously disturbed areas or open desert washes, whenever possible, in order to minimize impacts.

Gather activities, such as vehicle and equipment traveling to and from trap sites may potentially translocate local or introduce noxious and invasive weed seeds, however, these impacts are not expected to cause anymore impacts then similar activities that have and occur year-round. The construction and existence of roads, housing, mining, golf courses, have introduced noxious and invasive seeds. Introduction coupled with the spread of seeds by livestock, wild burros, wildlife, and through natural environmental processes has contributed to reduced habitat quality and increased invasive species over time. As discussed in the affected environment, all key areas representing those ecological sites currently exhibit noxious and/or invasives species. The potential to further spread such plants onto other areas is unlikely as current data indicates that noxious and/or invasive species could already exist within potential future trap sites.

Direct impacts to vegetation could result from crushing and trampling of some individual vegetation in the bait trapping locations but is expected to be short-term and intermittent. Though direct impacts may occur, it is not expected to inhibit the reproductive capabilities of individual plants and vegetation would recover during the next growing season. Some individual plants could be destroyed beyond recovery but not expected to cause or lead plant communities towards a degraded state beyond its current community

state. Once within the proposed AML range and with population control strategies in place, gather operations and such impacts would be infrequent.

Bringing population of wild burros within the proposed AML range would help reduce already water stressed plant communities. Managing wild burros below the high AML is expected to reduce utilization of key forage species, reduce hoof action on soils, assist in reducing the further spread of invasive species (inside and outside of the HMA), and reduce impacts to riparian areas which include T&E habitat. The reduction of these impacts would increase vegetation cover and forage availability, improve soil health, reduce erosion, improve riparian and watershed health, and improve wildlife habitat in the long term (i.e., Crist et. al. 2019).

3.2.3 Water Resources

Affected Environment

The Lake Pleasant HMA falls within the Agua Fria (HUC 8) watershed system. The HMA contains a system of springs, seeps, creeks, and washes that directly lead into Lake Pleasant and/or the Agua Fria River. Existing surface waters not only provide for wild burros but for livestock and wildlife as well. Season and precipitation influence surface water availability within the HMA. The most consistent source of water is Lake Pleasant. Where there is subsurface water within 1-2 meters from the surface of in sandy or gravelly streambeds, wild burros may dig 'wells' to access that water (Lundgren et al 2021), but that behavior has not been documented in arid upland habitats and is not expected to substantially change water availability at Lake Pleasant.

Healthy riparian areas provide essential habitat for fish and wildlife, particularly in the desert southwest. Springs, seeps, and perennial sections of spatially intermittent creeks within the HMA provide habitat for many fish, wildlife, and plant species. Of the twenty-seven special status species which may occur in the HMA, sixteen are reliant on riparian systems for at least part of their life history, with ten species requiring riparian habitat for reproduction. Deterioration of this habitat would likely result in declines of wildlife populations within the HMA.

Riparian functional assessments have been conducted on six creeks within the HMA, with assessments occurring between 1988 and 2016. Four of these creeks were most recently rated functional-at-risk, with three of the four assessments mentioning burros as a contributing factor to the system risk. Of the two systems rated at a proper functioning condition (PFC), one (upper Boulder creek) is fairly inaccessible to burros due to terrain, and the other (Tule creek) is inaccessible to burros due to a livestock exclosure constructed by AZGFD and BLM in 1991. Riparian health assessments of Tule creek prior to and shortly following the barrier construction (1989 and 1993) list the condition of the riparian area as "unsatisfactory" with extremely sparse and stressed vegetation. All riparian functional assessments for Tule creek in preceding years (1995, 2000, 2005, 2008, and 2011) rated the system as PFC. Exclusion of both burros and livestock has allowed the riparian habitat to recover and increase in quality.

Environmental Consequences

No Action

Under the no action, burros within the HMA would not be removed, therefore, water resources within the HMA would continue to be impacted at an increasing rate due to rising burro populations. High

burro populations coupled with continued pressures from recreational activity and livestock grazing use would further diminish spring functionality. Water resources outside the HMA are also expected to be impacted as burros continue to leave the HMA. Trampling and trailing damage by burros in and around water sources, including riparian areas, would continue. High burro population numbers would likely lead to reduced spring flows and eventually put functional springs at risk and non-functional status. High burro populations could increase nutrient loading, reducing water quality. Reduced water availability from springs would increase grazing pressure within other systems leading to degradation on riparian and T&E species habitat.

Alternative A and B

Under these alternatives, regardless of whether fertility control is approved or not, reducing the current population of wild burros within the proposed AML range is expected to improve water resource conditions. Water sources would be anticipated to improve with reduced use on water and vegetation, leading to increased water capacity and quality. Increased riparian vegetation would facilitate infiltration of water, cycling of nutrients, and moderating soil temperatures. Managing for healthy water sources would not only benefit those burros kept within the proposed AML range but other animals as well.

3.2.4 Wilderness

Affected Environment

Designated in 1990 the 10,656-acre[9] Hells Canyon Wilderness is 35 miles northwest of downtown Phoenix, one mile northwest of Lake Pleasant Regional Park, in Yavapai and Maricopa counties and comprises approximately 12 percent of the Lake Pleasant HMA. The Hells Canyon Wilderness Management Plan and Environmental Assessment (1995) provides management objectives for this wilderness area. These objectives were established to preserve naturalness and provide for primitive recreation opportunities. Under the management plan, existing livestock operations are allowed to continue with proposals for new range developments considered on a case-by-case basis. The Wild Horse and Burro Act (1971 Public Law 92-195) requires the BLM to manage wild burros on public lands, including wilderness areas. At the time of establishment, forage use by burros in the wilderness area was captured as light to moderate, with most use during cooler months, October through April. The BLM conducts low-level aerial burro inventory every few years, when feasible. Inventory activities were authorized in 1991 (U.S. Department of Interior 1991b).

Environmental Consequences

No Action

Under the no action, impacts to biological resources found within the wilderness area would be the same as those impacts under the no action on resources throughout the rest of the HMA as described in section 3.2.2, 3.2.3, and 3.2.5. As the wild burro population increases, the pressures on the natural environment increase equally within the wilderness. Which degrades ecological functions leading to incremental impacts over time due to inaction as it relates to management of burros.

Alternative A and B

[9] Acres obtain by current GIS data.

Under these alternatives, regardless of whether fertility control is approved or not, activities such as population surveys and removal of excess wild burros above the proposed high AML and down to the proposed low AML would result in improved ecological function of the wilderness areas. This would improve wilderness character and fulfill the BLM's objectives for management of wilderness as outlined in BLM Manual 6340, Management of BLM Wilderness.

3.2.5 Wildlife

Affected Environment

Wildlife species in the area are typical of the vegetation communities represented. Big game species include mule deer (*Odocoileus hemionus*), javelina (*Pecari tajacu*), and mountain lion (*Puma concolor*). Small game species include desert cottontail (*Sylvilagus audubonii*), black-tailed jackrabbit (*Lepus californicus)*, Gambel's quail (*Callipepla gambelii*), mourning dove (*Zenaida macroura*), white-winged dove (*Zenaida asiatica*), and waterfowl species.

Other wildlife species known to inhabit the area include, but are not limited to, coyote (*Canis latrans*), ringtail (*Bassariscus astutus*), numerous small mammals, raptors, songbirds, shorebirds, waterfowl, amphibians, reptiles, and sportfish. Water is limited in the HMA, outside of the area immediately surrounding Lake Pleasant, and small springs, seeps, and creeks (perennial and ephemeral) are very important for wildlife species. Special status species that are known to or potentially could occur in the HMA are listed in table 5 and discussed below.

Threatened and Endangered Wildlife Species

The U.S. Fish and Wildlife Service (USFWS) Information for Planning and Consultation Official Species List for the HMA (USFWS 2024) lists nine threatened, endangered, and/or candidate species as potentially present within the HMA. Of these, six species are either known to be present or have potential to be present: California least tern (*Sternula antillarum browni*), southwestern willow flycatcher (*Empidonax traillii extimus*), yellow-billed cuckoo (*Coccyzus americanus*), Gila topminnow (*Poeciliopsis occidentalis occidentalis*), desert pupfish (*Cyprinodon macularius*), and monarch butterfly (*Danaus plexippus*). For the three remaining species, the Mexican Wolf (*Canis lupis baileyi*), Mexican spotted owl (*Strix occidentalis lucida*), and Gila chub (*Gila intermedia*), the HMA is either outside the known range of and/or lacks suitable habitat for these species.

California Least Tern: The California least tern was federally listed in 1969 under the Endangered Species Preservation Act (USFWS 2020a). With the passing of the Endangered Species Act of 1973, it was considered an endangered species under the Act. Threats to the species include habitat destruction, human disturbance, predation, climate change, and food availability. California least terns nest in sandy substrate near shallow water appropriate for foraging. Suitable nesting habitat occurs within the HMA, however only one occurrence of nesting California least terns is known from Arizona, and the species has not been observed in the HMA (USFWS 2020a, eBird 2024).

Southwestern Willow Flycatcher: The southwestern willow flycatcher was listed as endangered in in February 1995 (60 FR 10694). The current distribution of critical habitat was designated in 2013 (78 FR 344). The primary threats to the species are river management, riparian habitat degradation, tamarisk leaf beetle, and wildfire (USFWS 2017). Southwestern willow flycatchers nest in multi-layered vegetation near rivers, creeks, or other wetlands, and generally only nest in areas with willows, tamarisk,

or both (USFWS 2017). Suitable nesting habitat is sparse within the HMA but exists near springs and creeks within the HMA and immediately adjacent to the HMA. No critical habitat occurs within the HMA. No observations are known from within the HMA, but multiple verified observations occur within half a mile of the HMA boundaries, within the area of burros that have strayed from the HMA.

Western Yellow-billed Cuckoo: The western yellow-billed cuckoo was listed as threatened under the ESA in October 2014 (USFWS 2014a), and critical habitat was designated in 2021 (86 FR 20798). The primary threats to the species are destruction, modification, or curtailment of suitable habitats throughout its known range (USFWS 2014b). Western yellow-billed cuckoos nest in low to moderate elevation (usually below 6,600 feet) riparian woodlands with native broadleaf trees and shrubs that are 50 acres or more in extent and is most commonly associated with cottonwood/willow-dominated vegetation cover, but the composition of dominant riparian vegetation can vary. This species has not been found nesting in isolated patches (1-2 acres in size) or narrow, linear riparian habitats less than 10 to 20 meters wide; however, migrant cuckoos have been detected in these habitats. During migration, this species uses a wider array of forest and shrub habitats but is rarely observed away from riparian habitats (Corman and Magill 2000). Suitable nesting habitat is sparse within the HMA but exists near springs and creeks within the HMA and immediately adjacent to the HMA. No critical habitat occurs within the HMA. Cuckoos have been observed within the HMA, and multiple verified observations occur within half a mile of the HMA boundaries, within the area of burros that have strayed from the HMA.

Gila Topminnow: The Gila topminnow was federally listed in 1967 under the Endangered Species Preservation Act (32 FR 4001). With the passing of the Endangered Species Act of 1973, it was considered an endangered species under the Act. This small fish was once the most common fish in southern Arizona but now has declined to natural populations at only eleven sites in Arizona. The majority of occupied sites are from reestablishment attempts (Voeltz and Bettaso 2003). Gila topminnows use shallow and slack water areas of small creeks, marshes, and springs. The species is highly tolerant of water temperature and chemistry (Stefferud 1982). The main threats to the species are predation and competition from nonnative fishes, habitat reduction, and drought. Several creek and springs within the HMA contain populations and/or suitable habitat for Gila topminnow.

Desert Pupfish: The desert pupfish was listed as endangered under the ESA in March of 1986 (51 FR 10842). This fish occupies clear, shallow waters with soft substrates below 5,000 ft (Rinne and Minckley 1991). The majority of extant populations are from reintroduction efforts. Threats to the species includes water loss from groundwater extraction and drought, habitat alteration, competition and predation by non-native fishes, and genetic bottleneck of small and isolated populations (AZGFD 2020). Several reintroduction sites occur within the HMA or within one half mile of the HMA, though pupfish have not been observed in recent years at any of these sites.

Monarch Butterfly: The monarch butterfly was identified as a candidate species warranted for listing by the USFWS on December 17, 2020 (85 FR 81813). Adult monarch butterflies feed on nectar from a variety of flowers; however, the species is dependent on milkweed (Asclepias spp.) as host plants and food sources for larvae (USFWS 2020). Broadleaf milkweed has been observed within the monument (Western Monarch Milkweed Mapper 2024), and other species of milkweed and associated suitable breeding habitat may also be present. As numerous flowering plants are present within the HMA, the HMA likely contains suitable migratory and nectaring habitat. The monarch butterfly is threatened by

habitat loss and degradation, herbicide use, logging at overwintering sites, urban development, drought, and climate change (USFWS 2020).

Bureau of Land Management Special Status and Priority Wildlife Species

Bats and Mammals: The HMA provides roosting and foraging habitat for several species of insectivorous bat, which include four BLM special status bat species: California leaf-nosed bat (*Macrotus californicus*), cave myotis (*Myotis velifer*), spotted bat (*Euderma maculatum*), and pale Townsend's big-eared bat (*Corynorhinus townsendii pallescens*). The HMA provides forage for insectivorous bat species, with foraging concentrated around water sources. Caves, rock crevices, and mines provide habitat for bat species within the HMA. Priority mammal species identified in the RMP which occur in the HMA include BLM sensitive species, most other bat species, and big game species.

Birds: BLM sensitive bird species which may occur within the HMA include American peregrine falcon (*Falco peregrinus anatum*), bald eagle (*Haliaetus leucocephalus*), ferruginous hawk (*Buteo regalis*), gilded flicker (*Colaptes chrysoides*), golden eagle (*Aquila chrysaetos*), LeConte's thrasher (*Toxostoma lecontei*), and western burrowing owl (*Athene cunicularia hypugaea*).

Bald and golden eagles are known to occur within the HMA. Golden eagle nesting is not known to occur within the HMA, but bald eagle nesting is confirmed and regularly occurs within the HMA. Bald and golden eagles are protected under the Bald and Golden Eagle Protection Act, which prohibits take of any part of an eagle, including nests.

Regardless of BLM status, all migratory birds are protected under the Migratory Bird Treaty Act, and Executive Order (EO) 13186 (Responsibilities of Federal Agencies to Protect Migratory Birds, signed in January 2001) requires the BLM to evaluate the impacts of federal actions on migratory birds. While a migratory bird inventory has not been completed, ebird data suggests 100-150 species of Arizona's neotropical migrants' nest in the area regularly or irregularly (eBird 2024). Bird species in the HMA depend on quality habitats containing adequate substrate and cover for nesting purposes, as well as diverse vegetation to supply food for brood rearing. The HMA contains breeding, nesting, brood-rearing, and wintering areas, as well as migration routes that are important for migratory birds.

Reptiles: The variety of habitat across the HMA support a diversity of reptile species, including two BLM sensitive species: Sonoran Desert tortoise (*Gopherus morafkai*) and Sonora mud turtle (*Kinosternon sonoriense sonoriense*). Sonora mud turtles rely on spring and creek habitat within the HMA. Sonoran Desert tortoise habitat consists primarily of rocky outcrops along mountain ranges, although it may be present in flatter areas between mountain ranges. The BLM classifies habitat for this species into three categories; the HMA is comprised entirely of Category II and Category III habitat. The Sonoran Desert tortoise is currently enrolled under a Candidate Conservation Agreement, under which the BLM has signed as a partner (Arizona Interagency Desert Tortoise Team 2015). Sonoran Desert Tortoises are most active during the monsoon season but are generally active from March 1 to October 31. Outside of this season, tortoises hibernate in burrows. High levels of wild burro use appear to be correlated with decreased desert tortoise abundance (Berry et al. 2020).

Amphibians: Habitat for amphibians, which is limited in the HMA, includes springs, seeps, creeks, and lakeshore habitat. BLM special status species that may be present include Arizona toad (*Anaxyrus*

microscaphus) and lowland leopard frog (*Lithobates yavapaiensis*). Threats to these species include disease, drought, environmental pollution, invasive species, and habitat loss.

Fish: The majority of fish species in the HMA occur within Lake Pleasant, with many of species of warm-water sportfish being represented. BLM special status species that may be present within the HMA include desert sucker (*Catostomus clarki)* and longfin dace (*Agosia chrysogaster*). Both of these species are unlikely to be found in lake habitat. These native fish occur in spring and creek habitat within the HMA.

Table 5. Special status species that may occur in the Lake Pleasant HMA.

Common Name	Scientific Name	Status	Presence
	Fish		
desert pupfish	*Cyprinodon macularius*	FE	P
desert sucker	*Catostomus clarki*	BS	K
Gila topminnow	*Poeciliopsis occidentalis occidentalis*	FE	K
longfin dace	*Agosia chrysogaster*	BS	K
	Amphibians		
Arizona toad	*Anaxyrus microscaphus*	BS	K
lowland leopard frog	*Lithobates yavapaiensis*	BS	K
	Reptiles		
Sonoran Desert tortoise	*Gopherus morafkai*	BS	K
Sonora mud turtle	*Kinosternon sonoriense sonoriense*	BS	K
	Birds		
American goshawk	*Accipiter atricapillus*	BS	U
American peregrine falcon	*Falco peregrinus anatum*	BS	K
bald eagle	*Haliaeetus leucocephalus*	BGA	K
California least tern	*Sterna antillarum browni*	FE	U
ferruginous hawk	*Buteo regalis*	BS	U
gilded flicker	*Colaptes chrysoides*	BS	K
golden eagle	*Aquila chrysaetos*	BGA	K
LeConte's thrasher	*Toxostoma lecontei*	BS	P
southwestern willow flycatcher	*Empidonax traillii extimus*	FE	P
western burrowing owl	*Athene cunicularia hypugaea*	BS	U
Yellow-billed cuckoo (Western DPS)	*Coccyzus americanus*	FT	P
	Mammals		
California leaf-nosed bat	*Macrotus californicus*	BS	K
cave myotis	*Myotis velifer*	BS	K
spotted bat	*Euderma maculatum*	BS	P
Townsend's big-eared bat	*Corynorhinus townsendii*	BS	K
	Plants		
giant sedge	*Carex spissa*	BS	K

Common Name	Scientific Name	Status	Presence
Murphey agave	*Agave murpheyi*	BS	K
Pima Indian mallow	*Abutilon parishii*	BS	U
	Insects		
monarch	*Danaus plexippus*	C	K

K = known P = Potential to occur U = Unlikely to occur FE = Federally Endangered
FT = Federally Threatened C = Candidate Species under ESA
BGA = Protected by Bald and Golden Eagle Act BS = Bureau of Land Management Sensitive

Environmental Consequences

No Action

No direct impacts from gather operations on wildlife or their habitat would occur from the no action. Habitat and wildlife would not be disturbed by trapping and holding activities. Continuation of nuisance gathers on private property and other non-public lands are not anticipated to have impacts to wildlife.

Under the no action, burro population control would not be address and along with permitted livestock grazing it would likely increase the reduction of forage and habitat values for native species. Already stressed water resources would begin to lose functionality. Reduced vegetative and water sources would decrease native species occurrences and populations. Loss of habitat and water resources would decrease the potential for migratory bird breeding and nesting, therefore having an effect on migratory bird ranges and populations. Special status species would be affected from reduced habitat, forage, and water availability as well. The no action alternative would result in foregoing the opportunity to improve rangeland health and the attainment of site-specific vegetation management objectives. Competition for food and water resources would continue to increase, and wildlife would not have the resources needed, potentially leading to reduced populations, higher mortalities, and a reduction of wildlife reproductive capabilities.

Alternative A and B

Under these alternatives, regardless of whether fertility control is approved or not, removing excess wild burros from the HMA and managing wild burros within the proposed AML range would result in improved habitat conditions over time for all wildlife species by increasing herbaceous vegetative cover and reducing pressure at water available sites. Increased vegetative cover would increase habitat quality and forage for wildlife species. High quality habitat could result in increased wildlife populations, reproductive succession, and reduce competition for food and water resources. Removal of excess burros would reduce the displacement of wildlife from their natural and home ranges. There would be less trampling which would directly benefit burrowing wildlife species, reducing destruction of their burrows and burrowing communities. Reduced burro numbers would decrease bank alteration, vegetation community alteration, and nutrient accumulation at natural springs and creek habitats increasing habitat quality for riparian obligate species. Reduced burro numbers would decrease competitive stress on native wildlife and improve habitat conditions.

Gather operations/transport and human presence may temporarily displace wildlife while in operation, but no long-term impacts to species would occur once the gather operations cease. Wildlife could be displaced for 15 minutes to 12 hours at any location during helicopter trapping operations and/or the checking of traps and/or while trapped animals are treated with fertility control or removed. If traps are

set close to water at existing range improvements, wildlife may not come in and drink due to the trapping activities. Once these activities cease, wildlife is expected to move back into these areas. If traps would be set close to water, seasonal mitigation would be in place to reduce impacts to migratory birds and species of concern. Drive trapping during the winter months would help prevent adverse effects to migratory bird species, T&E bird species, native fish spawning activity, T&E fish species, and Sonoran desert tortoise, which are typically inactive during the winter months. Trapping sites would be selected to avoid impacts to federally listed or BLM sensitive species.

Should fertility control be approved under alternative A, the proposed action, it is unlikely to adversely affect any wildlife, as most burros would be injected by hand during gathers. Darting attempts are unlikely to adversely affect wildlife as attempts would be made to recover all fired darts, and unrecovered darts do not discharge spontaneously or with incidental contact. Furthermore, the protein nature of the contraceptive agent allows for its use without passage of antifertility agent through the food chain (Kirkpatrick et al. 1990). Fertility control vaccines are made with naturally occurring proteins that begin to degrade if not stored on ice or kept in a cool environment.

BLM entered into an informal consultation with USFWS regarding T&E species. The concurrence letter (2024-0122790-S7) from USFWS agreed with BLMs biological assessment that T&E species is not likely to be adversely affected by the proposed action.

3.2.6 Livestock Grazing

Affected Environment

Livestock grazing has occurred in the area for over 100 years. Prior to the Taylor Grazing Act (TGA) of 1934, livestock grazing practices resulted in major impacts to soil resources and the vegetation communities they supported. As a result, livestock grazing activities prior to the TGA had significant impacts on the vegetation resources within the impact assessment area by eliminating or greatly reducing the primary understory plants.

A series of livestock grazing decisions since the TGA, and as required by FLPMA and the Public Rangelands Improvement Act of 1978, have resulted in reductions in livestock numbers and changes in grazing management practices to promote rangeland health within grazing allotments.

Portions of six grazing allotments are within the HMA (Table 6). The majority of concentrating burros during summer months are located within the Two Shoe allotment (not included in table 6) which was made unavailable to livestock grazing in 1995 through an amendment to the Phoenix Resource Management Plan Record of Decision (AZ-024-095-014), and carried over into the 2010 Bradshaw-Harquahala RMP, due to the expansion of Lake Pleasant. Range improvement projects such as corrals, wells, and fence lines for example exist within those grazing allotments for the management of livestock. Rangeland health evaluations have not been conducted for neither of the allotments in table 6.

Table 6. Grazing Allotments found all or partially within the Lake Pleasant HMA

Allotment Name	Allotment Number	Type Use	Livestock Number/Kind	Animal Unit Month
Bo Nine	AZ06095	Active	79 Cattle	948

Eleven L	AZ06103	Active	240 Cattle 4 Horse	1930 32
Castle Hot Springs	AZ06206	Active	8 Cattle	60
Cottonwood Creek	AZ06246	Active	8 Cattle	96
West Wing Mt.	AZ06056	Ephemeral	0	0
Boulder Creek[1]	AZ06215	Active	600 Cattle	5040
Total Total Cont.			935 Cattle 4 Horse	8074 32

[1]Only 33% of the allotment (public lands) is within the HMA.

Environmental Consequences

No Action

Livestock would not be displaced or disturbed due to gather operations under the no action; however, there would be continued competition with burros for water and forage resources. With unchecked population growth and no planned AML type gathers, rangeland resources would become degraded at an accelerated rate. Livestock would be impacted by continued deteriorating range conditions; forage consumed by wild burros reduces the forage available and allocated to livestock grazing as well as forage for wildlife.

Alternative A and B

Under these alternatives, regardless of whether fertility control is approved or not, burros would be captured using bait/water traps in temporary corrals and/or helicopter drive trapping. Livestock near helicopter gather activities would be temporarily disturbed or displaced by the helicopter and the increased vehicle traffic during the gather operation. Typically, livestock move back into the area once gather operations cease.

Livestock throughout the HMA could be affected by bait trapping activities since cattle could be attracted to trap sites due to bait (feed and/or water). Livestock could be caught in these traps; however, traps would be checked daily. The intensity of impacts would vary by individual and could be indicated by behaviors, such as agitation. However, livestock in the area are not necessarily unaccustomed to these activities as part of livestock management in the area involves the trapping and removing of livestock via helicopter and bait trapping as well. Direct impacts to livestock are therefore expected to be minimal. Additionally, prior communication, coordination, and cooperation between BLM and the permittee(s) would be established to determine the process(es) for moving livestock during burro gathers and releasing livestock from traps.

The largest impact to livestock grazing management was the overgrazing that occurred prior to implementation of the Taylor Grazing Act, FLPMA, and Public Rangelands Improvement Act. Overgrazing resulted in erosion and loss of forage. With improved livestock management practices over the years, rangeland health conditions could be improving but is hindered with high levels of overpopulation of wild burros. Removal of excess burros would reduce competition and result in an increase in forage and water resource availability. Maintaining burro populations within the proposed AML range is anticipated to also improve grazing operations such as livestock gathers, maintenance of livestock facilities, and competition for forage within those grazing allotments.

Should fertility control be approved under alternative A, the proposed action, it is unlikely to adversely affect livestock, as most burros would be injected by hand during gathers. Darting attempts are unlikely to adversely affect livestock as attempts would be made to recover all fired darts, and unrecovered darts do not discharge spontaneously or with incidental contact. Furthermore, the protein nature of the contraceptive agent allows for its use without passage of antifertility agent through the food chain (Kirkpatrick et al. 1990). Fertility control vaccines are made with naturally occurring proteins that begin to degrade if not stored on ice or kept in a cool environment

3.2.7 Human Health and Safety

Affected Environment

Recreation

Public visitation mainly concentrates around Lake Pleasant either to visit the three BLM managed recreational target shooting facilities, and/or the Desert Outdoor Center and the Agua Fria Conservation Area; managed by Maricopa County Parks and Recreation Department on behalf of the Bureau of Reclamation. Between all these areas, a variety of recreational activities from camping, boating, fishing, hiking, sightseeing, recreational target shooting, and watersports is available to the public. Annual visitation logs provided by the Lake Pleasant Regional Park and associated areas dates back to 2007. Between 2007 and 2021, annual visitation ranged between 608,000 and 735,000 visitors with the exception of over 840,000 visitors in 2015 (data obtained from Maricopa County Parks and Recreation Department per request). Visitation increased in 2022 with over 965,000 visitors and just below 1.2 million visitors in 2023 between the Regional Park, the Desert Outdoor Center, and the Agua Fria Conservation Area. The BLM target shooting facilities opened in 2022 and receive approximately 95,000 visitors per year. Other activities that draw the public to the HMA are the BLM public lands that further provide off -highway vehicle use and hunting opportunities. Additionally, development of private inholdings and Castle Hot Springs resort located inland from the lake further draws public visitation and traffic into the Lake Pleasant HMA.

Conflicts between burros and the public are known to occur and continues to be an ongoing issue. Burros are often seen on roads, parking lots, trails, and picnic areas for example. Burros are frequently seen along roads leading to these recreational areas such as Castle Hot Spring Road and the Reginal Park and Pleasant Harbor Marina and RV Resort entrance roads. Wild burro-vehicle collision incidents commonly occur every year (Arizona Department of Transportation 2022). Many of the visiting public stop along the road to feed or attempt to touch the wild burros. This has led over time to the “gentling” of some of these animals to the point where burros will approach people or push their heads into vehicle windows. This behavior has led to reports of wild burros biting people and/or chasing visitors’ dogs. Burros are also often reported causing property damage such as destroying fencing, water pipelines, lawns, and in some incidents – stationary vehicles due to male burro fights.

Urban Interface

In addition to issues that occur within the HMA, burro conflicts have extended several miles beyond. Due to these known conflicts, the 2023 population survey area extended several miles to the west and south of the HMA to capture the extent of where burros were residing outside the HMA. Increased population of burros coupled with an increase in recreation, use of public lands, and development has exacerbated incidents between burros and the public. Development of communities and mining activities

has offered increased resources for wild burros by making water and forage available when natural resources are unavailable. These activities have allowed the burro population to grow faster than without these resources. Burros are becoming more accustomed to humans and more skilled at getting food and water handouts. While contact with humans has increased the burros' access to food and water, collisions with automobiles have resulted in numerous injuries and fatalities to burros. Increased contact with humans imperils the "wild and free roaming" character of the burros, which is surely part of their charm, as well as part of BLM's management responsibility.

Incidents with burros, including property damage, injuries to burros and the public, burros being stuck behind private fencing, burros getting stuck in fencing and cattleguards, burros utilizing private waters, and burro-vehicle collisions have been reported as far south of the Arizona State Route 303 (over 5 direct miles) and west (over 9 direct miles) towards Morristown, Arizona. A high concentration of burro-vehicle collision has occurred along North New River Road located outside and southwest of the HMA, but are also reported on Lake Pleasant Parkway, Lone Mountain Parkway in Vistancia, Arizona, and along areas of Highway 74 (Carefree Highway) between Morristown Arizona and Interstate-17. Wild burros are also being reported in Anthem, Arizona, where burros have been less known to occur until more recently. Between a nuisance removal gather that concluded in the spring of 2024 (401 burros removed) and a 2025 nuisance gather that started in April 14 and concluded May 2 (460 burros removed), over 80 documented burros were killed due to burro vs. vehicle incidents.

Environmental Consequences

No Action

Under the no action, continued and expanded movement outside the HMA would be expected as greater numbers of burro's search for food and water for survival, thus impacting larger areas of public, state, and private lands. With foreseeable burro populations expected to rise along with continued and foreseeable increased public visitation, conflicts between burros and the public can be expected to increase. Burros would continue to inhabit areas within local communities in search of additional forage and water resources, increasing the number of interactions between burros and the public. The increasing population would likely cause a higher frequency of burros being struck by vehicles on roadways and the public being kicked or bitten in areas where burros are habituated. No effect to human health and safety from gather operations is expected under the no action alternative. No effects from the continuation of nuisance gathers are anticipated as well.

Alternative A and B

Under these alternatives, regardless of whether fertility control is approved or not, achieving and maintaining burro populations within the proposed AML range would reduce incidents between burros and the public. Burro-vehicle incidents would be expected to decrease overtime, improving public safety.

At any time, the public may encounter activities associated with the proposed action in the Lake Pleasant HMA. The presence of BLM personnel could provide an opportunity for public education and outreach. Public safety as well as that of the BLM and contractor staff is always a concern during helicopter gather operations and is addressed through the implementation of Gather Observation Protocols and Ground Rules (Appendix E) that have been used in recent gathers to ensure that the public remains at a safe distance and does not impede gather operations. BLM staff would be present to assure

compliance with visitation protocols at observation site(s). These measures minimize the risks to the health and safety of the public, BLM staff and contractors, and to the wild burros themselves during the gather operations.

During bait/water gather operations (due to this type of operation luring wild burro to bait) spectators and viewers would be prohibited as it would directly interfere with the ability to safely capture wild burros. Only essential personnel (Contracting Officers Representative/Project Inspector, veterinarian, contractor, contractor employees, etc.) would be allowed at the trap sites during trapping operations, thereby minimizing the risks to the health and safety of the public, BLM staff, and contractors. Visitors through prior coordination may be allowed the opportunity to view gathered burros once they are removed to the temporary holding facilities.

Public land users could come across one of the bait traps in the absence of project personnel and interact with either equipment or trapped burros. Since wild burros are not used to human contact and can be easily startled, there is a risk of someone being bitten, kicked, or charged by a burro if they were to enter the corral while it is occupied by animals and project personnel are not present. Active traps would be monitored and checked frequently (multiple times throughout day and night).

If fertility control under alternative A, the proposed action, is approved, no effects to human health and safety are expected as a result of the burros being darted with fertility control vaccines. SOPs (Appendix G) instruct operation personnel to take precautions with regards to any darting of burros where the public could be at risk. Although there is a high percentage rate of dart recovery by project personnel for darts administered in the field using opportunistic darting (Kirkpatrick 2008), the public could be exposed to unrecovered darts that have been fired and left in the field unintentionally. The chances of a dart being left unrecovered in the field are expected to be rare (i.e., <3% in some cases; Science and Conservation Center 2000), and the chance of a member of the public encountering an unrecovered dart are believed to be even rarer. Furthermore, the fertility control vaccines are made with naturally occurring proteins that begin to degrade if not stored on ice or kept in a cool environment. Other factors that minimize danger to the public include the expectation that most of the vaccine in a dart would be expelled, and that protein degradation causes any remaining vaccine to be ineffective, most likely within one day under warm conditions. Although any sharp metal object may be hazardous, the impacts to the public from encountering a dart in the field are expected to be minimal. The ingredients are not expected to cause contraceptive effects unless injected.

CHAPTER 4 CONSULTATION, COORDINATION, PREPERATION

List of Persons, Groups, or Agencies Consulted

AGENCY/GROUP CONTACTED
Arizona Game and Fish Department
Arizona State Historic Preservation Office
United States Fish and Wildlife Service
Pueblo of Zuni
Navajo Nation
Salt River Pima-Maricopa Indian Community

AGENCY/GROUP CONTACTED
Gila River Indian Community
Tohono O'odham Nation
Ak-Chin Indian Community
Yavapai-Apache Nation
Yavapai-Prescott Indian Tribe
Pascua Yaqui Tribe
Hopi Tribe
Fort Mojave Indian Tribe
Fort McDowell Yavapai Nation
White Mountain Apache
Tonto Apache Tribe
San Carlos Apache Tribe
Mescalero Apache Tribe

List of BLM Resource Preparers

NAME	TITLE
Eric Duarte, Project Lead	Wild Horse and Burro Specialist
John Hall	State Wild Horse and Burro Lead
Paul Griffin	Wild Horse and Burro Specialist, Headquarters Division
Chad Hunter	Wild Horse and Burro Specialist, Headquarters Division
Michelle Crabb	Population Biologist, Headquarters Division
Kendra Loubere	Wildlife Biologist
Jessica Bland	Archaeologist
Timothy Demko	Geologist
Christopher Gammage	Outdoor Recreation Planner
Hebin Lin	Socioeconomic Specialist
Rachel Luu	GIS Specialist
Amy McGowan	State Planning and Environmental Coordinator
Dale Ohnmeiss	Planning and Environmental Specialist
Marcus White Bull	Rangeland Management Specialist
Douglas Whitbeck	State Rangeland Management Lead

LIST OF APPENDICIES

Appendix A – Maps
Appendix B – 2023 Statistical Analysis Survey Memorandum
Appendix C – Appropriate Management Level
Appendix D – Standard Operating Procedures: Gathers
Appendix E – Gather Observation Protocols
Appendix F – Literature Review: Effects of Fertility Control Vaccines, Sex Ratio Manipulations, Sterilization, and Equids on Rangeland Ecosystems
Appendix G – Standard Operating Procedures: Fertility Control

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