

**DESERT TORTOISE COUNCIL**

3807 Sierra Highway #6-4514

Acton, CA 93510

[www.deserttortoise.org](http://www.deserttortoise.org)

[eac@deserttortoise.org](mailto:eac@deserttortoise.org)

**Via email and BLM NEPA ePlanning Portal**

October 11, 2023

Angelica Rose, Chad Benson  
Bureau of Land Management  
Kingman Field Office  
2755 Mission Boulevard  
Kingman, AZ 86401  
[adrose@blm.gov](mailto:adrose@blm.gov); [cbenson@blm.gov](mailto:cbenson@blm.gov)

RE: Big Sandy, Alamo, and Lake Havasu Herd Management Area Wild Burro Gather and  
Population Control Plan Environmental Assessment (DOI-BLM-AZ-C010-2023-0025-EA)

Dear Ms. Rose and Mr. Benson,

The Desert Tortoise Council (Council) is a non-profit organization comprised of hundreds of professionals and laypersons who share a common concern for wild desert tortoises and a commitment to advancing the public's understanding of desert tortoise species. Established in 1975 to promote conservation of tortoises in the deserts of the southwestern United States and Mexico, the Council routinely provides information and other forms of assistance to individuals, organizations, and regulatory agencies on matters potentially affecting desert tortoises within their geographic ranges.

Both our physical and email addresses are provided above in our letterhead for your use when providing future correspondence to us. When given a choice, we prefer to receive emails for future correspondence, as mail delivered via the U.S. Postal Service may take several days to be delivered. Email is an "environmentally friendlier way" of receiving correspondence and documents rather than "snail mail."

We appreciate this opportunity to provide comments on the above-referenced proposed action. Given the location of the proposed action in habitats known to be occupied by the Sonoran desert tortoise (*Gopherus morafkai*) (synonymous with Morafka's desert tortoise), our comments include recommendations intended to enhance protection of this species and its habitat during activities

authorized by the Bureau of Land Management (BLM), which we recommend be implemented when making a decision about the proposed action. Please accept, carefully review, and include in the relevant project file the Council's following comments for the proposed action.

## **Purpose and Need**

The purpose of this proposed action is for BLM to implement actions that would achieve and maintain the wild burro populations within established appropriate management levels (AMLs) over a period of 10 years on specified public lands. The Wild Free-Roaming Horses and Burros Act (WFRHBA) mandates that BLM manage wild horse and burro populations that prevent deterioration of the rangelands and help maintain a "thriving natural ecological balance" (TNEB), while allowing multiple use and sustained yield. BLM estimates the current burro population within and near the Big Sandy, Alamo, and Lake Havasu Herd Management Areas (HMAs) [herein referred to as the Three Rivers Complex] is approximately 385% over AML for this Complex. BLM has determined that there will be approximately 1,793 excess wild burros above the AMLs within the Three Rivers Complex as of January 2024.

## **Description of the Three Rivers Complex Herd Management Areas**

The Three Rivers Complex covers approximately 955,000 acres of public, state, and private lands in Mohave, Yavapai, and La Paz Counties in northwestern Arizona (Figure 1). The Big Sandy Herd Area (HA) is approximately 243,000 acres, including 193,683 acres of BLM-administered land. The Alamo HA is approximately 341,000 acres, including 288,382 acres of BLM-administered land. The Lake Havasu HA is approximately 372,000 acres, including 269,812 acres of BLM-administered land.

The BLM's Resource Management Plans set the AMLs for the Three Rivers HMAs for burros – Big Sandy HMA at 139 wild burros, Alamo HMA at 160 wild burros, and Lake Havasu HMA at 166 wild burros.

BLM does not intend to maintain burros that are outside of HMA boundaries but are within the HAs, nor maintain burros that are within HA that have not been designated as an HMA.

## **Alternatives Analyzed**

In the Big Sandy, Alamo, and Lake Havasu Herd Management Area Wild Burro Gather and Population Control Plan Environmental Assessment (EA), BLM has proposed four action alternatives that it would implement over a period of 10 years from the initial gather of burros, as well as the No Action Alternative:

**No Action Alternative:** Under the No Action Alternative, individual nuisance gathers of burros would continue to occur to address nuisance complaints and public safety concerns. There would be no active management to control the size of the wild burro population, control growth rates, or manage the wild burro populations at AML. This alternative does not conform with existing laws and regulations which require the authorized officer to remove excess animals immediately upon determination that excess wild burros are present and their removal is necessary.

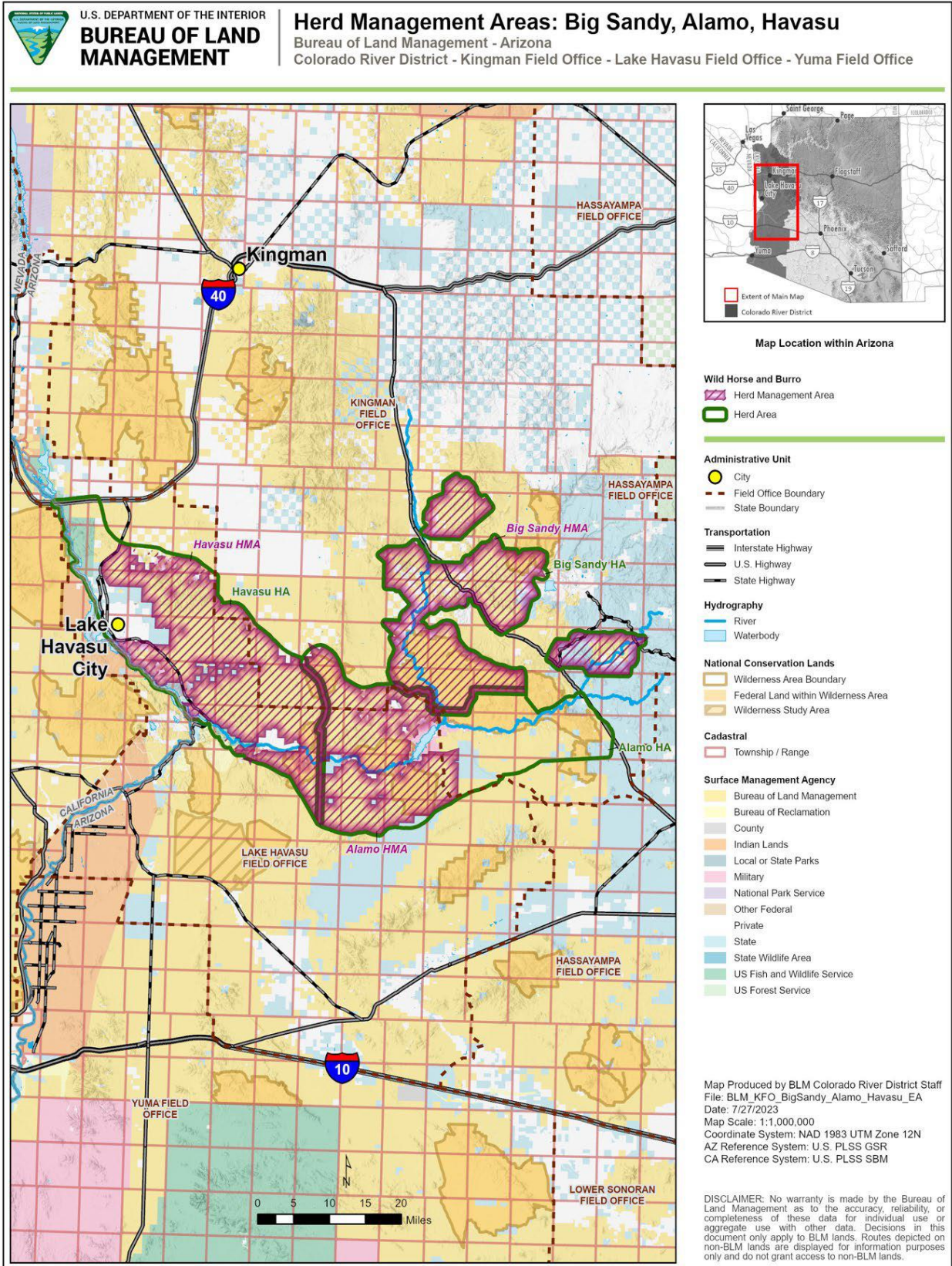


Figure 1. Location of Big Sandy, Alamo, and Lake Havasu Herd Management Areas and Herd Areas.

**Alternative A** (Proposed Action): Selective Removal of Excess Wild Burros to AML, and Population Growth Suppression using Fertility Control Vaccines and Sex Ratio Adjustments. Sex ratios of the herd would be managed for 60% males and 40% females and 50% of the females in each HMA would be treated with fertility control.

**Alternative B**: Selective Removal of Excess Wild Burros to AML and Population Growth Control using Fertility Control Vaccines, Sex Ratio Adjustments, and Gelding a Portion of the Male Population. Approximately 50% of the males would be gelded.

**Alternative C**: Selective Removal of Excess Wild Burros to AML, and Population Growth Control using Fertility Control Vaccines Only. This alternative differs from Alternative A as there would be no sex ratio adjustments and the number of females treated with fertility control would be increased from 50 % to 70%.

**Alternative D**: Gather and Remove Excess Wild Burros to AML without Fertility Control or Sex Ratio Adjustment.

For all action alternatives, water or bait trapping or helicopter gathers would be the commonly use gather methods. The primary focus would be on gathering burros from (1) areas where public safety is a concern (such as roadways where burro-vehicle collisions have occurred), (2) heavily concentrated areas within the HMAs with the most severe resource impacts, and (3) nuisance burros on private lands within and outside 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. BLM will continue rangeland health and population monitoring for the HMAs.

In addition, BLM identified alternatives that were considered but dismissed. These included:

- Use of Fertility Control Only, No Removals
- Use of Bait and/or Water Trapping Only
- Raising or Lowering the Appropriate Management Levels for Wild Burros
- Removing or Reducing Livestock within the Three Rivers Complex
- Use of Alternative Capture Techniques Instead of Helicopter Capture
- Designation of the HMAs to be Managed Principally for Wild horses or Burros
- Releasing and Relocating of Burros to New Areas.

### **Affected Environment**

Vegetation communities in the Three Rivers Complex include plants of the Mojave Basin and Sonoran Basin and Range (USDA Handbook 296). Several invasive and non-native plant species are found in the project area with red brome being the most dominant.

With respect to the Sonoran desert tortoise, this species occurs in the HMAs, as do two tortoise Areas of Critical Environmental Concern (ACECs), McCracken Desert Tortoise Habitat (974 acres) and Poachie Desert Tortoise Habitat (5,290 acres). There are approximately 34,345 acres of

Category I tortoise habitat (17,173 acres in HAs and 17,172 acres in HMAs), 308,470 acres of Category II (166,619 acres in HAs and 141,851 acres in HMAs), and 538,812 acres of Category III (180,965 acres in HAs and 357,847 acres in HMAs).

### **Comments on the Draft EA**

We thank BLM for contacting the Council about the availability of this EA for public comment. We compliment BLM on its preparation of this EA. Many of the sections in this EA appear to comply with the major requirements of National Environmental Policy Act (NEPA) regulations, especially with respect to using recent scientific data to develop alternatives, analyze impacts, and support conclusions.

The Council supports implementation of an alternative that would be the most effective at reducing the burro population size to the AML and ensuring that population size does not increase. As BLM has described in more than one action alternative, achieving limited or no population growth would likely require implementing more than one population management method. We support implementing a combination of methods to manage population size for burros. In addition, we support BLM's regular monitoring of burro population numbers and removing burros/implementing effective veterinary methods to manage burro reproduction so the result is a population growth rate of zero.

### **Environmental Consequences**

**Section 3.2 Resources and Uses – Climate Change:** We were unable to find an analysis of the impacts of climate change in the EA. It was not listed in Table 4. Resources and Uses. We suggest that BLM ensure that the EA include an analysis of impacts to climate change, as the gathers would likely contribute to greenhouse gas emissions (e.g., extensive helicopter use), but the anticipated improvement in range health condition would have beneficial impacts in capturing and storing more atmospheric carbon because of increased vegetation production.

**3.3.2 Vegetation and Soil Resources:** BLM says, “[r]ange 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.” We support BLM's efforts to restore native vegetation and presume BLM will follow its Mitigation Instructional Memorandum, Handbook, and Manual (BLM 2021a, b, and c).

We note that many revegetation processes are not effective at establishing native plant species and eliminating /reducing the presence of non-native invasive species. We urge BLM to include in the EA a description of methods it will implement for establishing native vegetation. These methods should be effective and scientifically supported. To aid BLM in this effort, we have included links in the “Literature Cited” section of this letter to publications by Abella et al. (2023), Abella and Berry (2016), and Desert Tortoise Council (no date) regarding revegetation methods in desert ecosystems for BLM to implement.

In this section, BLM also concludes, “Vegetation [at trap and bait stations] is expected to recover within a year.” “Managing wild burros at AML is expected to reduce utilization of key forage species, reduce hoof action on soils, reduce the potential spread of invasive species, 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.” We request that BLM provide citations from the scientific literature to support these conclusions.

**3.3.5 Wildlife Resources, Special Status Species, Desert Tortoise – Environmental Effects of Alternatives A, B, C, D:** BLM says, “[a]ctivities occurring within Category I habitat would be avoided. If activities must occur within Category I habitat during active season, the BLM wildlife biologist will survey prior to disturbance. Guidelines for Handling Desert Tortoise will be given out to all personnel (Appendix K).”

We strongly recommend BLM follow the Arizona Game and Fish Department’s (AZGFD) Desert Tortoise Survey Guidelines for Environmental Consultants (2010) and Guidelines for Handling Sonoran Desert Tortoises Encountered on Development Projects (2014), and relevant portions of U.S. Fish and Wildlife Service’s (USFWS) (2009) Desert Tortoise (Mojave Population) Field Manual (*Gopherus agassizii*) (i.e., Chapter 7 – Guidelines for Handling Desert Tortoises and Their Eggs and Chapter 6 – Desert Tortoise Clearance Survey Protocol) or most recent Field Manual. These handling protocols address crucial factors such as appropriate temperatures for moving tortoises, appropriate procedures for extracting tortoises from coversites, avoiding transmission of pathogens and parasites, moving and releasing tortoises, and conducting clearance surveys for work areas such as trap sites and corrals. Trap sites and corrals will result in impacts similar to development projects.

As mentioned above, BLM says, “[g]uidelines for Handling Desert Tortoise will be given out to all personnel” and “[a]ll workers would be given guidelines prior to gather operation.” We request that BLM add that workers will be required to follow guidelines that BLM determines should be implemented.

We were unable to find a discussion of the impacts to the tortoise from increased vehicle traffic associated with the action alternatives. These impacts are analyzed for livestock. We request that vehicle impacts be analyzed for the tortoise and appropriate mitigation be implemented to reduce/eliminate adverse impacts to the tortoise.

BLM says, “Once AML is reached, habitat quality would increase as described in the general wildlife section above, promoting more cover and forage for desert tortoise. High burro density is associated with lower desert tortoise density, even after controlling for other environmental covariates (Berry et al. 2020). Additionally, reduced burro numbers would reduce competitive stress on tortoise once AML is reached.”

BLM has provided conclusions of likely impacts to tortoise habitat and tortoise physiology but none to tortoise population density or numbers. Because Tuma et al. (2016) found that feral burro disturbances caused the most severe declines in Mojave tortoise population numbers in one part of the range of the tortoise, one may conclude that if burro numbers were substantially reduced, the expected result would be an increase in tortoise numbers assuming other threats to the tortoise did not increase. We request that BLM provide a conclusion on how reducing burro numbers would affect Sonoran desert tortoise population numbers and densities in the HMAs.

The EA should include an analysis of how the implementation of each action alternative would result in “no net loss in quantity and quality of Sonoran desert tortoise habitat” (USFWS et al. 2015). As a signatory to the Candidate Conservation Agreement for the Sonoran Desert Tortoise (*Gopherus morafkai*) in Arizona (Agreement) (USFWS et al. 2015), this is one of several commitments BLM made regarding management for the tortoise/tortoise habitat. This request also applies to Appendix N, Compensation for the Desert Tortoise, and how BLM proposes to compensate for habitat degraded/destroyed by implementation of an action alternative.

## **Cumulative Effects Analysis**

In Chapter 4 of the EA, BLM includes a cumulative effects analysis. However, we request that BLM revisit this chapter and apply CEQ’s 1997 guidance on Considering Cumulative Effects under the National Environmental Policy Act (NEPA). Please ensure that the direction provided by CEQ in this document is followed, including the eight principles, when analyzing cumulative effects of the proposed action to the affected resource issues. This CEQ document is referenced in BLM’s National Environmental Policy Act Handbook (BLM 2008a).

CEQ states, “Determining the cumulative environmental consequences of an action requires delineating the cause-and-effect relationships between the multiple actions and the resources, ecosystems, and human communities of concern. The range of actions that must be considered includes not only the project proposal but all connected and similar actions that could contribute to cumulative effects.” The analysis “must describe the response of the resource to this environmental change.” Cumulative impact analysis should “address the sustainability of resources, ecosystems, and human communities.”

CEQs guidance on how to analyze cumulative environmental consequences, which contains eight principles, are listed below:

### **1. Cumulative effects are caused by the aggregate of past, present, and reasonable future actions.**

The effects of a proposed action on a given resource, ecosystem, and human community, include the present and future effects added to the effects that have taken place in the past. Such cumulative effects must also be added to the effects (past, present, and future) caused by all other actions that affect the same resource.

### **2. Cumulative effects are the total effect, including both direct and indirect effects, on a given resource, ecosystem, and human community of all actions taken, no matter who (federal, non-federal, or private) has taken the actions.**

Individual effects from disparate activities may add up or interact to cause additional effects not apparent when looking at the individual effect at one time. The additional effects contributed by actions unrelated to the proposed action must be included in the analysis of cumulative effects.

### **3. Cumulative effects need to be analyzed in terms of the specific resource, ecosystem, and human community being affected.**

Environmental effects are often evaluated from the perspective of the proposed action. Analyzing cumulative effects requires focusing on the resources, ecosystem, and human community that may

be affected and developing an adequate understanding of how the resources are susceptible to effects.

**4. It is not practical to analyze the cumulative effects of an action on the universe; the list of environmental effects must focus on those that are truly meaningful.**

For cumulative effects analysis to help the decision maker and inform interested parties, it must be limited through scoping to effects that can be evaluated meaningfully. The boundaries for evaluating cumulative effects should be expanded to the point at which the resource is no longer affected significantly or the effects are no longer of interest to the affected parties.

**5. Cumulative effects on a given resource, ecosystem, and human community are rarely aligned with political or administrative boundaries.**

Resources are typically demarcated according to agency responsibilities, county lines, grazing allotments, or other administrative boundaries. Because natural and sociocultural resources are not usually so aligned, each political entity actually manages only a piece of the affected resource or ecosystem. Cumulative effects analysis on natural systems must use natural ecological boundaries and analysis of human communities must use actual sociocultural boundaries to ensure including all effects.

**6. Cumulative effects may result from the accumulation of similar effects or the synergistic interaction of different effects.**

Repeated actions may cause effects to build up through simple addition (more and more of the same type of effect), and the same or different actions may produce effects that interact to produce cumulative effects greater than the sum of the effects.

**7. Cumulative effects may last for many years beyond the life of the action that caused the effects.**

Some actions cause damage lasting far longer than the life of the action itself (e.g., acid mine damage, radioactive waste contamination, species extinctions). Cumulative effects analysis need to apply the best science and forecasting techniques to assess potential catastrophic consequences in the future.

**8. Each affected resource, ecosystem, and human community must be analyzed in terms of its capacity to accommodate additional effects, based on its own time and space parameters.**

Analysts tend to think in terms of how the resource, ecosystem, and human community will be modified given the action's development needs. The most effective cumulative effects analysis focuses on what is needed to ensure long-term productivity or sustainability of the resource.

Note that CEQ recognizes that synergistic and interactive impacts as well as cumulative impacts should be analyzed in the NEPA document for the resource issues. We request that BLM include these analyses in the EA.

We request that the EA (1) include these eight principles in its analysis of cumulative impacts to the Sonoran desert tortoise; (2) address the sustainability of the tortoise in/near the project area; and (3) include effective science-based mitigation, monitoring, and adaptive management that protect desert tortoises and their habitats during BLM's implementation of burro management.



This request should be implemented for each resource issue analyzed in the EA (e.g., wildlife resources including tortoise and bighorn sheep, vegetation and soils, burros, wilderness, etc.).

As a signatory to the Agreement (USFWS et al. 2015), BLM committed to manage for the tortoise with the goal of conserving the Sonoran desert tortoise and its habitat on BLM-managed lands in cooperation with other agencies and to implement:

- (1) BLM Manual 6840 (BLM 2008b) that establishes specific procedures for managing the Sonoran desert tortoise as it is a BLM sensitive species;
- (2) landscape level conservation measures (e.g., identifying areas of potential conflict between agency mission and Sonoran desert tortoise habitat and identifying and reducing or otherwise mitigating dispersal barriers between Sonoran desert tortoise populations, etc.); and
- (3) local level conservation measures (e.g., considering the effects of actions on the Sonoran desert tortoise during the planning process, and avoiding or minimizing impacts, or implementing mitigation measures to offset impacts to tortoise populations and habitat where practical and feasible, avoid, where practicable, or otherwise minimize or mitigate adverse effects of actions that could result in isolation of known Sonoran desert tortoise populations and/or landscape-level fragmentation of Sonoran desert tortoise habitat, etc.).

These three measures may only be effectively implemented when BLM has data on the status and trend of tortoise populations on the lands it manages, and where the direct and indirect impacts to the tortoise are occurring, especially at a landscape level, and thus affecting tortoise populations. The Council is concerned about projects and management decisions that contribute to degradation and loss of tortoise habitat (including habitat needed for connectivity among populations)(CEQ 2023) from habitat fragmentation, activities that introduce and spread non-native plant species, wildfires, etc., which result in a reduction in tortoises. To conduct an accurate regional or cumulative effects analysis and comply with the Agreement, BLM would need to track these and other impacts to the tortoise at a local and landscape level using a geospatial tracking system for all management actions and projects that it authorizes, funds, or implements. We request that BLM implement such as tracking system and add the proposed project, its impacts, and monitoring data, to the system. Without such a tracking system, BLM is unable to analyze cumulative impacts to special status species (e.g., desert tortoises) with any degree of confidence.

## **Appendices**


Appendix C includes Map 9 – BLM Categorized Desert Tortoise Habitat. We appreciate the inclusion of this information in the EA. This information reminds us that BLM should revisit the categories and locations of tortoise habitat to ensure that the areas managed for tortoises/tortoise habitat, generally Categories 1 and II, should include habitats that connect these areas. This population connectivity through management of linkage habitats for the tortoise is necessary so tortoise populations will be able to maintain viable population numbers and genetic diversity/geneflow among populations. Managing for viable population numbers and genetic diversity is necessary to ensure that genetic, environmental, and/or demographic stochastic events do not inadvertently result in the extirpation of tortoise populations. We assert that BLM should revisit these habitat designations in the next few months for the tortoise as these designations were defined 35 years ago in Spang et al. (1988), Since then, the scientific community has published

numerous scientific journal articles on the necessity for connectivity among populations (e.g., Ament et al. 2014, Heller and Zavaleta 2009) , and CEQ (2023) recently issued a policy on “Guidance for Federal Departments and Agencies on Ecological Connectivity and Wildlife Corridors.” This guidance should be implemented in the analyses sections of all environmental assessments and environmental impacts statements. Arizona Game and Fish Department has conducted many mark-recapture plots to estimate density, demographic status, and trend since 1988, several plots being within the affected area.

In reviewing the EA, we found several minor editorial errors (e.g., discussing wild horses when the EA is about burros, etc.). We suggest that BLM correct these errors especially those that refer to wild horses in the EA, as the proposed action is about burro management.

We appreciate this opportunity to provide the above comments and trust they will help protect tortoises during any resulting authorized activities. Herein, we reiterate that the Desert Tortoise Council wants to be identified as an Affected Interest for this and all other projects funded, authorized, or carried out by the BLM that may affect desert tortoises, and that any subsequent environmental documentation for this proposed action is provided to us at the contact information listed above. Additionally, we ask that you respond in an email that you have received this comment letter so we can be sure our concerns have been registered with the appropriate personnel and office for this proposed action.

Respectfully,



Edward L. LaRue, Jr., M.S.  
Chairperson, Ecosystems Advisory Committee

Cc: Tracy Stone-Manning, Director, Bureau of Land Management, [tstonemanning@blm.gov](mailto:tstonemanning@blm.gov)  
Nada Culver, Deputy Director of Policy and Programs, Bureau of Land Management, [nculver@blm.gov](mailto:nculver@blm.gov)  
David Jenkins, Assistant Director of Resources & Planning, Bureau of Land Management, [djenkins@blm.gov](mailto:djenkins@blm.gov)  
Raymond Suazo, Arizona State Director, Bureau of Land Management, [rsuazo@blm.gov](mailto:rsuazo@blm.gov); [azstatedirctor@blm.gov](mailto:azstatedirctor@blm.gov)  
William Mack, Jr., District Manager, Colorado River District Office, Bureau of Land Management [wmack@blm.gov](mailto:wmack@blm.gov)

## Literature Cited

- Abella S.R. and K.H. Berry. 2016. Enhancing and restoring habitat for the desert tortoise (*Gopherus agassizii*). Journal of Fish and Wildlife Management 7(1):255–279.  
<https://doi.org/10.3996/052015-JFWM-046>.
- Abella, S.R., K.H. Berry, and S. Ferrazzano. 2023. Techniques for restoring damaged Mojave and western Sonoran habitats, including those for threatened desert tortoises and Joshua trees.

Desert Plants 38:4-52. <https://deserttortoise.org/wp-content/uploads/Abella-et-al-2023-Restoration-in-the-Mojave-Western-Sonoran-Desert-Vegetation.pdf>

Ament, R., R. Callahan, M. McClure, M. Reuling, and G. Tabor. 2014. Wildlife Connectivity: Fundamentals for conservation action. Center for Large Landscape Conservation: Bozeman, Montana. <https://largelandscapes.org/wp-content/uploads/2019/05/Wildlife-Connectivity-Fundamentals-for-Conservation-Action.pdf>

Arizona Game and Fish Department. 2010. Desert Tortoise Survey Guidelines for Environmental Consultants. June 2010. <https://s3.amazonaws.com/azgfd-portal-wordpress/PortalImages/files/wildlife/2010SurveyguidelinesForConsultants.pdf>

Arizona Game and Fish Department. 2014. Guidelines for handling Sonoran desert tortoises encountered on development projects. Arizona Game and Fish Department, Revised September 22, 2014. <https://s3.amazonaws.com/azgfd-portal-wordpress/PortalImages/files/wildlife/2014%20Tortoise%20handling%20guidelines.pdf>

[BLM] U.S. Bureau of Land Management. 2008a. H-1790-1 - National Environmental Policy Act Handbook. National Environmental Policy Act Program, Office of the Assistant Director, Renewable Resources and Planning, Washington, D.C. January 2008.

[BLM] U.S. Bureau of Land Management. 2008b. Special Status Species Management Handbook 6840. December 12, 2008.

[BLM] Bureau of Land Management. 2021a. Reinstating the Bureau of Land Management (BLM) Manual Section (MS-1794) and Handbook (H-1794-1) on Mitigation. Instruction Memorandum IM 2021-046. September 22, 2021.

[BLM] Bureau of Land Management. 2021b. Mitigation Handbook (H-1794-1). [https://www.blm.gov/sites/default/files/docs/2021-10/IM2021-046\\_att2.pdf](https://www.blm.gov/sites/default/files/docs/2021-10/IM2021-046_att2.pdf).

[BLM] Bureau of Land Management. 2021c. Mitigation Manual (MS-1794). Bureau of Land Management, September 22, 2021. [https://www.blm.gov/sites/default/files/docs/2021-10/IM2021-046\\_att1\\_0.pdf](https://www.blm.gov/sites/default/files/docs/2021-10/IM2021-046_att1_0.pdf).

[CEQ] Council on Environmental Quality. 1997. Considering Cumulative Effects under the National Environmental Policy Act. [https://ceq.doe.gov/publications/cumulative\\_effects.html](https://ceq.doe.gov/publications/cumulative_effects.html)

[CEQ] Council on Environmental Quality. 2023. Guidance for Federal Departments and Agencies on Ecological Connectivity and Wildlife Corridors. March 21, 2023. <https://www.whitehouse.gov/wp-content/uploads/2023/03/230318-Corridors-connectivity-guidance-memo-final-draft-formatted.pdf>

Desert Tortoise Council. No date. Best Management Practices – Restoring Perennial Plants. [https://deserttortoise.org/wp-content/uploads/BMP\\_fact\\_sheet\\_1\\_restore\\_perennials.pdf](https://deserttortoise.org/wp-content/uploads/BMP_fact_sheet_1_restore_perennials.pdf)

Heller, N.E., and E.S. Zavaleta. 2009. Biodiversity management in the face of climate change: a review of 22 years of recommendations. *Biological Conservation* 142, no. 1: 14-32.

Spang, Edward F., G. W. Lamb, F. Rowley, W.H. Radtkey, R.R. Olendorff, E.A. Dahlem, and S. Slone. 1988. Desert Tortoise Habitat Management on the Public Lands: A Rangeland Plan. Bureau of Land Management. Washington, D.C.: U.S. Department of the Interior. November 1988.

[USDA] United States Department of Agriculture, Natural Resources Conservation Service. 2022. Land resource regions and major land resource areas of the United States, the Caribbean, and the Pacific Basin. U.S. Department of Agriculture, Agriculture Handbook 296. <https://www.nrcs.usda.gov/resources/data-and-reports/major-land-resource-area-mlra>

Tuma, M.W., C. Millington, N. Schumaker, and P. Burnett. 2016. Modeling Agassiz's Desert Tortoise Population Response to Anthropogenic Stressors. *Journal of Wildlife Management* 80(3):414-429. <https://wildlife.onlinelibrary.wiley.com/doi/abs/10.1002/jwmg.1044>

[USFWS] U.S. Fish and Wildlife Service. 2009. Desert Tortoise (Mojave Population) Field Manual: (*Gopherus agassizii*). December 2009. Region 8, Sacramento, California. <https://www.fws.gov/sites/default/files/documents/Desert-Tortoise-Field-Manual.pdf>

[USFWS et al.] U.S. Fish and Wildlife Service, Bureau of Land Management, Bureau of Reclamation, National Park Service, Department of Defense, Customs and Border Protection, U.S. Forest Service, Natural Resources Conservation Service, Arizona Game and Fish Department, and Arizona Department of Transportation. 2015. Candidate Conservation Agreement for the Sonoran Desert Tortoise (*Gopherus morafkai*) in Arizona. May 27, 2015. <https://www.blm.gov/sites/blm.gov/files/policies/IMAZ-2016-004-a1.pdf>