FINDING OF NO SIGNIFICANT IMPACT

EA Number: DOI-BLM-AZ-G020-2012-0046-EA

Serial/Case File No. 6199

BLM Office: Tucson Field Office

Finding of No Significant Impact:

I have reviewed the environmental assessment (EA), # DOI-BLM-AZ-G020-2012-0046-EA, dated June 7, 2013, prepared for the Moore Canyon Allotment Grazing Lease Renewal, and have found through the EA that there are no potentially significant environmental impacts caused by the proposed action. I have determined that the proposed action with the mitigation measures listed below will not have any significant impacts on the human environment and that an EIS is not required. I have determined that the proposed action is in conformance with the Safford District Resource Management Plan approved in Record of Decision dated September 1992 and July 1994.

Below are the substantive reasons for finding no significant impact:

- The proposed action does not conflict with cultural resources and will not affect historic properties.
- The proposed action is compatible with wetland, riparian, and floodplain values as the utilization was below 10% for all wetland, riparian, and floodplain vegetation species, which indicates that sufficient residual vegetation is present.
- The proposed action is compatible with special status, BLM sensitive species, and wildlife habitat as the proposed action does not include authorization for any road construction, clearing of habitat, destruction of riparian areas, or fragmentation of habitat and is, therefore, in compliance with the Biological Opinion.
- The proposed action does not promote non-native and invasive species. Monitoring indicates that plant cover is high, and utilization is low, allowing adequate soil stabilization and competition by existing plants to prevent spread of invasive plant species. In addition, planned monitoring in the proposed action should allow the documentation of any invasive or non-native species that are present or become established.
- The proposed action is compatible with rangeland health standards and vegetation resources. The rangeland health standards for the allotment are currently being met for biotic integrity, hydrologic function, and soil/site stability, as determined through evaluations and monitoring. The current low utilization limits (less than 10%) on the Moore Canyon Allotment provides a sustainable forage base for livestock grazing consistent with other multiple uses.

- The proposed action is compatible with migratory bird species. The migratory bird species observed there, trampling and/ or increased predation of nests may not be a serious issue because of the low utilization level of cover plants. It is not known how livestock grazing may affect the avian food sources on the allotment but, due to the low utilization level, the allotment likely provides adequate production and habitat for all varieties of food and prey.
- The proposed action is compatible with recreational and range resource uses within the area.
- The proposed action is consistent with Bureau policies and management goals within the area.

Attachments: NEPA#: DOI-BLM-AZ-G020-2012-0046-EA

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Field Manager Date

United States Department of the Interior
Bureau of Land Management

Environmental Assessment

DOI-BLM-AZ-G020-2012-0046-EA

7 June 2013

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1.0 INTRODUCTION

This Environmental Assessment (EA) analyzes the proposed action of lease renewal and alternatives for the Moore Canyon Allotment, No. 06199 (see Appendices 11.1.1 and 11.1.2 for maps of the allotment). This EA will incorporate the conservation measures from the U.S. Fish and Wildlife Service's Biological Opinion on the Gila District Livestock Grazing Program (2012), analyses from the Rangeland Health Evaluations completed on 22 May 2008 and 29 November 2011 by the BLM interdisciplinary teams, and the vegetation monitoring conducted on 7 July 2009 by BLM staff and the University of Arizona Cooperative Extension.

1.1 Background

The BLM is proposing to fully process the term grazing permit on the Moore Canyon Allotment in accordance with all applicable laws, regulations, and policies. Because Grazing Permit No. 06199 expired in 2005, the BLM renewed the permit with the same terms and conditions pursuant to Section 416 of Public Law 111-88, pending compliance with applicable laws and regulations. The permit now expires on 02/28/2015. Compliance with all applicable laws and regulations includes consultation, coordination, and cooperation with affected individuals, interested parties, States, and Indian Tribes; completion of the applicable level of National Environmental Policy Act (NEPA) review; consultation with the United States Fish and Wildlife Service (USFWS) under Section 7 of the Endangered Species Act; and ensuring that allotments are achieving or making significant progress toward achievement of land health standards.

1.2 Purpose and Need

The purpose of this action is to provide for livestock grazing opportunities on public lands where consistent with meeting management objectives, including the Arizona Standards for Rangeland Health and Guidelines for Livestock Grazing Management (IB AZ-97-087, Appendix 11.2).

The need for this action is established by the Taylor Grazing Act (TGA), the Federal Land Policy and Management Act (FLPMA), and the Eastern Arizona Grazing Environmental Impact Statement (EAG EIS, USDI BLM 1985), which require that the BLM respond to applications to fully process and renew permits to graze livestock on public land. In detail, the analysis of the actions identified in the applications for grazing permit renewals and the alternative actions is needed because:

BLM Arizona adopted the Arizona Standards for Rangeland Health (Land Health Standards) and Guidelines for Livestock Grazing Management in all Land Use Plans (Arizona S&Gs) in 1997 (Appendix 11.2). Land Health for Rangelands should be achieving or making significant progress towards achieving the standards and to provide for proper nutrient cycling, hydrologic cycling, and energy flow. Guidelines direct the selection of grazing management practices and, where appropriate, livestock facilities to promote significant progress toward, or the attainment and maintenance of, the standards. Rangeland health assessments, monitoring, and the evaluation report completed for the Moore Canyon Allotment identified that Standards 1 and 3 are being met (Standard 2 is not applicable).

The Safford District Resource Management Plan (RMP) and EIS (1991) identified resource management objectives and management actions that establish guidance for managing a broad spectrum of land use for

public lands. The RMP allocated public lands within the Moore Canyon Allotment as available for domestic livestock grazing. Where consistent with the goals and objectives of the RMP and Land Health Standards, allocation of forage for livestock use and the issuance of grazing permits to qualified applicants are provided for by the Taylor Grazing Act (TGA) and the Federal Land Policy and Management Act (FLPMA).

1.3 Decision to be made

The Tucson Field Office Manager is the authorized officer responsible for the decisions regarding management of public lands within this allotment. Based on the results of the NEPA analysis, the authorized officer will issue a determination of the significance of the environmental effects and whether an environmental impact statement (EIS) would be required. If the authorized officer determines that it is not necessary to prepare an EIS, the EA will provide information for the authorized officer to make an informed decision whether to renew, renew with modifications, or not renew the permit. If renewed, which management actions, mitigation measures, and monitoring requirements will be prescribed for the Moore Canyon Allotment to ensure management objectives and Arizona Standards for Rangeland Health are achieved.

2.0 SCOPING AND IDENTIFICATION OF ISSUES

Identification of resources that could be affected by the lease renewal occurred during the BLM internal NEPA scoping discussion on 9 July 2012. The issues were determined by considering the resources that were identified by the interdisciplinary team, lessee(s), the internal scoping discussion, field visits, and/or external response to the land health evaluation. The issues identified through public scoping were the effects from livestock grazing on:

Habitat for special status species?

Nesting cover and food sources for migratory birds?

Ground cover and soil erosion at any springs or ephemeral washes, and the result to watershed health?

Species composition and cover of upland vegetation with quantitative monitoring results and actual use?

Spread of invasive and non-native species?

Wildlife distribution from range developments and water sources for livestock?

3.0 DESCRIPTION OF ALTERNATIVES, INCLUDING PROPOSED ACTION

The BLM, with input from the interested public, have developed the range of action alternatives presented below. The five alternatives presented consist of the proposed action to renew the grazing lease for a period of ten years with Terms and Conditions, the no grazing alternative, the no action alternative, the alternative to reduce the stocking rate, and the alternative to increase the stocking rate.

3.1.1 Alternative 1 - Proposed Action to Renew Grazing Lease with Terms and Conditions

The Proposed Action consists of renewal of the grazing lease for the Moore Canyon Allotment as a Custodial allotment, as identified under the EAG EIS and ROD, for a period of ten years with the following Terms and Conditions:

The grazing plan is proposed as year-long with eight cattle (96 Animal Unit Months or AUMs), as identified in the EAG Draft EIS, Appendix 1 (1985).

Allotment Number	Allotment Name	Pasture	Number of Livestock	Kind	Begin	End	% Public Land	Type of Use	AUMs
6199	Moore Canyon	Upland	8	CATTLE	3/1	2/28 (year-long)	100	ACTIVE	96

The lessee will provide the BLM with actual use from the prior grazing fee year by March 15 of each year detailing the number of livestock and period(s) of use for each pasture in accordance with 43 CFR §4130. 3-2 (d).

When forage conditions warrant, additional livestock grazing may be authorized upon an approved application to utilize an ephemeral forage crop pursuant to guidelines for grazing administration, federal grazing regulations, special management requirements, and other program guidance.

All drinking troughs shall be fitted with a wildlife escape ramp that intercepts the line of travel along the tank edge.

BLM administrative actions that would apply to the renewal of the grazing lease for the Moore Canyon allotment include:

The BLM in consultation, coordination and cooperation with the lessee, other agencies, and any interested public, have implemented and would continue a monitoring plan to measure the attainment of resource management objectives. The monitoring schedule for Custodial allotments, as identified under the EAG EIS (Table 3), indicates that allotment inspections will be to "Visually detect: apparent trend; utilization and unauthorized use." Improve or Maintain allotments have this monitoring schedule once every year or once every three to five years, respectively. The Moore Canyon allotment is listed as a Maintain allotment in the Gila District Grazing Program Biological Opinion, Table 1(2012).

Actual use/utilization data would be collected over a period of years along with trend data to determine if changes in management practices are necessary to meet resource condition objectives. Estimation of utilization on key species will aide in decision making.

Monitoring of utilization of upland key forage species (e.g.sideoats grama) will be to maintain an average desired utilization level of 40% (or below) (Cooperative Extension Service et al. 1999a). In addition, monitoring of key area cover, frequency, and composition will occur (see Cooperative Extension Service et al. 1999b).

The BLM will inform any entity associated with the livestock grazing program to not subject jaguars or ocelots to any predator control activities.

The lessee shall be notified annually [during billing] of the potential occurrence of jaguars or ocelots in their allotment, the status of the jaguar and ocelot, and that take of jaguar or ocelot, including harm and harassment, is prohibited under the Act and could result in prosecution.

Stipulations would apply for cultural resource protection.

3.1.2 Alternative 2 - No Grazing

The no grazing alternative would result in cancellation of the lease for the Moore Canyon Allotment, and livestock grazing would not be authorized. BLM would initiate the process in accordance with 43 CFR parts 4100. The Moore Canyon Allotment is designated as available for livestock grazing under the EAG EIS, therefore, this alternative is not viable in order to comply with Title 43 CFR § 4130.2(a) which states, "Grazing permits or leases shall be issued to qualified applicants to authorize use on the public lands and other lands under the administration of the Bureau of Land Management that are designated as available for livestock grazing through land use plans." The Moore Canyon Allotment is designated as available for livestock grazing under the EAG EIS, therefore, a land use plan amendment would be required. A total of approximately 5.5 miles of new fencing would be required to fence out the BLM land from adjacent state land, private land, and other allotments, and would meet the BLM specifications for wildlife compatible fencing.

3.1.3 Alternative 3 - No Action

The No Action Alternative is described as the continuation of the existing terms and conditions after the expiration of the existing lease. The terms and conditions of the existing lease (03/01/2005 to 02/28/2015) include a grazing schedule (identical to the proposed alternative above with eight cattle year-long) and specific language that the grazing lease is renewed under Section 402 of the Federal Land Policy and Management Act of 1976, as amended. In addition, the previous terms and conditions are incorporated and continue in effect under the renewed lease until the Secretary of the Interior completes processing of the lease in compliance with all applicable laws and regulations, at which time the lease may be canceled, suspended, or modified to meet the requirements of the applicable laws and regulations.

Standard terms and conditions include that 1) lease fees charged are established in accordance with grazing regulations approved by the Secretary of the Interior, 2) the lease is subject to cancellation due to noncompliance, loss of control, transfer to another party, decrease in lands administered, repeated unauthorized grazing, or loss of qualifications by the lessee, 3) the lease is subject to an allotment management plan if a plan has been prepared, 4) the lessee must own or control the livestock authorized, 5) counting and/or marking or tagging of the livestock may be required, 6) the lessee's grazing case file is available for public inspection, 7) the lease is subject to nondiscrimination clauses, 8) changes in grazing use must be applied for before the grazing period and approved by the authorized officer before grazing use is made, 9) billing notices are issued which specify fees due, become part of the grazing lease, and that grazing use cannot be authorized during any period of delinquency, 10) grazing fee payments are due on the date specified on the billing notice and must be paid in full within 15 days of the due date, 11) no member of Congress or Resident Commissioner, officer, agent, or employee of the Department of the Interior shall be admitted to any share or part of a lease, or derive any benefit therefrom, and 12)

provisions of Section 3741 Revised Statute (41 USC 22), 18 USC Sections 431-433, and 43 CFR Part 7 enter into and form a part of the grazing lease, as applicable.

3.1.4 Alternative 4 - Reduce the Stocking Rate

This alternative would authorize livestock grazing on the Moore Canyon Allotment at a lower level. The numbers for this allotment were set forth in the EAG EIS (1987). As stated in 43 CFR 4110.3, changes in the grazing permit/lease are subject to consultation, cooperation and coordination with permittee/lessee, the state having lands or managing resources in the area, and the interested public. Monitoring, field observations, ecological site inventory, or other data must also be available to support a reduction in a lease. Should BLM determine that existing grazing management is not consistent in meeting the Fundamentals of Rangeland Health, appropriate action will be taken as soon as practicable, but not later than the start of the next grazing year to ensure conformance with the Fundamentals of Rangeland Health. The authorized officer will make a determination on a case-by-case basis as to what corrective actions are appropriate. In some cases, the action taken may not result in the reduction of the lease. A variety of management tools are available to resolve the problem. The management action may include changing season-of-use, modifying the grazing system, properly placing rangeland improvements, salting, temporarily suspending use, reducing livestock numbers, or applying some other appropriate action. At present, there are no conflicts identified between livestock grazing and other resources. Studies indicate that management of the allotment is satisfactory and that livestock grazing use is satisfactory.

3.1.5 Alternative 5 - Increase the Stocking Rate

This alternative would increase AUMs, if conditions were good. The regulation cited above in 43 CFR 4110.3 applies in this case as well. Also, changes must be supported through monitoring, field observations, ecological site inventory, or other data. Additional forage must become available on a sustained-yield basis. Once available, the BLM would then determine how to allocate the additional forage. Consideration would be given to satisfying suspended use, the needs of other resources such as wildlife, the stewardship efforts that contributed to the increased forage production, and other factors. Studies indicate that management of the allotment is satisfactory and that livestock grazing use satisfactory.

3.1.6 Alternatives Considered But Eliminated From Detailed Analysis

3.1.6.1 Change the Grazing Plan

This alternative would be to change the grazing plan on the Moore Canyon Allotment. The Moore Canyon Allotment is designated as a year-long custodial allotment with 96 AUMs in the EAG EIS and ROD (1987), thus, a land use plan amendment would be required to bring this alternative into conformance with the RMP. Since the allotment is meeting land health standards and there is suitable perennial forage available, there is no need to change to an ephemeral designation. Review of the Special Ephemeral Rule (33 FR 18245, and in accordance with 43 CFR 4115.2-1) does not show that this allotment meets the criteria for this rule: “Ephemeral range does not consistently produce forage, but periodically provides annual vegetation suitable for livestock grazing.”

3.1.6.2 Exclusion of Pete Moore Spring

This alternative would be to permanently exclude cattle from the privately-owned Pete Moore Spring on the Moore Canyon Allotment, and allow grazing on the uplands with up to a 40% utilization limit. This

would require approximately 0.10 mile of new fencing around the perimeter of the spring, which would meet the BLM's specifications for wildlife compatible fencing. However, BLM has no jurisdiction on this alternative, because the spring is located on private property.

4.0 CONFORMANCE

The proposed action is in conformance with the EAG Environmental Impact Statement (EIS) and Record of Decision (ROD, 1987), Safford District Resource Management Plan and EIS (ROD 1992 and 1994), and the Statewide Land Use Plan Amendment for Implementation of Arizona's Standards for Rangeland Health and Guidelines for Grazing Administration (AZ S&Gs, BLM 1997).

4.1 Relationship to Statutes, Regulations, or Other Plans

The rangeland management program is managed under the provisions of the Taylor Grazing Act of 1934 as amended, the Federal Land Policy and Management Act of 1976 as amended, the Public Rangelands Improvement Act of 1978, and the National Environmental Policy Act (NEPA) of 1969. These laws, along with the grazing regulations under 43 CFR 4100 and associated BLM Manual policy, authorize and govern administration of livestock grazing on public lands.

5.0 AFFECTED ENVIRONMENT

5.1 General

Precipitation in this zone of the common resource area ranges from 16-20 inches per year, with elevations from 4700-5500 feet. The average precipitation recorded at the Bisbee 2 COOP station for the 16 year data is 15.10 inches. However, the Southwest region has been in a severe drought situation beginning in 1995. Approximately 40% of moisture comes as gentle rain or snow during the winter-spring (October – April) season, originates in the north Pacific and Gulf of California, and comes as frontal storms with long duration and low intensity. The remaining 60% falls in the summer season (May – September), originates in the Gulf of Mexico, and is convective, usually brief, and intense thunderstorms. Snow is common from December – March, averaging 5-15 inches per year, but rarely lasts more than a week. May and June are the driest months. Photographs of the allotment's evaluation site are given in Appendix 11.3.

5.2 Cultural Resources

A Cultural Resource Compliance Documentation Record was completed for the Moore Canyon Allotment by BLM Archaeologist Dan McGrew in 2008. There were no cultural resources documented, except for allotment fencing.

5.3 Floodplain

The Moore Canyon Allotment is located on the southwest side of the Mule Mountains. The northern portions of the allotment contain ephemeral drainages which drain into Banning Creek (which drains into the San Pedro River on the San Pedro Riparian National Conservation Area - SPRNCA). The southern portions of the allotment contain ephemeral drainages which drain into Moore Canyon to Spring Creek, and from Little Dry Canyon and other smaller tributaries to the SPRNCA. Many of the ephemeral drainages along the east side of SPRNCA were rerouted, blocked, and/or modified by culverts by a

railroad grade which remains today, but is not used (there is an existing valid right-of-way). Monitoring results indicated gravel, litter, rock, and live basal vegetation provided 8%, 49%, 24%, and 19% cover, respectively; there was no bare ground.

5.4 Special Status Species

Conservation measures from the U.S. Fish and Wildlife Service's (FWS) Biological Opinion on the Gila District Livestock Grazing Program (BO, 2012) include: "1) Consider effects to listed species and designated critical habitat during grazing allotment evaluations. Realistic and achievable habitat elements that benefit listed species will be included when determining desired resource condition; and 2) Review, for every proposed project, the FWS county list and conduct appropriate surveys and clearances for threatened and endangered species (TES)." The Cochise County list of TES is given in Appendix 11.4. The occurrence of any listed or proposed species has not been documented. There is no designated critical habitat. However, the Moore Canyon Allotment does contain potential habitat for jaguar, ocelot, and lesser long-nosed bat, and the conservation measures from the BO for livestock grazing within the Gila District is given for each of these species in Appendix 11.5.

Jaguar and Ocelot

In 2009, an ocelot was documented in Arizona (in Cochise County) with the use of camera traps. Additionally, in 2010, an ocelot was found dead on a road near Globe, Arizona. In 2011 and 2012, an ocelot was again documented in Cochise County. In addition to the recent Arizona sightings, a number of ocelots have been documented just south of the U.S. border in Sonora, Mexico. At least four ocelots have been documented since February 2007 in the Sierra Azul, 30-35 miles southeast of Nogales; and one ocelot was documented in 2009 in the Sierra de Los Ajos, about 30 miles south of the U.S. border near Naco, Mexico. The closest U.S. documented ocelot occurrence from the Moore Canyon allotment is approximately 20 miles west of the allotment.

Recent U.S. ocelot locations are near the action area, especially since one ocelot was known to travel a significant distance (Globe, Arizona). BLM allotments that are scattered in southeastern Arizona may provide dense vegetation for the ocelot, especially for travel between mountain ranges. Some BLM lands may also provide habitat for hunting and hiding.

Jaguars have been documented since 1980 in the action area, from the Peloncillo Mountains west to the Baboquivari Mountains, in Sky Island mountain ranges, and from the International Boundary north to Interstate 10. BLM allotments are scattered in this area. Some of these areas may provide habitat for the jaguar, especially for travel between mountain ranges. Some BLM areas may also provide habitat for prey species. The closest U.S. documented jaguar occurrence from the Moore Canyon allotment is approximately 30 miles northwest of the allotment.

Conservations measures for jaguar and ocelot include minimizing effects related to predator control, providing information regarding exclusion of jaguars or ocelots to predator control, to inform lessees of the potential occurrence of jaguars and ocelots, to maintain dense, low vegetation in riparian corridors, to implement actions that improve conditions of riparian areas, and to report any observations of jaguars and ocelots.

The USFWS concurred with the determination of "may affect, not likely to adversely affect" for jaguar and ocelot (Appendix A of the BO). Excerpts on the justification from the 2012 BO for this determination are given in Appendix 11.5.

Lesser long-nosed bat

The allotment does contain agave and may provide habitat for foraging lesser long-nosed bat. In addition, a possible cave opening is present approximately 200 yards upslope from BLM lands on the allotment, and rocky outcrops may provide habitat for roosting bats. Possible roost sites on the allotment are located in cliffs and outcrop areas that are largely inaccessible to humans and livestock. During the evaluation on 29 November 2011, it was noted that good density of Palmer agave exists on the allotment, and only one agave with herbivory was observed (probably from javelina). Agave is a primary food source for lesser long-nosed bat during the agave flowering period of June – August. All bolted agave stalks appeared to have been successful in flowering, therefore, regeneration and maintenance of lesser long-nosed bat food plants is occurring on the allotment. There has been no construction or maintenance of structures or improvements on the allotment that could affect food plants.

The conservation measures from the 2012 BO for lesser long-nosed bat include that grazing related actions do not directly or indirectly affect day roost sites on BLM land and do not facilitate public access to known lesser long-nosed bat roosts. In addition, BLM will support surveys for lesser long-nosed bats, consider the bat's forage base in any allotment evaluation, conduct pre-construction surveys for paniculate agaves and saguaros that may be directly affected by construction activities and conduct surveys within 0.5 mi of any proposed water source, and will not seed/plant non-native plants on any allotments with agaves or saguaros (see 2012 BO for the list in its entirety).

The following conservation recommendation was given in the BO: 1. Support surveys for lesser long-nosed bats to facilitate better management of lesser long-nosed bats and their habitat.

The USFWS concurred with the determination of "may affect, not likely to adversely affect" for lesser long-nosed bat (Appendix A of the BO). Excerpts on the justification from the 2012 BO for this determination are given in Appendix 11.5.

Bartram stonecrop

Bartram stonecrop has been observed in the Mule Mountains near the Moore Canyon allotment. The allotment has not been inventoried for the presence of the stonecrop. Bartram stonecrop is found in rock crevices, ledges, and gravelly slopes ranging from 1,113 to 2,042 meters (m) (3,652 to 6,700 feet (ft)) in elevation in southern Arizona and Mexico. The plant is typically found in the shade of Madrean evergreen woodland overstory and under dense litter. Populations tend to be very small, typically consisting of a few individuals, and are widely scattered.

The USFWS determined that listing of the Bartram stonecrop may be warranted (August 8, 2012). For the purposes of this analysis the Bartram stonecrop shall be treated as a special status species.

BLM Sensitive Species

When BLM engages in the planning process, it shall also address BLM Sensitive Species and their habitats in land use plans and associated NEPA documents (per BLM Land Use Planning Handbook 1601-1, Appendix C, and BLM Manual 6840). Implementation-level planning should consider all site-specific methods and procedures needed to bring species and their habitats to the condition under which management under the BLM Sensitive Species policies would no longer be necessary. All Federal candidate species, proposed species, and delisted species in the five years following delisting will be conserved as BLM Sensitive Species. The Arizona Game and Fish Department's On-line Environmental Review Tool was used to determine the occurrence of any BLM Sensitive Species within five miles of the Moore Canyon Allotment (accessed 21 June 2012); these BLM Sensitive Species are included in Appendix 11.6, as well as those BLM Sensitive Species that may have potential habitat in the allotment.

BLM Sensitive Species documented on the Moore Canyon Allotment include the golden eagle, which was observed during the Rangeland Health Evaluation on 29 November 2011. Golden eagle may use the allotment for hunting and migration, but are not known to nest in the close vicinity. Dalhouse spleenwort, Arizona giant sedge, Bartram stonecrop, Texas purple spike, Great Plains narrow-mouthed toad, American peregrine falcon, cave myotis, greater western mastiff bat, and Townsend's big-eared bat have the potential to occur within the allotment, but have not been documented (Appendix 11.6).

5.5 Wetlands/Riparian

There are no true riparian areas on the Moore Canyon Allotment, although xero-riparian areas do occur within canyons and washes. However, under current BLM policy, xero-riparian areas are not evaluated under the Arizona Standard and Guidelines #2. A wetland, Pete Moore Spring, does occur within the Moore Canyon Allotment on private property.

5.6 Invasive and Non-native Species

The Rangeland Health Evaluations and monitoring conducted on the Moore Canyon Allotment documented the presence of the introduced Lehmann lovegrass (*Eragrostis lehmanniana*). Other non-native species were not noted, and invasive native woody species were within the frequency expected for the ecological site (e.g. turpentine bush at 1%).

Lehmann lovegrass was introduced from South Africa in the 1930's for soil erosion control and range restoration. The subsequent invasion of Lehmann lovegrass into native desert grasslands is of great concern to ranchers and land managers throughout the Southwestern United States, as it may displace native grasses and may reduce plant and animal diversity (Albrecht et al. 2008). Lehmann lovegrass has replaced Arizona cottontop (*Trichachne californica*), threeawn grasses (*Aristida spp.*), and grama grasses (*Bouteloua spp.*) over much of the Santa Rita Experimental Range in Arizona (Cable 1991). Several grassland bird species, including eastern meadowlark and several sparrows, will nest in Lehmann lovegrass, but it is not preferred nesting habitat and native grasses are chosen for nesting more frequently (Bock and Bock 1992).

Lehmann lovegrass is grazed by cattle, but the palatability of Lehmann lovegrass is low during the summer and it is generally lightly grazed at that time. Cattle make greater use of Lehmann lovegrass during fall, winter, and spring because the foliage remains green longer than most native grasses.

Lehmann lovegrass's ability to replace native grass species is attributed to: (1) its low palatability during summer, which results in cattle selectively grazing native grasses during the active growth period and thus

reducing their vigor; (2) its ability to produce seed stalks early in the summer, which allows it to maintain itself when it is grazed; and (3) its ability to establish new stands quickly from seed after disturbance (Cable 1991, Cox et al. 1988).

5.7 Land Health Standards

A Rangeland Health Evaluation was completed on the allotment on May 22, 2008, and a second evaluation was conducted on 29 November 2011. The USDA Natural Resources Conservation Service (NRCS) State General Soil Map was completed in 1975. The reference sheet for the Granitic Hills 16-10" p.z. was created on 17 February 2005. Both evaluations' preponderance of evidence indicated that there was a "none to slight" rating for departure from the ecological site description and ecological reference area for soil/site stability and hydrologic functions. Rills, waterflow patterns, pedestals and/or terracettes, bare ground, gullies, and litter movement were "none to slight" for departure from expected reference conditions. Rocky outcroppings and ground cover contributed to the absence of rills, gullies, and water-flow patterns. Plant community composition and distribution relative to infiltration was also "none to slight" for departure from expected reference conditions. Biotic integrity was rated "moderate to extreme" during the first evaluation, only because of the dominance of Lehmann lovegrass, which has invaded the site at lower elevations of the allotment. During the second evaluation, biotic integrity was rated "slight to moderate," because Lehmann lovegrass occurred only in trace amounts at the higher slope of the allotment.

In addition, vegetation monitoring (ground cover, pace frequency, fetch, and dry weight rank) was conducted on 7 July 2009, and four pace frequency transects, 25 quadrat placements each, were run parallel to each other, four paces apart. Data collected included ground cover (amount of surface area comprised of bare ground, perennial plant bases, litter, gravel, or rocks), plant frequency (the number of times a plant species is present within quadrats), fetch (distance from the quadrat's ground cover point to the nearest perennial plant base), and dry weight rank (plant composition on a dry weight production basis). Gravel, litter, rock, and live basal vegetation comprised 8%, 49%, 24%, and 19% of ground cover, respectively. There was no bare ground. Fetch ranged from 0-29", with a mean of 4.7". The plants with the highest frequency included Lehmann lovegrass, perennial forbs, three-awn, annual forbs, and side-oats grama at 84%, 37%, 11%, 11%, and 7%, respectively. Plants with the highest dry weight composition included Lehmann lovegrass, perennial forbs, agave, three-awn, and side-oats grama with 65%, 11%, 7%, 6%, and 4%, respectively. Monitoring data from the rangeland health assessment is available at the Tucson Field Office.

Utilization monitoring was conducted on 29 November 2011. Species chosen for monitoring were listed in the ecological site description as plant preferences for cattle. Sideoats grama, kidneywood, and bullgrass were chosen as the three species for monitoring because the other listed species either were not present at the BLM evaluation site, or had no utilization (e.g. Emery oak). A total of 100 sideoats grama, 50 kidneywood, and 100 bullgrass plants were monitored for utilization. Average utilization for sideoats grama, kidneywood, and bullgrass was 3%, 7%, and 5%, respectively. Utilization was below 10% for all species. Utilization on kidneywood and bullgrass was probably from deer (pellet groups were observed) or other wildlife, as no cattle sign were observed on the slope. Some utilization of sideoats grama may have been from cattle, as some utilization on sideoats grama was observed in areas with cattle sign.

Actual use was reported by the lessee in 2009, 2010, 2011, and 2012 as five head of cattle year-long (96 AUMs).

5.8 Migratory Birds

Per the 2010 Memorandum of Understanding (MOU, BLM WO-IB-2010-110) between the BLM and FWS, the BLM shall, at the project level, evaluate the effects of the BLM's actions on migratory birds during the NEPA process, focusing first on species of concern, priority habitats, and key risk factors (MOU VII.F). The Moore Canyon Allotment contains land within middle elevations of the Madrean Basin and Range province, in the Sierra Madre Occidental Bird Conservation Region (BCR 34). Appendix 7 lists those migratory bird species of conservation concern from BCR 34.

The effects of the BLM's actions on migratory birds during the NEPA process shall be evaluated, focusing first on these species of concern listed above in their respective priority habitats (MOU VII.F). Birds of conservation concern within BCR 34 that could occur within the habitat of the Mule Mountains and the Moore Canyon Allotment include peregrine falcon. Peregrine falcon may use the Moore Canyon Allotment during hunting and migration. Peregrine falcons specialize on avian prey, which would be available in the area, and the allotment and nearby areas contain numerous cliff faces and rocky outcroppings that would provide roosts for peregrines.

Other avian species, not included in birds of conservation concern, that have been observed on the Moore Canyon Allotment on 22 May 2008 include acorn woodpecker and canyon wren. During the rangeland health assessment on 29 November 2011, one adult and one juvenile golden eagle were observed soaring above the allotment, and a sharp-shinned hawk, Chihuahuan raven, common flicker, house finch, and cactus wren were also observed.

5.9 Recreation

Recreation on the allotment is limited because of the lack of public access and rugged terrain. The allotment may be reached from Hwy. 90 to the north of the Moore Canyon Allotment, or from the south from Hwy. 92. However, both routes would require ingress through private and/or Arizona State Trust Land, for which permission would likely be required. Arizona State Trust Land requires a recreational permit, unless the user is actively hunting with a valid Arizona Game and Fish Department license. For these reasons, recreational use of the Moore Canyon Allotment is likely very low. Recreationists who do use the area are probably hikers, hunters, equestrians, and birders.

5.10 Wildlife

The Desired Plant Community (DPC) for a site is defined as the one that has been identified through a management plan to best meet the plan's objectives for the site, of several plant communities that may occupy a site, and must protect the site at a minimum. The plant communities found on an ecological site are naturally variable. Existing communities are the result of the combination of historical and recent uses and natural events. Composition and production will vary with yearly conditions, location, aspect, and natural variability of the soils. The Historic Climax Plant Community (HCPC) represents the natural potential plant communities found on relatively undisturbed sites.

The ecological site description at Moore Canyon allotment is Granitic Hills 16-20" p.z. (site ID R041XA102AZ) in the Southeastern Arizona Basin and Range Major Land Resource Area. The HCPC consists of 25-40% canopy of mid-grasses, 5-15% canopy of Arizona white oak (*Quercus arizonica*),

Emory oak (*Quercus emoryi*), or Mexican blue oak (*Quercus oblongifolia*), 1-10% canopy of yucca-like shrubs, 5-10% canopy of other shrubs and succulents, and other warm and cool season grasses. Oaks were present at higher elevations on the allotment.

There are no specific objectives for wildlife listed for this allotment in the EAG EIS, or Safford District Resource Management Plan (RMP) and EIS. In the EAG EIS, it was expected that wildlife habitat would improve on the ten allotments with management plans, and remain static or continue along present trend on 326 allotments. Mule deer would mainly be the affected big game species and would benefit from increased forage production. Small game and nongame would also benefit from increased forage and cover. The objectives from the Safford District RMP included management of upland vegetation to restore and maintain plant communities for wildlife, watershed condition, and livestock.

The land health evaluation on the Moore Canyon Allotment indicated 40% canopy of native perennial grasses, 76-100% canopy of exotic perennial grasses, 0-1% canopy of perennial forbs, 2-5% canopy cover of shrubs, 10% canopy cover of succulents, and 0-1% biological crust. Multiple canopy cover classes may be recorded, therefore, total plant canopy may exceed 100%. The multiple canopy cover classes and vegetation species present on the allotment provide niches for various wildlife species.

Common wildlife species found in the area include Coues whitetail and mule deer, javelina, coyote, gray fox, skunk, cottontail rabbit, small rodents, reptiles and amphibians, Mearn's quail, mourning dove, and songbirds. The ecological site description states that the site provides excellent habitat for Coues whitetail deer and javelina, with natural water areas occurring infrequently as springs or seeps (only the Pete Moore Spring is known to be present on the allotment). Preferred plant species for deer that are present on the allotment include agave, false mesquite, kidneywood, and oaks. Mearn's quail are listed for the ecological site, and their plant preferences include mimosa and oak species which are present on the allotment. Deer pellet groups were observed at the evaluation site on 29 November 2011, as well as soil disturbance from rooting javelina. A Sonoran whipsnake were observed in Moore Canyon near BLM lands on the allotment on 22 May 2008.

5.11 Vegetation

The Natural Resource Conservation Service (NRCS) characterizes land resource regions by particular patterns of soils, climate, water resources, and land uses. These large regions are then grouped into Major Land Resource Areas (MLRAs). MLRAs are then broken down further into ecological sites, which are associated units of soil and vegetation with quantifiable characteristics. The BLM portion of the Moore Canyon Allotment is located in MLRA 041-Southeastern Arizona Basin and Range. Ecological Sites within this MLRA include Granitic Hills at the land health evaluation site. This Ecological Site occurs in the middle elevations of the Madrean Basin and Range province in southeastern Arizona on hill-slopes, ridge-tops, and rolling pediments. Slope aspect is site differentiating at elevations near common resource area boundaries. This ecological site receives 16 to 20 inches of precipitation per year and elevation ranges from 4700 to 5500 feet. Ecological Site Guides were last updated in 2005 for this site.

The NRCS Ecological Site Description for this site is a diverse mixture of warm and cool season perennial grasses, ferns, forbs, succulents, and shrubs. A tree canopy of 5-15% Mexican live-oak species occurs on the site, giving it a savannah appearance. Most perennial herbaceous species are well dispersed throughout the plant community.

Trees present in the current plant community include oak (*Quercus spp.*), and juniper (*Juniperus spp.*). Shrubs present include sumac (*Rhus microphylla*, *R. trilobata*, and *R.virens*), kidneywood (*Eysenhardtia polystachya*), mintbush lippia (*Aloysia wrightii*), turpentine bush (*Ericameria laricifolia*), prairie acacia (*Acacia angustissima*), manzanita (*Arctostaphylos sp.*), coral bean (*Erythrina flabelliformis*), yerba de pasmo (*Baccharis pteronioides*), California brickellbush (*Brickellia californica*), and ocotillo (*Fouquierria splendens*). Succulents include sotol (*Dasylirion wheeleri*), Palmer agave (*Agave palmeri*), tulip pricklypear (*Opuntia phaeacantha*), and cane cholla (*Cylindopuntia sp.*).

Native perennial grasses include hairy grama (*Bouteloua hirsuta),* sideoats grama (*Bouteloua curtipendula*), tanglehead (*Heteropogon contortus*), threeawn (*Aristida sp.*), needlegrass (*Stipa sp.*), bullgrass (*Muhlenbergia emersleyi*), wolfstail (*Lycurus phleoides*), and cane beardgrass (*Bothriocholoa barbinodis*). Lehmann lovegrass (*Eragrostis lehmanniana*) occurs in scattered areas.

Some of the forbs present on the allotment include shrubby buckwheat (*Eriogonum wrightii*), bursage (*Ambrosia sp.*), dayflower (*Commelina sp.*), miner's lettuce (*Claytonia perfoliata*), and silverleaf nightshade (*Solanum elaeagnifolium*).

5.12 Grazing Program

The Moore Canyon Allotment is in the maintain category, and is authorized for eight cattle year-long (96 AUMs). Range improvements on the allotment include a two-mile boundary fence and a ¼-mile interior pasture fence. Livestock water is provided on the private property on the south side of the allotment.

6.0 ENVIRONMENTAL EFFECTS

This section describes the expected impacts of the alternatives. Appendix 8 summarizes the resources reviewed for this project. Resources that have been identified by the BLM Tucson Field Office interdisciplinary NEPA team as present and potentially affected are discussed further below. Those resources that are not affected (as identified by the BLM interdisciplinary team), and will not be discussed in detail include air quality, Areas of Critical Environmental Concern, environmental justice, prime and unique farmland, hazardous or solid waste, Native American religious concerns, Wild and Scenic Rivers, Wilderness Areas and wilderness character, national energy policy, lands/realty, access/transportation, visual resources, mineral resources, and water rights.

6.1 Cultural Resources

6.1.1 Alternative 1 – Proposed Action to Renew Grazing Lease

An existing data review was conducted, and it was determined that no historic properties were affected by the ten year grazing renewal for the allotment. Treatment recommendations included standard stipulations, which are included in the Terms and Conditions for the proposed action of renewing the grazing lease. The BLM TFO Archaeologist reviewed the documentation record during 2012, and no modifications were made.

6.1.2 Alternative 2 – No Grazing

The no grazing alternative would not have livestock-related impacts to known or undiscovered cultural resources on the Moore Canyon Allotment. However, private property could become cross-fenced in the future under this alternative, and it is unknown whether previously undiscovered cultural properties may

exist and become damaged through construction activities, such as new fencing. There would be no cultural resource inventory of private land.

6.1.3 Alternative 3 – No Action

The continuation of the existing terms and conditions under the current lease would likely have no further impacts to cultural resources than the effects from the proposed action to renew the grazing lease.

6.1.4 Alternative 4 – Reduce the Stocking Rate

Reducing the stocking rate would likely have no livestock-related impacts to known or unknown cultural resources on the Moore Canyon Allotment.

6.1.5 Alternative 5 – Increase the Stocking Rate

Increasing the stocking rate may have livestock-related impacts only to undiscovered cultural resources on the Moore Canyon Allotment. It is unknown whether previously undiscovered cultural properties may exist and become damaged through increased cattle use and subsequent effects (e.g. trailing, cross fence construction, range improvements, etc.).

6.2 Floodplains

6.2.1 Alternative 1 – Proposed Action to Renew Grazing Lease

The rangeland health evaluations and monitoring (utilization was below 10% for all species) indicate that sufficient residual vegetation is present, which should protect floodplains from flood events. The current low utilization prevents vegetation modification that would increase runoff, erosion, and flooding. The very gravelly to extremely gravelly soil types in the Budlamp-Woodcutter complex, of which the Moore Canyon allotment is comprised, are not easily displaced by livestock except on well used trails. Erosion would be limited because the surface gravel and rock fragments, litter, and live vegetation help armor the soil surface from raindrop impact and protect the soil surface from detachment and transport by water runoff. Residual vegetation, as determined through utilization monitoring, should be adequate to protect soils from wind and water erosion. Some compaction may occur on well used trails, but compaction off-trails should not change the soil's capacity for absorption and infiltration of water. Plant canopies of plants of all forms and sizes help absorb and dissipate raindrop impact, and also help promote water infiltration, reducing runoff. Achieving and maintaining standards for rangeland health would ensure that soils are maintained in healthy functioning condition.

6.2.2 Alternative 2 – No Grazing

Potential for impacts due to grazing on public land would be eliminated. Segments of xero-riparian and ephemeral washes on the private and state land may receive increased livestock use if the BLM land would become fenced out. The approximately 5.5 miles of new fencing would require access to boundary lines by horseback or all-terrain vehicle. This may result in formation of tracks and/or trails which may cause erosion.

6.2.3 Alternative 3 – No Action

The continuation of the existing terms and conditions under the current lease would likely have no further impacts to floodplains than the effects from the proposed action to renew the grazing lease.

6.2.4 Alternative 4 – Reduce the Stocking Rate

Segments of xero-riparian and ephemeral washes on the private and state land may receive decreased livestock use with fewer cattle, resulting in lower utilization and higher amounts of vegetative cover to withstand flood events.

6.2.5 Alternative 5 – Increase the Stocking Rate

Segments of xero-riparian and ephemeral washes on the private and state land may receive increased livestock use with more cattle, resulting in higher utilization rates and lower amounts of vegetative cover to withstand flood events.

6.3 Special Status Species

6.3.1 Alternative 1 - Proposed Action to Renew Grazing Lease

Jaguar and Ocelot

This grazing lease renewal for the Moore Canyon Allotment is managed to meet the 1997 AZ S & Gs, and does not include authorization for any predator-control activities, clearing of habitat, destruction of riparian areas, or fragmentation of habitat. Stipulations in the Terms and Conditions of the lease renewal have been added to inform the lessee associated with the livestock grazing program to not subject jaguars or ocelots to any predator control activities, and to inform the lessee of the Moore Canyon Allotment of the potential occurrence of jaguars or ocelots in their allotment, the status of the jaguar and ocelot, and that take of jaguar or ocelot, including harm and harassment, is prohibited under the Act and could result in prosecution.

Lesser long-nosed bat

The allotment does contain agave and may provide habitat for foraging lesser long-nosed bat. In addition, a possible cave opening is present approximately 200 yards upslope from BLM lands on the allotment, and rocky outcrops may provide habitat for roosting bats. Possible roost sites on the allotment are located in cliffs and outcrop areas that are largely inaccessible. During the evaluation on 29 November 2011, it was noted that good density of Palmer agave exists on the allotment, and only one agave with herbivory was observed. Agave is a primary food source for lesser long-nosed bat during the agave flowering period of June through August. All bolted agave stalks appeared to have been successful in flowering, therefore, regeneration and maintenance of lesser long-nosed bat food plants is occurring on the allotment. There has been no construction or maintenance of structures or improvements on the allotment that could affect food plants. In addition, this grazing lease renewal for the Moore Canyon Allotment does not include authorization for any road construction, clearing of habitat, destruction of riparian areas, or fragmentation of habitat and is, therefore, in compliance with the BO. If funding were to become available, it would be noteworthy to document any lesser long-nosed bat or roosts on or near the allotment.

Bartram stonecrop

Bartram stonecrop has been observed in the Mule Mountains near the Moore Canyon allotment. The allotment has not been inventoried for the presence of the stonecrop. Habitat destruction caused by livestock grazing poses a rangewide threat to the survival of Bartram stonecrop. In addition to habitat destruction resulting from grazing, individual plants can be trampled by cattle (Arizona Game and Fish Department 2001).). The species is known at 12 locations in Arizona, including the Baboquivari, Chiricahua, Dragoon, Mule, Patagonia, Rincon, Santa Rita, and Tumacacori mountains in Cochise, Pima, and Santa Cruz Counties. It is also found in one location in Mexico. Because there are so few populations of this species, and because populations consist of few individuals, grazing poses a significant threat to the stonecrop. Most, if not all, populations of this species occur in areas of cattle grazing (Phillips et al. 1982).

BLM Sensitive Species

Effects of livestock grazing to golden eagle are probably primarily through effects to prey cover and food. Golden eagles prey primarily on mammals, although birds, reptiles, fish, and carrion also are eaten (Bent 1961, Brown 1992, Olendorff 1976). The black-tailed jackrabbit (*Lepus californicus*) is a key prey

species for golden eagle in the southwest (Boeker and Ray 1971), and eagle reproductive rates are known to fluctuate with jackrabbit population cycles (Kochert 1980, Smith and Murphy 1971). The Moore Canyon Allotment does not contain potential jackrabbit habitat, however, cottontail and other small mammals do likely occur on the allotment. Livestock grazing may impact the amount of cover and food available for these small mammals, and in turn affect the amount and/or kind of prey available to golden eagle.

The Moore Canyon Allotment may also contain cliffs, crevices, and caves as roosting sites for insectivorous bats, and contains habitat for their prey. Effects of livestock grazing to bats are probably primarily through effects to insect diversity and abundance, but roost sites are unlikely to be impacted by livestock due to the inaccessibility of the terrain. Livestock grazing may impact plant-eating insects through effects to the structure and species assemblage of vegetation; however, not all species react in similar ways and there may be winners and losers from different grazing regimes (Littlewood et al. 2011). Debano (2006) found overall abundance of insects was lower on grazed grasslands, and certain insect orders appeared to be negatively affected by livestock grazing. This study found that beetles were less rich, flies were less diverse, and Hymenoptera were less rich and diverse on grazed sites. Species composition of vegetation-associated insect communities may also differ and be correlated with percent vegetation cover and number of shrubs (Debano 2006). Other studies have found that intense, short duration grazing by livestock during late summer resulted in reduced species richness in the grass-herb vegetation layer but had no effect on insect species richness on snakeweed or mesquite shrubs; livestock grazing in winter had no effect on insect species richness on any of the vegetation sampled (Forbes et al. 2005). Thus, livestock grazing on the Moore Canyon Allotment may affect certain insect species more than others, and this in turn may affect bat species differently.

6.3.2 Alternative 2 – No Grazing

Jaguar and Ocelot

The no grazing alternative would result in no direct impacts from the livestock grazing program to jaguar and ocelot. BLM lands in the allotment would be fenced out. Subsequently, decreased utilization and increased cover may occur in the BLM lands on the allotment; increased use by livestock may occur on the private and state lands of the allotment. A decrease in utilization on BLM land may result in effects to the jaguar or ocelot's prey base through increased recruitment of prey through improved cover and/or food resources. Improved vegetative cover may result in increased effectiveness of prey concealment. New fencing may result in additional disturbance and/or fragmentation of habitat through the use of increased human activity to construct and maintain fences (e.g. access by horseback or all-terrain vehicle, formation of vehicle tracks or trails along fencelines).

Lesser long-nosed bat

The no grazing alternative would result in no direct impacts from the livestock grazing program to lesser long-nosed bat. BLM lands in the allotment would be fenced out. Decreased utilization of agave by livestock may occur on the BLM lands on the allotment; increased use of agave by livestock may occur on the private and state lands of the allotment. New fencing may result in additional disturbance and/or fragmentation of habitat through the use of increased human activity to construct and maintain fences. However, a stipulation regarding avoidance of agave during range improvement activities (e.g. fencing) would be required.

Bartram stonecrop

The no grazing alternative would result in no direct impacts from the livestock grazing program to Bartram stonecrop. BLM lands in the allotment would be fenced out. Subsequently, decreased utilization and increased cover may occur in the BLM lands on the allotment; increased use by livestock may occur on the private and state lands of the allotment. A decrease in utilization on BLM land may

result in an increase in viable habitat for populations of Bartram stonecrop.

BLM Sensitive Species
The no grazing alternative would result in indirect effects to BLM Sensitive Species such as golden eagle and bats. BLM lands in the allotment would be fenced out. Decreased utilization and increased cover would likely occur on the BLM land, which may affect BLM Sensitive Species indirectly through vegetative cover, richness, and structure of plants used by prey species. New fencing may result in additional disturbance and/or fragmentation of habitat for BLM Sensitive Species and/or their prey base.

6.3.3 Alternative 3 – No Action

The continuation of the existing terms and conditions under the current lease would likely have no further impacts to special status species than the effects from the proposed action to renew the grazing lease

6.3.4 Alternative 4 – Reduce the Stocking Rate

Jaguar and ocelot
Increased water quantity may be present with fewer cattle utilizing the available water, although it is unknown whether water improvements would continue to be maintained by the lessee with a reduced stocking rate. Improved vegetative cover over the allotment may result in increased effectiveness of movement and concealment for both predator and prey. Prey species, richness, abundance and/or availability may change with increased vegetative cover.

Lesser long-nosed bat
Reducing the stocking rate may in turn affect utilization of agave by livestock, thereby increasing the amount of flowering agave for foraging lesser long-nosed bat.

Bartram stonecrop
Reducing the stocking rate may affect utilization thereby increasing the amount of viable habitat for populations of Bartram stonecrop.

BLM Sensitive Species
Reducing the stocking rate may affect species richness, abundance, and availability of prey species for golden eagle. Increasing vegetative cover may affect species, richness, abundance and/or availability of prey for insectivorous bats.

6.3.5 Alternative 5 – Increase the Stocking Rate

Jaguar and ocelot
Decreased water quantity may be present with more cattle utilizing the available water. Greater utilization and decreased vegetative cover over the allotment may result in decreased effectiveness of movement and concealment for both predator and prey. Prey species, richness, abundance and/or availability may change with decreased vegetative cover.

Lesser long-nosed bat
Increasing the stocking rate may in turn increase utilization of agave by livestock, thereby decreasing the amount of flowering agave available for foraging lesser long-nosed bat.

Bartram stonecrop
Increasing the stocking rate may affect utilization thereby decreasing the amount of viable habitat for populations of Bartram stonecrop.

BLM Sensitive Species
Increasing the stocking rate may affect species richness, abundance, and availability of prey species for

golden eagle. Decreasing vegetative cover may affect species, richness, abundance and/or availability of prey for insectivorous bats.

6.4 Wetlands/Riparian

6.4.1 Alternative 1 - Proposed Action to Renew Grazing Lease

Cattle may congregate around the spring, resulting in higher utilization on nearby upland vegetation compared to the remainder of the allotment. Soil compaction and accelerated erosion within the canyons and washes is not anticipated due to the shallow decomposed granite substrate. High flows from runoff may move sediment along drainages; however, these flows are naturally occurring in desert ecosystems and the current low utilization levels should allow vegetation to capture and hold sediment.

6.4.2 Alternative 2 – No Grazing

The Pete Moore Spring is on private land and would likely remain grazed, although BLM land would not. The decision to continue to graze the spring would be outside of BLM's purview.

6.4.3 Alternative 3 – No Action

The continuation of the existing terms and conditions under the current lease would likely have no further impacts to wetland/riparian areas than the effects from the proposed action to renew the grazing lease.

6.4.4 Alternative 4 – Reduce the Stocking Rate

The Pete Moore Spring is on private land and would likely remain grazed, although BLM land would not. The decision to continue to graze the spring would be outside of BLM's purview.

6.4.5 Alternative 5 – Increase the Stocking Rate

The Pete Moore Spring is on private land and would likely remain grazed at the higher stocking rate. Increasing the stocking rate may allow loss of vegetative cover at the spring and surrounding area through increased utilization and trampling.

6.5 Invasive and Non-native Species

6.5.1 Alternative 1 - Proposed Action to Renew Grazing Lease

The proposed action to renew the grazing lease may have impacts to invasive and non-native species through the actions of cattle and from human activity associated with range improvements or cattle movement and holding. Areas of cattle congregation may result in soil disturbance and decrease in plant cover, resulting in conditions that are conducive to invasive and non-native species. Invasive and non-native plant seeds may attach to cattle, transporting these seeds to other locations. Cattle that are brought from other locations, or that are fed, may pass invasive and non-native seeds through their digestive tract and deposit the seeds in new locations. Range improvements or activities that cause human travel may cause soil disturbance and create conditions favorable for invasive species. However, no range improvements are planned at this time and cattle feeding is not authorized under this lease.

Decreased plant cover and increased soil disturbance from cattle grazing and trampling may allow further spread of Lehmann lovegrass. Lehmann lovegrass relative abundance may increase with time and as grazing intensity increases, but lovegrass density and relative abundance did not differ between adjacent ungrazed and grazed areas on the nearby Santa Rita Experimental Range (McClaran and Anable 1992). This study also indicated that livestock grazing was not necessary for Lehmann lovegrass to spread, but rather lovegrass relative abundance was greater at higher grazing intensities. Low utilization and high existing plant cover on the Moore Canyon Allotment may reduce the spread of Lehmann lovegrass.

Monitoring indicates that plant cover is high, and utilization is low, allowing adequate soil stabilization

and competition by existing plants to prevent spread of invasive plant species. In addition, planned monitoring in the proposed action should allow the documentation of any invasive or non-native species that are present or become established.

6.5.2 Alternative 2 – No Grazing

The no grazing alternative for BLM land would allow grazing on state and private land to continue. Lehmann lovegrass is present on the allotment, including the BLM land. Little is known regarding the effects to invasive species, once cattle grazing is removed (see Mashiri et al. 2008).

6.5.3 Alternative 3 – No Action

The continuation of the existing terms and conditions under the current lease would likely have no further impacts to invasive and non-native species than the effects from the proposed action to renew the grazing lease.

6.5.4 Alternative 4 – Reduce the Stocking Rate

Reducing the stocking rate would allow grazing on BLM, state, and private land to continue. Lehmann lovegrass is present on the allotment, including the BLM land. Little is known regarding the effects to invasive species, once cattle grazing is removed (see Mashiri et al. 2008).

6.5.5 Alternative 5 – Increase the Stocking Rate

Increasing the stocking rate would allow grazing on BLM, state, and private land to continue at a higher rate. Lehmann lovegrass is present on the allotment, including the BLM land. The ability of Lehmann lovegrass to compete with native grasses may allow the expansion of this species in the allotment.

6.6 Land Health Standards

6.6.1 Alternative 1 - Proposed Action to Renew Grazing Lease

The rangeland health standards for the allotment are currently being met for biotic integrity, hydrologic function, and soil/site stability, as determined through evaluations and monitoring.

6.6.2 Alternative 2 – No Grazing

Rangeland Health Standards would not be considered for BLM lands with the no grazing alternative.

6.6.3 Alternative 3 – No Action

The continuation of the existing terms and conditions under the current lease would likely have no further impacts to land health standards than the effects from the proposed action to renew the grazing lease.

6.6.4 Alternative 4 - Reduce the Stocking Rate

Reducing the stocking rate from eight cattle (96 AUMs) should allow rangeland health standards to be met. The rangeland health standards for the allotment are currently being met for biotic integrity, hydrologic function, and soil/site stability, as determined through evaluations and monitoring, and would continue to be met through a reduction in the stocking rate.

6.6.5 Alternative 5 – Increase the Stocking Rate

Increasing the stocking rate from eight cattle (96 AUMs) may not allow rangeland health standards to be met. The rangeland health standards for the allotment are currently being met for biotic integrity, hydrologic function, and soil/site stability, as determined through evaluations and monitoring, but may not continue to be met through an increase in the stocking rate. Additional monitoring would be required to assess the effect of increasing the stocking rate on vegetation attributes.

6.7 Migratory Birds

6.7.1 Alternative 1 - Proposed Action to Renew Grazing Lease

Livestock grazing impacts on birds vary with the type of livestock operation, region of the country, and other factors, with responses of individual bird species often habitat and species-specific (Bock 2002). Moderate levels of grazing may increase avian diversity at a local scale, because the habitat needs of many species will be met (Nelson et al. 1997). However, a uniform livestock management strategy may depress avian diversity because of resulting homogenous, wide-spread habitat. Livestock grazing may affect the amount of available seeds produced, or the amount of vertebrates or invertebrates available for those avian species with these diets. In addition, direct effects of livestock grazing may include trampling of nests (Jensen et al. 1990) and increased predation (Gregg et al. 1994). For the Moore Canyon Allotment and the bird species observed there, trampling and/ or increased predation of nests may not be a serious issue because of the low utilization level of cover plants. It is not known how livestock grazing may affect the avian food sources on the allotment but, due to the low utilization level, the allotment likely provides adequate production and habitat for all varieties of food and prey.

6.7.2 Alternative 2 – No Grazing

The no grazing alternative may result in decreased utilization and increased vegetative cover on BLM land. However, increased utilization and decreased cover may occur on the state and private land of the allotment once BLM land became fenced out (outside of BLM's authority). Decreased utilization would have both direct effects to nesting birds through increased cover available for nest concealment, and indirectly through a possible decrease in predation and changes in prey species, richness, relative abundance, and/or availability. New fences along BLM boundaries would require some brushing; however, a stipulation to avoid the nesting season during vegetation treatment would be required.

6.7.3 Alternative 3 – No Action

The continuation of the existing terms and conditions under the current lease would likely have no further impacts to migratory birds than the effects from the proposed action to renew the grazing lease.

6.7.4 Alternative 4 – Reduce the Stocking Rate

Reducing the stocking rate may have beneficial effects to migratory birds through improvement of the increased vegetation cover and reduced trampling. Improved vegetative cover may result in increased effectiveness of movement and concealment, and improved nesting cover.

6.7.5 Alternative 5 – Increase the Stocking Rate

Increasing the stocking rate may have effects to migratory birds though decreased vegetation cover and increased trampling. Increased utilization by livestock with subsequent decreased vegetative cover may result in a loss of effectiveness in movement and concealment, and nesting cover.

6.8 Recreation

6.8.1 Alternative 1 - Proposed Action to Renew Grazing Lease

Renewal of the grazing lease would allow the presence of eight cattle (96 AUMs) on the allotment, and may affect the quality of the recreational experience to the user. Some recreationists may enjoy the presence of cattle, while others may not. It would be difficult to assess the general consensus on the quality of the recreational experience on the Moore Canyon Allotment, as there are no permit or registration requirements for the allotment's recreational use.

6.8.2 Alternative 2 – No Grazing

The no grazing alternative may enhance some recreationists' experience on the BLM portion of the

allotment where livestock would not be visible, although some recreationists may enjoy the presence of cattle. Tracks and trails created by approximately 5.5 miles of fence construction may allow easier access and navigation along property boundary lines.

6.8.3 Alternative 3 – No Action

The continuation of the existing terms and conditions under the current lease would likely have no further impacts to recreation than the effects from the proposed action to renew the grazing lease.

6.8.4 Alternative 4 – Reduce the Stocking Rate

Recreational use of the Moore Canyon Allotment is likely very low. Recreationists who do use the area are probably hikers, hunters, equestrians, and birders. Reducing the stocking rate would allow the presence of fewer than eight cattle on the allotment, and may affect the quality of the recreational experience to the user. Some recreationists may enjoy the presence of cattle, while others may not. It would be difficult to assess the general consensus on the quality of the recreational experience on the Moore Canyon Allotment, as there are no permit or registration requirements for the allotment's recreational use.

6.8.5 Alternative 5 – Increase the Stocking Rate

Recreational use of the Moore Canyon Allotment is likely very low. Recreationists who do use the area are probably hikers, hunters, equestrians, and birders. Increasing the stocking rate would allow the presence of more than eight cattle on the allotment, and may affect the quality of the recreational experience to the user. Some recreationists may enjoy the presence of cattle, while others may not. It would be difficult to assess the general consensus on the quality of the recreational experience on the Moore Canyon Allotment, as there are no permit or registration requirements for the allotment's recreational use.

6.9 Wildlife

6.9.1 Alternative 1 - Proposed Action to Renew Grazing Lease

Livestock grazing may impact wildlife through competition for water, food, and/or cover. Increased predation through lack of cover may also occur. Cattle may compete directly with browsers, such as mule deer, especially in the spring when new growth is limited. However, cattle may also facilitate vegetation use by wildlife by removing coarse material from plants and allowing wildlife to utilize a more nutritious part of the plant. Heavier use on grass species near water developments and areas of terrain favorable to cattle movement may cause an increase in the proportion of forbs as these annuals invade the site. These forbs may be preferred by deer, however, mule deer may shift their habitat use in response to livestock grazing (Lott et al. 1991), and may decline when cattle are introduced (Wallace and Krausman 1987).

Bird and rodent species which forage on grass seeds as a large component of their diet may experience negative impacts if livestock grazing does not allow for enough plants to complete their life cycle and produce seed. Changes in vertical structure of vegetation can impact ground nesting birds, rodents, and reptile species by reducing cover needed for protection from weather and predators. Deer may be affected through a decrease in recruitment by loss of vertical structure within fawning areas. A reduction in cover may favor predator species that hunt by sight, and potentially improve their hunting success.

Fencing within an allotment may impact ungulate movement and even cause direct mortality. Fences, if not built to BLM specifications for wildlife compatible fencing, may promote habitat fragmentation and lead to the loss or decreased use of habitat. Fences have also been known to cause direct mortality to ungulates (Harrington and Conover 2006) and flying birds, particularly raptors (Gillihan 2000). A stipulation will be added for range improvements that all new fencing will be built to BLM specifications for wildlife-friendly fencing.

Livestock grazing may provide an additional food source for large predators, such as mountain lions. The ability to utilize livestock may maintain predator numbers when natural factors, such as drought and natural prey populations, may have led to predator declines. Suppression of large predators for livestock protection may lead to an increase in smaller predators, which may have been reduced by direct competition and predation from larger predators.

Wildlife populations may also be impacted from livestock grazing activities through human disturbance associated with access and management of range improvements (e.g. fencing) on the allotment. Vehicle access may fragment habitat, and result in accelerated rates of erosion and loss of vegetative resources. Positive experiences for recreational users for consumptive and non-consumptive wildlife use may also occur with any allotment access routes.

Ungulates may utilize those areas where provided water under a livestock grazing program. This utilization may impact the vegetative community as plant species, richness, abundance, and availability changes with grazing pressure. Smaller species, such as birds and bats, may also benefit from increased availability of water and from an increase in insects associated with the water. Mortality may occur when wildlife enter cattle troughs for water and are unable to escape (Craig and Powers 1975, Enderson 1964). Therefore, all drinking troughs should be installed with escape ramps that intercept the line of travel along the tank edge (Sherrets 1989). The requirement for wildlife escape ramps will be added as a stipulation in the lease renewal.

6.9.2 Alternative 2 – No Grazing

The no grazing alternative may allow less competition between wildlife and livestock for water, food, and cover for the BLM lands within the allotment. Decreased plant utilization by livestock may result in more or different available plant food sources, a change in prey species, richness, relative abundance, or availability, and/or improved cover for wildlife. However, increased utilization and decreased cover may occur on the state and private land of the allotment once BLM land became fenced out (outside of BLM's authority).

6.9.3 Alternative 3 – No Action

The continuation of the existing terms and conditions under the current lease would likely have no further impacts to wildlife than the effects from the proposed action to renew the grazing lease.

6.9.4 Alternative 4 – Reduce the Stocking Rate

Reducing the stocking rate may allow less competition between wildlife and livestock for water, as more available water would be present for wildlife. However, it is unknown whether the lessee would continue to maintain watering areas with a reduction in the stocking rate. Improved vegetative cover with decreased utilization by livestock over the whole of the allotment may result in increased effectiveness of movement and concealment, and changes in species, richness, relative abundance, or availability of prey for wildlife.

6.9.5 Alternative 5 – Increase the Stocking Rate

Increasing the stocking rate may allow more competition between wildlife and livestock for water, as less available water would be present for wildlife. Less vegetative cover with increased utilization by livestock over the whole of the allotment may result in a loss in effectiveness of movement and concealment, and changes in species, richness, relative abundance, or availability of prey for wildlife.

6.10 Vegetation

6.10.1 Alternative 1 - Proposed Action to Renew Grazing Lease

A forage utilization objective of 40% has been shown to benefit plant production and resilience (Valentine 1990, Van Poollen, et al. 1979). Holechek et al. (2004), recommends that grazing intensity in areas of the southwest where annual precipitation is less than 12 inches should be between 25% and 40%. The current low utilization limits (less than 10%) on the Moore Canyon Allotment provides a sustainable forage base for livestock grazing consistent with other multiple uses.

6.10.2 Alternative 2 – No Grazing

Elimination of grazing would allow upland vegetation to grow, set seed, build up carbohydrate stores, build root systems, become established, and spread unrestricted when weather conditions permit. New fences along BLM boundaries would require some pruning and removal of vegetation.

6.10.3 Alternative 3 – No Action

The continuation of the existing terms and conditions under the current lease would likely have no further impacts to vegetation than the effects from the proposed action to renew the grazing lease.

6.10.4 Alternative 4 – Reduce the Stocking Rate

A reduction in the stocking rate may allow a decrease in livestock utilization and a subsequent change in vegetative cover, structure, and/or species. The current low utilization (10%) would likely be even lower with a reduction in the stocking rate, and would provide a sustainable forage base for livestock grazing consistent with other multiple uses. Additional monitoring of vegetation attributes would be required to assess a reduction in the stocking rate.

6.10.5 Alternative 5 – Increase the Stocking Rate

An increase in the stocking rate may allow livestock utilization to intensify, with a subsequent change in vegetative cover, structure, and/or species. The current low utilization (10%) would likely be higher with an increase in the stocking rate, and may not provide a sustainable forage base for livestock grazing consistent with other multiple uses. Additional monitoring of vegetation attributes would be required to assess an increase in the stocking rate to determine whether this alternative would meet the AZ S & Gs (1997).

6.11 Grazing Program

6.11.1 Alternative 1 - Proposed Action to Renew Grazing Lease

The proposed renewal of the grazing lease with Terms and Conditions allows the grazing program to continue on the Moore Canyon Allotment in concert with the multiple use and sustainability mandates of the BLM.

6.11.2 Alternative 2 – No Grazing

No grazing would be authorized on public land and the grazing program for this allotment would no longer be under the BLM's authority.

6.11.3 Alternative 3 – No Action

The Moore Canyon Allotment is designated as available for livestock grazing under the EAG EIS, therefore, this alternative is not viable in order to comply with Title 43 CFR § 4130.2(a) which states, "Grazing permits or leases shall be issued to qualified applicants to authorize use on the public lands and other lands under the administration of the Bureau of Land Management that are designated as available for livestock grazing through land use plans." The continuation of the existing terms and conditions under the current lease, without renewal of the lease, would result in an allotment with an expired lease

and without a fully processed lease.

6.11.4 Alternative 4 - Reduce the Stocking Rate

A reduction of the stocking rate, in concert with the renewal of the grazing lease, allows the grazing program to continue on the Moore Canyon Allotment in concert with the multiple-use and sustainability mandates of the BLM.

6.11.5 Alternative 5 – Increase the Stocking Rate

An increase of the stocking rate, in concert with the renewal of the grazing lease, allows the grazing program to continue on the Moore Canyon Allotment, but monitoring would need to be conducted to assess the multiple-use and sustainability mandates of the BLM.

7.0 CUMULATIVE EFFECTS

In addition to direct and indirect effects, the cumulative effects of the proposed action are those that would result from renewal of the Moore Canyon Allotment grazing lease, combined with other reasonably foreseeable future actions. A cumulative impact, as defined by the CEQ (40 CFR 1508.7), is the impact on the environment that results from the incremental impact of an action when added to other past, present, and reasonably foreseeable future actions, regardless of what agency (federal or nonfederal) or person undertakes such actions. Individually minor, but collectively significant actions taking place over time, may result in cumulative impacts. Reasonably foreseeable future actions, while not part of the proposed action, refer to future projections or estimates of what is likely to take place when a proposed action is implemented. This allows for future impacts, cumulative and otherwise, to be estimated under NEPA.

The following issues were identified for detailed analysis based on the criteria in the BLM NEPA Handbook (Section 6.4): 1) habitat for special status species, 2) nesting cover and food sources for migratory birds, 3) ground cover and soil erosion at any springs or ephemeral washes, and the result to watershed health, 4) species composition and cover of upland vegetation with quantitative monitoring results and actual use, 5) spread of invasive and non-native species, and 6) wildlife distribution from range developments and water sources for livestock.

7.1 Geographic Scope of the Cumulative Effects Analysis

The geographic scope for each resource issue is given in the following table.

Resource Issue	Geographic Area for Analysis
Habitat for Special Status Species	Range of lesser long-nosed bat, jaguar, and ocelot in U.S.
Nesting Cover and Food Sources for Migratory Birds	Mule Mountain nesting birds and San Pedro River migration corridor.
Ground Cover and Soil Erosion in Wetlands/Riparian Areas	Watershed. The watershed includes the crest of Escabrosa Ridge to the ephemeral drainages on the southern portions of the allotment, which drain into Moore Canyon to Spring Creek, and from Little Dry Canyon and other smaller tributaries to the San Pedro River. The northern portions of the allotment contain ephemeral drainages which drain from Escabrosa Ridge into Banning Creek, which drains into the San Pedro River.
Watershed Health	Watershed.
Species Composition and Cover of Vegetation	Watershed.
Invasive and Non-native Species	Watershed.

Resource Issue	Geographic Area for Analysis
Wildlife Distribution	Mule Mountains and San Pedro River corridor.
Land Health Standards	Watershed.

7.2 Timeframe of the Cumulative Effects Analysis

The proposed action would authorize livestock grazing for 10 years. Although there are theoretically some indirect effects of livestock grazing that could continue after grazing (such as long-term patterns of plant species composition), the measurable effects of livestock grazing on vegetation would occur during the period of the 10-year grazing permit. Therefore, the temporal scope for analysis of this issue is 10 years for short-term effects. Short-term effects are defined as those impacts that last less than ten years, because ten years is the standard term for grazing leases. Long-term effects are defined as those impacts that last longer than ten years, because these impacts could last longer than can be modified under a current grazing lease.

7.3 Past Actions

During the late part of the 19th century and early part of the 20th century, heavy grazing occurred over a large part of the public lands (Humphrey 1987), and may have had a detrimental effect on some resources (Bahre and Shelton 1996, Hastings and Turner 1965). Livestock grazing has occurred in the area since the Spanish land grants in the valleys of the San Pedro River before 1800 (Hastings and Turner 1965). The "fire deficit" caused by fire suppression (Climate Change 2012), and change in vegetation resulted in increased severity of fire in some locations. With emphasis on grazing management, the slow process of improving rangelands began. Grazing management has helped to maintain or improve resource conditions in some areas compared to historic use.

However, livestock grazing on federal lands is not the only factor that affects rangeland vegetation. Wood products were extensively harvested in the vicinity of the allotment for the mining industry, and this practice removed trees and reduced fuel loads within these vegetation communities. Beginning in the 1930s, the federal government actively managed public land with fire suppression. Because of fire suppression, livestock grazing, decrease in harvest of wood products, precipitation, and other factors, woody vegetation has reestablished on sites and expanded into adjacent vegetation communities. Other impacts from human caused climate change altered vegetation cover and composition. Increases in carbon dioxide levels from burning of fossil fuels have favored the growth of woody species through carbon sequestration (Throop and Archer 2008).

As a consequence of alterations in land use practices and climate change, vegetation cover and composition changed. Shrub and tree densities and subsequent canopy cover increased (Brown 1950). Livestock grazing, fire, neighboring woody plants, increase in Lehmann lovegrass, and precipitation appear to have influenced native perennial grass dynamics (McClaran 2003). Increase in woody species resulted in higher fuel loads which created larger, hotter fires. Vegetation communities became less diverse and more even-aged.

In the past, prescribed and wild fire has occurred on the San Pedro Riparian NCA and on other federal, state, and private land nearby. For the most part, prescribed fire has been used in order to control woody species, such as mesquite and juniper, and increase herbaceous vegetation, or for maintenance of grassland communities.

Population growth has changed the setting from rural to suburban and urban uses in some areas. Increased human activity has occurred with border crossing violations and subsequent Border Patrol activity.

7.4 Present Actions

The trend toward larger, hotter wildfires continued in the local area with the 2010 fire season. Continued fire suppression perpetuates fuel loading. Goals of current land management practices by federal agencies include improvement of vegetation communities and authorized livestock use must meet land health standards. Inventory, monitoring, and control of noxious and invasive weeds are occurring. Border crossings continue as does Border Patrol activity. Recreational use of public land in the area occurs. Mining in the area may continue in some locations.

7.5 Reasonably Foreseeable Future Actions

The following list identifies the land use planning and environmental documents consulted in determining the pertinent existing and reasonably foreseeable future actions:

1) Eastern Arizona Grazing EIS,
2) Safford District RMP,
3) San Pedro River Riparian Management Plan,
4) San Pedro Riparian NCA Habitat Management Plan,
5) Environmental assessments for renewal of other BLM grazing leases within the same watershed (e.g. Susnow, La Roca, Ramirez, Albert Thomas, Cleveland, Wildcat Canyon, and Powers).

The past, present, and reasonably foreseeable projections are made only for the purpose of analyzing possible future cumulative impacts, and are not linked to the Proposed Action. Inclusion of these documents in the Moore Canyon Allotment Grazing Lease Renewal EA scenario does not constitute a decision or a commitment of resources. If a future action requires NEPA compliance, inclusion in this cumulative impact analysis would not satisfy any NEPA requirement.

The future of soils, vegetation, hydrology and other biotic factors cannot be predicted by considering changes in livestock grazing management alone. Population growth and demographic changes are likely to occur in the local area. Land-use changes, such as increased recreation use and subdivision of privately owned ranch lands, are likely to have future impacts to resources. The number of natural fire ignitions is likely to be similar to previous years, with some experts anticipating the continued occurrence of larger, hotter fires. Previous research reveals that climatic changes, including increasing temperatures and the earlier onset of spring snowmelt, have been linked to increasing levels of atmospheric greenhouse gases and are likely influencing these damaging fire trends. As average global temperatures rise, researchers project that the risk of wildfires in America's West will accelerate (Climate Central 2012). Prescribed fire will continue to be used in some locations, and it is likely that wildland urban interface will continue to be a concern in the management of fires. Construction of border fencing makes passage for larger wildlife species difficult, if not impossible. Livestock grazing will continue to be managed to meet land health standards. It is likely that increased efforts will be required to detect and control noxious and invasive weeds.

7.6 Issues Analyzed in Detail

The cumulative effects analysis is presented below for each resource issue.

7.6.1 How would livestock grazing affect habitat for special status species?

The existing condition of special status species is an effect of past human activity within the geographic scope, consisting of trampling and soil loss from livestock grazing and human activity, changes in plant frequency, cover, and utilization, fires and fire suppression, recreation, wood cutting, mining, habitat fragmentation due to roads, ROWs, and fencelines, residential and commercial construction, border crossing violations and Border Patrol activity, border fencing, groundwater and surface water use and diversion, predator control, drought and climate change.

The cumulative effect of the no action alternative (current terms and conditions) or the proposed action to renew the grazing lease, together with other present and reasonably foreseeable actions, would not result in fragmentation of habitat, or removal of dense vegetation within xero-riparian corridors. Some special status species could be affected either through direct disturbance by humans or livestock, through effects to a species' food source, through effects to the species' movement corridors, or through modification of habitat used for concealment, foraging, or hunting. The following is an excerpt from the Gila District Grazing Program BO (FWS 2012):

> Livestock grazing on non-Federal lands affects the watershed conditions for some listed species. Excessive livestock grazing could result in increased erosion, high run-off after storms, and decreased habitat quality and quantity because of reduced plant cover and soil disturbance. Other activities on non-Federal lands that may not be subject to section 7 consultation include recreation, residential and commercial development, groundwater pumping, water diversions and channelization, and mining; these activities can and do result in adverse effects to listed species in the action area. All of these actions could reduce or eliminate habitat that could adversely affect some species in some areas. The effects on species vary depending on the actions in the immediate areas of listed species. In the borderlands of Arizona, there has been a dramatic increase in the numbers of cross border violators since the 1997 BO. These activities have resulted in many miles of new vehicle routes, trails, campsites, and accumulations of trash. Crossborder violators build warming or cooking fires, which occasionally escape and become wildfires; and sometimes wildfires are deliberately set as diversions so cross border violators can escape more easily. They also camp in riparian areas, which may result in reducing habitat quality and alter species use, including blocking travelways.

The cumulative effect of either the no grazing alternative or reduction of the stocking rate alternative, together with other present and reasonably foreseeable actions, may result in short and long-term improvement in vegetation conditions in both xero-riparian and upland areas, which may constitute progress toward enhancing land health standards. No grazing or a reduction in the stocking rate alternatives may result in improvements of some indicators of land health, such as improvements from departures from the ecological site description (reference conditions) in ratings that are not "none to slight." The Moore Canyon Allotment land health evaluation on 5/22/08 had one "moderate to extreme" departure from reference conditions for biotic integrity, and all other indicators were "none to slight." The land health evaluation on 11/29/11 had two "slight to moderate" departures from reference conditions for biotic integrity, and all other indicators were "none to slight." However, land health standards are currently being met on the Moore Canyon Allotment based on the preponderance of evidence in ratings of "none to slight" for soil/site stability, hydrologic function, and biotic integrity (17 or 18 of the 19 indicators). The no grazing or reduction in the stocking rate alternatives may result in short and long-term decreased utilization of agave by livestock with more agave available for use as a food source by lesser long-nosed bat, however, only one agave was noted with herbivory during the land health evaluations, and herbivory did not appear to be from livestock. Short and long-term increased cover in xero-riparian and upland areas may result in better concealment, movement, and hunting areas for jaguar and ocelot.

The cumulative effect of the alternative to increase the stocking rate, together with other present and reasonably foreseeable actions, may result in short-term increased utilization and long-term changes in plant frequency and cover. Some special status species could be affected either through direct disturbance by humans or livestock, through effects to a species' food source, through effects to the species' movement corridors, or through modification of habitat used for concealment, foraging, or hunting.

7.6.2 How would livestock grazing affect nesting cover and food sources for migratory birds?

The existing condition of migratory birds and their habitat is an effect of past human activity within the geographic scope, consisting of trampling and soil loss caused by livestock and human activity, fires and fire suppression, wood cutting, mining, changes in plant frequency, cover, and utilization, habitat

fragmentation due to roads, ROWs, or fencelines, housing and commercial construction, predator control, groundwater and surface water use and diversion, introduction of non-native species (e.g. domestic cat, Lehmann lovegrass, tamarisk), drought and climate change.

The cumulative effects analysis area for biological resources could include the overall range of any population of wildlife that may be affected by livestock grazing. For some migratory bird species that utilize the San Pedro River as a migration corridor in the Pacific Flyway, this could include much of North and South America. Cumulative effects may include effects on dispersal between populations.

The Safford District RMP EIS (page 135) notes that riparian areas in the district are important migration corridors through Arizona's deserts for birds moving between tropical wintering areas and breeding areas farther north. The value of riparian habitat extends beyond district, state, or national boundaries.

The cumulative effect of the no action (current terms and conditions), together with other present and reasonably foreseeable actions, may result in some short and long-term mortality of birds unable to escape from water troughs that are not equipped with escape ramps. The cumulative effect of the proposed action to renew the grazing lease, together with other present and reasonably foreseeable actions, may result in less mortality of birds from the inability to escape from water troughs, compared to the no action alternative. The cumulative effect of either the no grazing or reduction of the stocking rate alternatives, together with other present and reasonably foreseeable actions, may result in short and long-term improvement of vegetation conditions in both xero-riparian and upland areas on BLM land; increased utilization and decreased cover may occur on state and private land if BLM land were fenced out. Fencing activities, such as brushing, could result in direct short-term impacts to nesting birds if nesting avoidance dates were not used. The no grazing or reduction in the stocking rate alternatives may result in short and long-term improvement in vegetation conditions in both xero-riparian and upland areas; this may enhance land health standards, such as improvements from departures from the ecological site description (reference conditions) in ratings that are not "none to slight." However, land health standards are currently being met. Improved vegetation cover in xero-riparian and upland areas may result in improved concealment, movement, nesting, foraging, or hunting habitat for migratory birds, and may have effects on food sources. The cumulative effect of the proposed action for an increase in the stocking rate, together with other present and reasonably foreseeable actions, may result in increased utilization of vegetation in both xero-riparian and upland areas. This may result in less cover used for concealment, movement, nesting, foraging, or hunting habitat, and may have effects on food sources.

7.6.3 How would livestock grazing affect ground cover and soil erosion at any wetlands or riparian areas?

The existing condition of wetlands or riparian areas is an effect of past human activity within the geographic scope, consisting of trampling and soil loss from livestock grazing and human activity, changes in plant frequency, cover, and utilization, fires and fire suppression, wood cutting, mining, roads, ROWs, and fencelines, residential and commercial construction, border crossing violations and Border Patrol activities, border fencing, construction of retention/detention basins, groundwater and surface water use and diversion, drought and climate change.

Xero-riparian vegetation along washes in the watershed may be more heavily utilized by livestock, resulting in decreased recruitment of deciduous woody species and stabilizing riparian species. The Safford District RMP EIS (page 147) notes that riparian scrub is usually composed of a dense stand of narrowleaf shrubs, where dominant species may consist of seepwillow, desert willow, coyote willow, mesquite, catclaw, and tamarisk. The Eastern Arizona Grazing DEIS (page 41) concludes that the proposed action (a decrease of historic high livestock use) would have significant beneficial impacts to the soil resource.

Xero-riparian vegetation or soil conditions in the Moore Canyon Allotment have not changed since the Safford District RMP EIS or Eastern Arizona Grazing DEIS in a way that would alter the analytical conclusions. The Moore Canyon Allotment evaluation determined that Standards 1 and 3 were being met, and Standard 2 (Watershed Function - Riparian/Wetland Areas) was not applicable due to the non-perennial washes present on the allotment. Monitoring data in the evaluation determined that adequate cover and composition of vegetation was present. That evaluation is incorporated here by reference.

The cumulative effect of the no action (current terms and conditions) and proposed action to renew the grazing lease, together with other present and reasonably foreseeable actions, may result in increased utilization of vegetation in and around Pete Moore Spring and any xero-riparian areas (which may contain greener, more palatable vegetation), compared to the no grazing alternative. The cumulative effect of either the no grazing or reduction of the stocking rate alternatives, together with other present and reasonably foreseeable actions, may result in improving vegetation conditions in both xero-riparian and upland areas on BLM land. The no grazing or reduction in the stocking rate alternatives may result in short and long-term improvement in vegetation conditions in both xero-riparian and upland areas; this may enhance land health standards, such as improvements from departures from the ecological site description (reference conditions) in ratings that are not "none to slight." However, land health standards are currently being met. Improved vegetation cover in xero-riparian and upland areas may result in the better ability of the watershed to trap and hold sediments and water. The cumulative effect of the proposed action for an increase in the stocking rate, together with other present and reasonably foreseeable actions, may result in increased utilization of vegetation in both xero-riparian and upland areas. This may result in less cover, and deceased ability for water infiltration to the watershed, springs, and xero-riparian areas, and would require documentation through monitoring and land health evaluations.

7.6.4 What is the result to watershed health?

The existing condition of the watershed is an effect of past human activity within the geographic scope, consisting of trampling and soil loss from livestock grazing and human activity, changes in plant frequency, cover, and utilization, fires and fire suppression, wood cutting, mining, residential and commercial construction, construction of detention/retention basins, construction of roads, fencelines, and other ROW activities such as utility pole placement and railroad construction, drought and climate change.

The Safford District RMP EIS (page 128) notes that watersheds are in generally fair to good condition. Surface rock and vegetation cover protect the soil from erosion. Watershed conditions in the Moore Canyon Allotment have not changed since the Safford District RMP EIS in a way that would alter the analytical conclusions in the RMP EIS. The Moore Canyon Allotment evaluation determined that Standards 1 and 3 were being met, and Standard 2 (Watershed Function - Riparian/Wetland Areas) was not applicable due to the non-perennial washes present on the allotment. Monitoring data in the evaluation determined that adequate cover and composition of vegetation was present. That evaluation is incorporated here by reference.

The cumulative effect of the no action (current terms and conditions) and proposed action to renew the grazing lease, together with other present and reasonably foreseeable actions, may result in increased utilization of vegetation in uplands and xero-riparian areas compared to the no grazing alternative. The cumulative effect of either the no grazing or reduction of the stocking rate alternatives, together with other present and reasonably foreseeable actions, may cause a reduction in sediment yield and improved infiltration, resulting in improvement of vegetation conditions in both xero-riparian and upland areas on BLM land. Maintenance or improvement of water quality lower in the watershed may occur. This may enhance land health standards, such as improvements from departures from the ecological site description (reference conditions) in ratings that are not "none to slight." However, land health standards are

currently being met. Improved vegetation cover in xero-riparian and upland areas may result in the better ability of the watershed to trap and hold sediments and water. The cumulative effect of the proposed action for an increase in the stocking rate, together with other present and reasonably foreseeable actions, may cause increased utilization of vegetation in both xero-riparian and upland areas, resulting in less cover, and deceased ability for water infiltration to the watershed. This would require documentation through monitoring and land health evaluations.

7.6.5 How would livestock grazing affect species composition and cover of upland vegetation?

The existing condition of vegetation is an effect of past human activity within the geographic scope, consisting of trampling and soil loss from livestock grazing and human activity, changes in plant frequency, composition, and utilization, fires and fire suppression, wood cutting, mining, fragmentation of land due to roads, ROWs, and fencelines, residential and commercial construction, border crossing violations and Border Patrol activities, border fencing, drought and climate change.

Increased utilization of upland vegetation, such as native perennial grasses and forbs, in the watershed may occur by livestock grazing, compared to the no grazing alternative. The Safford District RMP EIS (page 147) notes that Madrean evergreen woodland is usually composed of evergreen oaks, various species of juniper and associated shrubs, forbs and grasses. The End of Year Range Condition Report (1990), cited in the Safford District RMP EIS, lists condition in 66,000 acres as excellent, 542,000 acres as good, 406,000 acres as fair, 291,000 acres as poor, and 111,000 acres as unclassified condition. The Eastern Arizona Grazing DEIS (page 41) concludes that the vegetation resource would receive a slight benefit from the implementation of the proposed action. Upland vegetation conditions in the Moore Canyon Allotment have not changed since the Safford District RMP EIS or Eastern Arizona Grazing DEIS in a way that would alter the analytical conclusions in the RMP EIS. The Moore Canyon Allotment evaluation determined that Standards 1 and 3 were being met, and Standard 2 (Watershed Function - Riparian/Wetland Areas) was not applicable due to the non-perennial washes present on the allotment. Monitoring data in the evaluation determined that adequate cover and composition of vegetation was present. That evaluation is incorporated here by reference.

The cumulative effect of the no action (current terms and conditions) and proposed action to renew the grazing lease (compared to the no grazing alternative), together with other present and reasonably foreseeable actions, may result in increased utilization of native perennial grasses, causing a short-term increase in utilization and possibly a long-term change in plant frequency, cover, or composition. The cumulative effect of either the no grazing or reduction of the stocking rate alternatives, together with other present and reasonably foreseeable actions, may cause short-term decreased utilization of native perennial grasses, possibly resulting in long-term changes in plant frequency, cover, or composition in both xero-riparian and upland areas on BLM land. The no grazing or reduction in the stocking rate alternatives may result in short and long-term increases in cover of grasses and forbs; this may enhance land health standards, such as improvements from departures from the ecological site description (reference conditions) in ratings that are not “none to slight.” However, land health standards are currently being met. The cumulative effect of the proposed action for an increase in the stocking rate, together with other present and reasonably foreseeable actions, may cause short-term increased utilization of vegetation, possibly resulting in long-term changes in plant frequency, cover, or composition. This would require documentation through monitoring and land health evaluations.

7.6.6 How would livestock grazing affect invasive and non-native species?

The existing condition of invasive and non-native species is an effect of past human activity within the geographic scope, consisting of trampling and soil loss from livestock grazing and human activity, changes in plant frequency, cover, and utilization, fires and fire suppression, wood cutting, mining, road construction, accessibility due to roads, ROWs, and fencelines, housing and commercial construction, border crossing violation and Border Patrol activities, border fencing, construction of retention/detention

basins, groundwater and surface water use and diversion, introduction of non-native species (e.g. Lehmann lovegrass, tamarisk, giant reed), drought and climate change.

The cumulative effect of the no action (current terms and conditions) and proposed action to renew the grazing lease, together with other present and reasonably foreseeable actions, may result in increased utilization of native perennial grasses, causing a short-term increase in utilization and possibly a long-term change in plant frequency, cover, or composition. Short-term increased utilization of native perennial grasses may result in the long-term ability of invasive plant species to become established and spread. The cumulative effect of either the no grazing or reduction of the stocking rate alternatives, together with other present and reasonably foreseeable actions, may cause short-term decreased utilization of native perennial grasses, possibly resulting in long-term changes in plant frequency, cover, or composition in both xero-riparian and upland areas on BLM land. Short-term decreased utilization of native perennial grasses may result in less likelihood of long-term ability of invasive plant species to become established or spread. The no grazing or reduction in the stocking rate alternatives may result in short and long-term improvement in the amount of soil disturbance and bare ground leading to weed invasion; this may enhance land health standards, such as improvements from departures from the ecological site description (reference conditions) in ratings that are not "none to slight." However, land health standards are currently being met. The cumulative effect of the proposed action for an increase in the stocking rate, together with other present and reasonably foreseeable actions, may cause short-term increased utilization of vegetation, possibly resulting in long-term changes in plant frequency, cover, or composition. Increased utilization and bare ground may result in higher likelihood of long-term ability of invasive plant species to become established and spread. This would require documentation through monitoring and land health evaluations.

7.6.7 How would livestock grazing affect wildlife distribution?

The existing condition of wildlife distribution is an effect of past human activity within the geographic scope, consisting of trampling and soil loss from livestock grazing and human activity, changes in plant frequency, composition, and utilization, competition with livestock for water, food, or shelter, fires and fire suppression, recreation (including hunting), wood cutting, mining, habitat fragmentation due to roads, ROWs, or fencelines, residential and commercial construction, groundwater and surface water use and diversion, border crossing violation and Border Patrol activity, border fencing, predator control, introduction of non-native species, drought and climate change.

The Safford District RMP EIS (page 135) notes that, in Arizona, 60% of wildlife species are dependent upon riparian and aquatic habitats, with 28 priority species requiring these habitats. Protection and management of this biological diversity is linked to the 0.5% of the land that is riparian and aquatic habitat. The ecological value of riparian and aquatic habitat is proportionately far greater than its size, and BLM set a goal of having 75% of its riparian habitat in good or excellent condition by 1997.

The Eastern Arizona Grazing DEIS (page 46) concludes that the most significant effects on wildlife habitat would occur in the long term since the impacts involved are related to changes in vegetation production and recovery. Mule deer would be the most affected big game species, and would benefit from increased forage production and decreased competition with livestock. Small game and nongame would benefit from increased forage and cover, compared to historic higher livestock use.

Wildlife habitat conditions in the Moore Canyon Allotment have not changed since the Safford District RMP EIS and Eastern Arizona Grazing DEIS in a way that would alter the analytical conclusions. The Moore Canyon Allotment evaluation determined that Standards 1 and 3 were being met, and Standard 2 (Watershed Function - Riparian/Wetland Areas) was not applicable due to the non-perennial washes present on the allotment. Monitoring data in the evaluation determined that adequate cover and composition of vegetation was present. That evaluation is incorporated here by reference.

The cumulative effect of the no action (current terms and conditions) and proposed action to renew the grazing lease, together with other present and reasonably foreseeable actions, may result in increased livestock utilization of native perennial grasses; this may cause a short-term increase in utilization and possibly a long-term change in plant frequency, cover, or composition, which may impact cover, food sources, and water availability for wildlife. The cumulative effect of either the no grazing or reduction of the stocking rate alternatives, together with other present and reasonably foreseeable actions, may cause short-term decreased utilization of native perennial grasses and browse species, possibly resulting in long-term changes in plant frequency, cover, or composition, which may impact cover, food sources, and water availability for wildlife. The no grazing or reduction in the stocking rate alternatives may result in short and long-term improvement in vegetation conditions in both xero-riparian and upland areas; this may enhance land health standards, such as improvements from departures from the ecological site description (reference conditions) in ratings that are not "none to slight." However, land health standards are currently being met. The cumulative effect of the proposed action for an increase in the stocking rate, together with other present and reasonably foreseeable actions, may cause short-term increased utilization of vegetation, possibly causing long-term changes in plant frequency, cover, or composition, resulting in changes in cover, food sources, and water availability. This would require documentation through monitoring and land health evaluations.

7.6.8 How does livestock grazing affect Land Health Standards?

The existing condition of land health is an effect of past human activity within the geographic scope, consisting of trampling and soil loss caused by livestock and human activity, changes in plant frequency, cover, and utilization, fires and fire suppression, wood cutting, mining, road, ROW, and fence construction, construction of retention/detention basins, groundwater and surface water use and diversion, introduction of non-native species (e.g. Lehmann lovegrass), drought and climate change.

The Safford District RMP EIS (page 137) and the Eastern Arizona Grazing DEIS (page 21) note improve, maintain, and custodial category criteria for grazing allotments. The Eastern Arizona Grazing DEIS (page 44) concludes that livestock production would increase and distribution would improve because of land treatments and range improvements; allotments with downward trends would continue to decline. Land Health Standards for the Moore Canyon Allotment have not changed since the Safford District RMP EIS in a way that would alter the analytical conclusions in the RMP EIS. The Moore Canyon Allotment evaluation determined that Standards 1 and 3 were being met, and Standard 2 (Watershed Function - Riparian/Wetland Areas) was not applicable due to the non-perennial washes present on the allotment. Monitoring data in the evaluation determined that adequate cover and composition of vegetation was present. That evaluation is incorporated here by reference.

The cumulative effect of the no action (current terms and conditions), proposed action to renew the grazing lease, no grazing, and reduction in the stocking rate alternatives, together with other present and reasonably foreseeable actions, may result in short and long-term maintenance or improvement of land health. The no grazing or reduction in the stocking rate alternatives may result in short and long-term improvement in vegetation conditions in both xero-riparian and upland areas; this may enhance land health standards, such as improvements from departures from the ecological site description (reference conditions) in ratings that are not "none to slight." However, land health standards are currently being met. The cumulative effect of the proposed action for an increase in the stocking rate, together with other present and reasonably foreseeable actions, may cause short and long-term negative impacts to land health, but this would need to be documented through monitoring and land health evaluations.

8.0 CONSULTATION, COOPERATION, AND COORDINATION

This proposal was presented at the BLM bi-monthly interdisciplinary NEPA meeting held on 2 July 2012. A Cultural Resources Compliance Documentation Record was completed on 15 September 2008. Formal consultation with FWS occurred on the Gila District Grazing Program, and a biological opinion was issued during May 2012.

Western Watersheds Project has made comments on the Moore Canyon Allotment evaluation on 29 September 2008 and 21 April 2009, and expressed concern about several issues. Concerns ranged from taking a hard look at the environmental consequences of any proposed action to assessment of vegetation attributes. Many of the concerns focused on potential impacts from livestock grazing and requested that these impacts be analyzed in the EA. These comments were considered by the interdisciplinary team and the applicable points were incorporated into the EA. All of the concerns were addressed through an additional rangeland health evaluation, and monitoring by University of Arizona Cooperative Extension and the BLM interdisciplinary team. Additionally, the Moore Canyon Allotment Grazing Lease Renewal EA was posted on-line for a 30 day comment period.

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10.0 REFERENCES

Albrecht, E.W., E.L. Geiger, A.R. Litt, G.R. McPherson, and R.J. Steidl. 2008. Fire as a tool to restore biodiversity in ecosystems dominated by invasive grasses. Dept. of Defense, Legacy Resource Management Program, Project 03-192, Ft. Huachuca, AZ.

Bahre, C.J. and M.L. Shelton. 1996. Rangeland destruction: cattle and drought in southeastern Arizona at the turn of the century. J. of the Southwest 38:1-22.

Bent, A. C. 1961. Life Histories of North American Birds of Prey. Dover Publications, New York, NY.

Bock, C. E. 2002. Birds and bovines: effects of livestock grazing on birds in the West *in* G. Wuerthner and M. Matteson (eds.). Welfare Ranching: the Subsidized Destruction of the American West. Island Press. Covelo, CA.

Bock, C.E. and J.H. Bock. 1992. Response of birds to wildfire in native versus exotic Arizona grassland. Southwestern Naturalist 37(1):73-81.

Boeker, E. L. and T. D. Ray. 1971. Golden eagle population studies in the Southwest. Condor 73:463-467.

Brown, A.L. 1950. Shrub invasion of a southern Arizona desert grassland. J. Range Management 19:93-95.

Brown, B. T. 1992. Golden eagles feeding on fish. J. Raptor Research 26:36-37.

Bureau of Land Management. 1997. Arizona's Standards for Rangeland Health and Guidelines for Grazing Administration. Arizona State Office, Phoenix.

Cable, D.R. 1965. Damage to mesquite, Lehmann lovegrass, and black grama by a hot June fire. J. Range Management 18:326-329.

Cable, D.R. 1971. Lehmann lovegrass on the Santa Rita Experimental Range, 1937-1968. J. Range Management 24:17-21.

Climate Central. 2012. The age of western wildfires. Palo Alto, CA.

Cooperative Extension Service, U.S. Forest Service, and BLM. 1999a. Utilization studies and residual measurements. Technical Reference TR 1734-3. BLM National Operations Center, Denver, CO.
Cooperative Extension Service, U.S. Forest Service, and BLM. 1999b. Sampling Vegetation Attributes. Technical Reference TR 1734-4. BLM National Operations Center, Denver, CO.

Cox, J.R., G.B. Ruyle, J.H. Fourle, and C. Donaldson. 1988. Lehmann lovegrass--central South Africa and Arizona, USA. Rangelands 10(2):53-55.

Cox, J.R., F.A. Ibarra-F, and M.H. Martin-R. 1990. Fire effects on grasses in semiarid deserts. In: Krammes, J. S., technical coordinator. Effects of fire management of southwestern natural resources: Proceedings of the symposium; 1988 November 15-17; Tucson, AZ. Gen. Tech. Rep. RM-191. Fort

Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Forest and Range

Experiment Station: 43-49.

Craig, T.H. and L.R. Powers. 1975. Raptor mortality due to drowning in a livestock watering tank. Condor 78:412.

Debano, S.J. 2006. Effects of livestock grazing on aboveground insect communities in semi-arid grasslands of southeastern Arizona. Biodiversity and Conservation 15(8):2547-2564.

Enderson, J.H. 1964. A study of the prairie falcon in the central Rocky Mountain region. Auk, 81:332-352.

Forbes, G.S, J.W. Van Zee, W. Smith, and W.G. Whitford. 2005. Desert grassland canopy arthropod species richness: temporal patterns and effects of intense, short-duration livestock grazing. J. Arid Environments 60(4):627-646.

Gillihan, S.W. 2000. Barbed wire fence fatal to burrowing owl. J. Colorado Field Ornithologists 34(4):220-221.

Gregg, M. A., J. A. Crawford, M. S. Drut, A. K. DeLong. 1994. Vegetational cover and predation of sage grouse nests in Oregon. J. Wildl. Manage. 58(1):162-166.

Harrington, J.L. and M.R. Conover. 2006. Characteristics of ungulate behavior and mortality associated with wire fences. Wildlife Society Bulletin 34(5):1295-1305.

Hastings, J.R., and R.M. Turner. 1965. The Changing Mile: An Ecological Study of Vegetation Change with Time in the Lower Mile of an Arid and Semiarid Region. University of Arizona Press, Tucson, AZ.

Holechek, J.L., R.D. Pieper, and C.H. Herbel. 2004. Range Management Principles and Practices (5th ed.). Prentice-Hall, Englewood Cliffs, NJ.

Humphrey, R.R. 1987. 90 Years and 535 Miles. University of New Mexico Press, Albuquerque, NM. 448 pp.

Jensen, H.P., D. Rollins, and R.L. Gillen. 1990. Effect of cattle stock density on trampling loss of simulated ground nests. Wildl. Soc. Bull. 18:71–74.

Kochert, M. N. 1980. Golden eagle reproduction and population changes in relation to jackrabbit cycles: implications to eagle electrocutions. Pages 71-86 *in* R. P. Howard and J. F. Gore, editors. Proceedings of a Workshop on Raptors and Energy Developments. Idaho Chapter, The Wildlife Society, Boise, ID.

Littlewood, N.A., R.J. Pakeman, and G. Pozsgai. 2011. Grazing impacts on Auchenorrhyncha diversity and abundance on a Scottish upland estate. Insect Conservation and Diversity 5(1):67-74.

Lott, R.E., J.W. Menke, and J.G. Kie. 1991. Habitat shifts by mule deer: the influence of cattle grazing. J. Wildl. Manage. 55:16-26.

Martin, S.C. 1983. Responses of semidesert grasses and shrubs to fall burning. J. Range Management 36(5):604-610.

Mashiri, F.E., M.P. McClaran, and J.S. Fehmi. 2008. Short- and long-term vegetation change related to grazing systems, precipitation, and mesquite cover. Rangeland Ecol. Manage. 61:368–379.

McClaran, M.P. 2003. A century of vegetation change on the Santa Rita Experimental Range. USDA Forest Service Proceedings RMRS-P-30. Ogden, UT.

McClaran, M.P. and M.E. Anable. 1992. Spread of introduced Lehmann lovegrass along a grazing intensity gradient. J. Applied Ecology 29(1):92-98.

Nelson, T., J. L. Holechek, R. Valdez, and M. Cardenas. 1997. Wildlife Numbers on Late and Mid Seral Chihuahuan Desert Rangelands. J. Range Management 50:593-599.

Olendorff, R. R. 1976. The food habits of North American golden eagles. American Midland Naturalist 95:231-236.

Pase, C.P. 1971. Effect of a February burn on Lehmann lovegrass. J. Range Management. 24: 454-456.

Pase, C. P. and O.D. Knipe. 1977. Effect of winter burning on herbaceous cover on a converted chaparral watershed. J. Range Management 30(5): 346-348.

Roundy, B.A., R.B. Taylorson, and L.B. Sumrall. 1992. Germination responses of Lehmann lovegrass to light. J. Range Management 45(1):81-84.

Sherrets, H.D. 1989. Wildlife watering and escape ramps on livestock water developments: Suggestions and recommendations, Idaho BLM Tech. Bull. 89-4.

Smith, D.G. and J.R. Murphy. 1971. Breeding responses of raptors to jackrabbit density in the Eastern Great Basin Desert of Utah. Raptor Research 13(1):1-14.

Sumrall, L. B., B.A. Roundy, J.R. Cox, and V.K. Winkel. 1991. Influence of canopy removal by burning or clipping on emergence of Eragrostis lehmanniana seedlings. Int'l J. Wildland Fire 1(1):35-40.

Throop, H. and S.R. Archer. 2008. Shrub (*Prosopis velutina*) encroachment in a semi-desert grassland: spatial-temporal changes in soil organic carbon and nitrogen pools. Global Change Biology: 14:1-12.

Valentine, J.F. 1990. Grazing Management. Academic Press, New York.

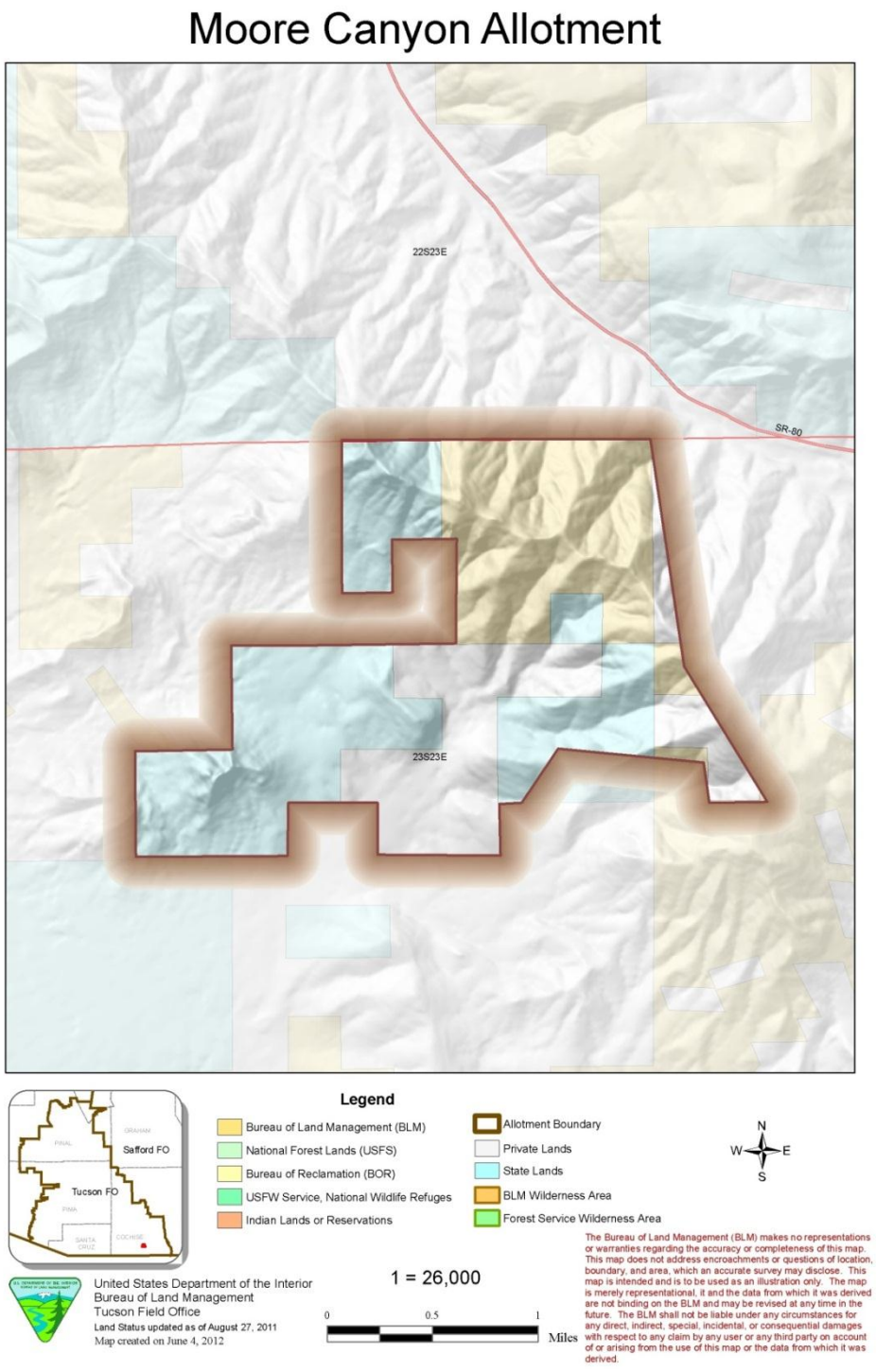
Van Poollen, H.W. and J.R. Lacey. 1979. Herbage responses to grazing systems and stocking intensities. J. Range Management 32:25-253.

Wallace, M.C. and P.R. Krausman. 1987. Elk, mule deer, and cattle habitats in central Arizona. J. Range Management 40:80-83.

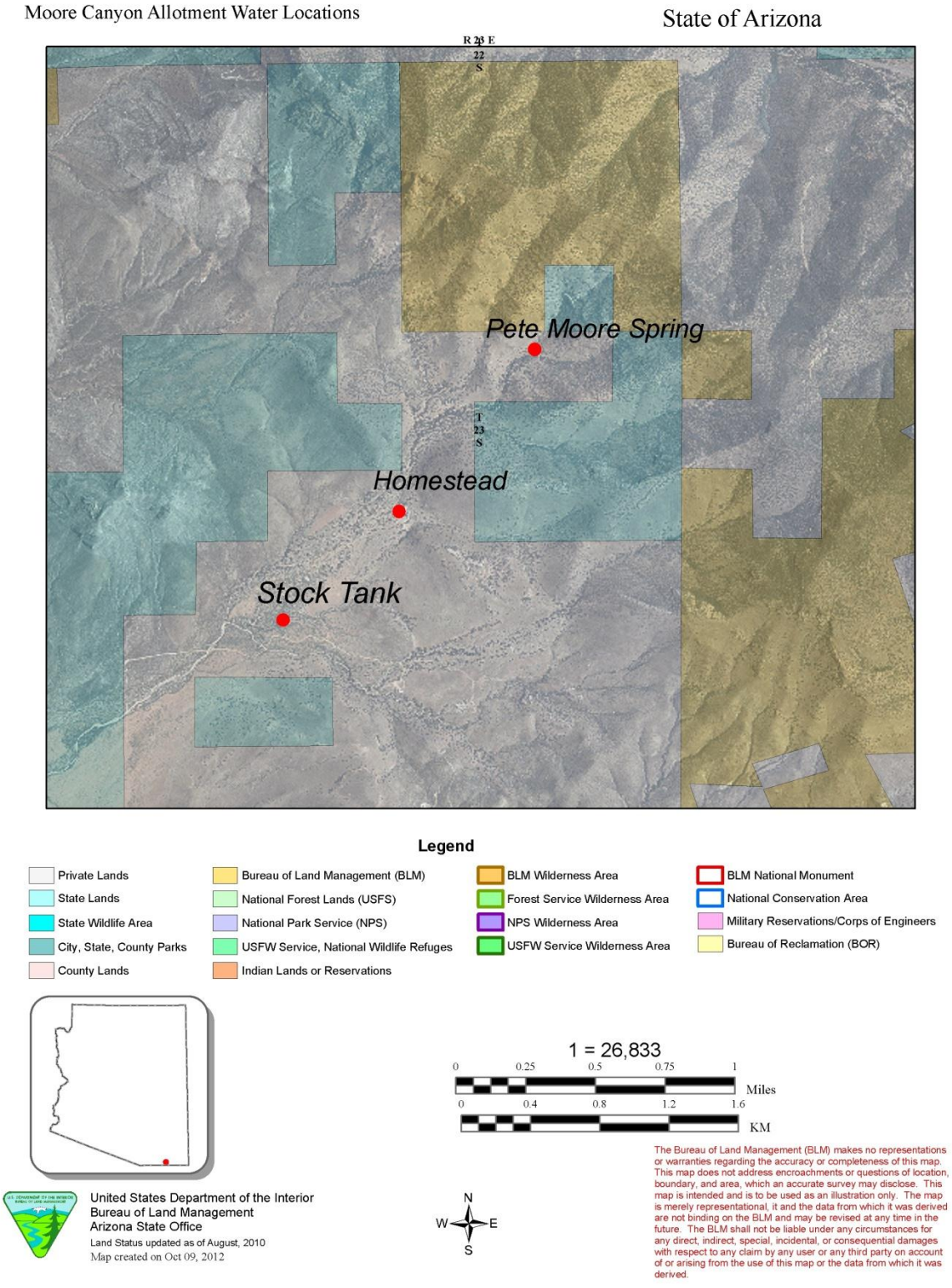
Winn, M.H. 1991. Lehmann lovegrass stands may be replaced by herbicide, planting with natives (Arizona). Restoration & Management Notes 9(2):109.

11.0 Appendices

Appendix 11.1 Vicinity map of Moore Canyon Allotment.



Appendix 11.2 Map of water locations



Appendix 11.3 Arizona Standards for Rangeland Health and Guidelines for Grazing Administration (IB AZ-97-087)

INTRODUCTION

The Department of the Interior's final rule for Grazing Administration, issued on February 22, 1995, and effective August 21, 1995, requires that Bureau of Land Management (BLM) State Directors develop State or regional standards and guidelines for grazing administration in consultation with BLM Resource Advisory Councils (RAC), other agencies and the public. The final rule provides that fallback standards and guidelines be implemented, if State standards and guidelines are not developed by February 12, 1997. Arizona Standards and Guidelines and the final rule apply to grazing administration on public lands as indicated by the following quotation from the Federal Register, Volume 60, Number 35, page 9955. "The fundamentals of rangeland health, guiding principles for standards and the fallback standards address ecological components that are affected by all uses of public rangelands, not just livestock grazing. However, the scope of this final rule, and therefore the fundamentals of rangeland health of §4180.1, and the standards and guidelines to be made effective under §4180.2, are limited to grazing administration."

Although the process of developing standards and guidelines applies to grazing administration, present rangeland health is the result of the interaction of many factors in addition to grazing by livestock. Other contributing factors may include, but are not limited to, past land uses, land use restrictions, recreation, wildlife, rights-of-way, wild horses and burros, mining, fire, weather, and insects and disease.

With the commitment of BLM to ecosystem and interdisciplinary resource management, the standards for rangeland health as developed in this current process will be incorporated into management goals and objectives. The standards and guidelines for rangeland health for grazing administration, however, are not the only considerations in resolving resource issues.

The following quotations from the Federal Register, Vol. 60, No. 35, page 9956, February 22, 1995, describe the purpose of standards and guidelines and their implementation: "The guiding principles for standards and guidelines require that State or regional standards and guidelines address the basic components of healthy rangelands. The Department believes that by implementing grazing-related actions that are consistent with the fundamentals of §4180.1 and the guiding principles of §4180.2, the long-term health of public rangelands can be ensured. Standards and guidelines will be implemented through terms and conditions of grazing permits, leases, and other authorizations, grazing-related portions of activity plans (including Allotment Management Plans), and through range improvement-related activities. The Department anticipates that in most cases the standards and guidelines themselves will not be terms and conditions of various authorizations but that the terms and conditions will reflect the standards and guidelines. The Department intends that assessments and corrective actions will be undertaken in priority order as determined by BLM. The Department will use a variety of data including monitoring records, assessments, and knowledge of the locale to assist in making the "significant progress" determination. It is anticipated that in many cases it will take numerous grazing seasons to determine direction and magnitude of trend. However, actions will be taken to establish significant progress toward conformance as soon as sufficient data are available to

make informed changes in grazing practices."

FUNDAMENTALS AND DEFINITION OF RANGELAND HEALTH

The Grazing Administration Regulations, at §4180.1 (43 Code of Federal Regulation [CFR] 4180.1), Federal Register Vol. 60, No. 35, pg. 9970, direct that the authorized officer ensures that the following conditions of rangeland health exist: (a) Watersheds are in, or are making significant progress toward, properly functioning physical condition, including their upland, riparian-wetland, and aquatic components; soil and plant conditions support infiltration, soil moisture storage, and the release of water that are in balance with climate and landform and maintain or improve water quality, water quantity, and timing and duration of flow.
(b) Ecological processes, including the hydrologic cycle, nutrient cycle, and energy flow, are maintained, or there is significant progress toward their attainment, in order to support healthy biotic populations and communities. (c) Water quality complies with State water quality standards and achieves, or is making significant progress toward achieving, established BLM management objectives such as meeting wildlife needs. (d) Habitats are, or are making significant progress toward being, restored or maintained for Federal threatened and endangered species, Federal Proposed, Category 1 and 2 Federal candidate and other special status species.

These fundamentals focus on sustaining productivity of a rangeland rather than its uses. Emphasizing the physical and biological functioning of ecosystems to determine rangeland health is consistent with the definition of rangeland health as proposed by the Committee on Rangeland Classification, Board of Agriculture, National Research Council (Rangeland Health, 1994, pg. 4 and 5). This Committee defined Rangeland Health ". . .as the degree to which the integrity of the soil and the ecological processes of rangeland ecosystems are sustained." This committee emphasized ". . .the degree of integrity of the soil and ecological processes that are most important in sustaining the capacity of rangelands to satisfy values and produce commodities." The Committee also recommended that "The determination of whether a rangeland is healthy, at risk, or unhealthy should be based on the evaluation of three criteria: degree of soil stability and watershed function, integrity of nutrient cycles and energy flow, and presence of functioning mechanisms" (Rangeland Health, 1994, pg. 97-98).

Standards describe conditions necessary to encourage proper functioning of ecological processes on specific ecological sites. An ecological site is the logical and practical ecosystem unit upon which to base an interpretation of rangeland health. Ecological site is defined as: ". . . a kind of land with specific physical characteristics which differs from other kinds of land in its Appendix 1-3 3 ability to produce distinctive kinds and amounts of vegetation and in its response to management" (Journal of Range Management, 48:279, 1995). Ecological sites result from the interaction of climate, soils, and landform (slope, topographic position). The importance of this concept is that the "health" of different kinds of rangeland must be judged by standards specific to the potential of the ecological site. Acceptable erosion rates, water quality, productivity of plants and animals, and other features are different on each ecological site.

Since there is wide variation of ecological sites in Arizona, standards and guidelines covering these sites must be general. To make standards and guidelines too specific would reduce the ability of BLM and interested publics to select specific objectives, monitoring strategies, and grazing permit terms and conditions appropriate to specific land forms.

Ecological sites have the potential to support several different plant communities. Existing communities are the result of the combination of historical and recent uses and natural events. Management actions may be used to modify plant communities on a site. The desired plant community for a site is defined as follows: "Of the several plant communities that may occupy a site, the one that has been identified through a management plan to best meet the plan's objectives for the site. It must protect the site as a minimum." (Journal of Range Management, 48:279, 1995.)

Fundamentals (a) and (b) define physical and biological components of rangeland health and are consistent with the definition of rangeland health as defined by the Committee on Rangeland Classification, Board on Agriculture, National Research Council, as discussed in the paragraph above. These fundamentals provide the basis for sustainable rangelands.

Fundamentals (c) and (d) emphasize compliance with existing laws and regulation and, therefore, define social and political components of rangeland health. Compliance with Fundamentals (c) and
(d) is accomplished by managing to attain a specific plant community and associated wildlife species present on ecological sites. These desired plant communities are determined in the BLM planning process, or, where the desired plant community is not identified, a community may be selected that will meet the conditions of
Fundamentals (a) and (b) and also adhere to laws and regulations. Arizona Standard 3 is written to comply with Fundamentals (c) and (d) and provide a logical combination of Standards and Guidelines for planning and management purposes.

STANDARD AND GUIDELINE DEFINITIONS

Standards are goals for the desired condition of the biological and physical components and characteristics of rangelands. Standards:
(1) are measurable and attainable; and
(2) comply with various Federal and State statutes, policies, and directives applicable to BLM Rangelands.

Guidelines are management approaches, methods, and practices that are intended to achieve a standard. Guidelines:
(1) typically identify and prescribe methods of influencing or controlling specific public land uses;
(2) are developed and applied consistent with the desired condition and within site capability; and
(3) may be adjusted over time.

IMPLEMENTING STANDARDS AND GUIDELINES

The authorized officer will review existing permitted livestock use, allotment management plans, or other activity plans which identify terms and conditions for management on public land. Existing management practices, and levels of use on grazing allotments will be reviewed and evaluated on a priority basis to determine if they meet, or are making significant progress toward meeting, the standards and are in conformance with the guidelines. The review will be interdisciplinary and conducted under existing rules which provide for cooperation, coordination, and consultation with affected individuals, federal, state, and local agencies, tribal governments, private landowners, and interested publics.

This review will use a variety of data, including monitoring records, assessments, and knowledge of the locale to assist in making the significant progress determination. Significance will be determined on a case by case basis, considering site potential, site condition, weather and financial commitment. It is anticipated there will be cases where numerous years will be needed to determine direction and magnitude of trend.

Upon completion of review, the authorized officer shall take appropriate action as soon as practicable but no later than the start of the next grazing year upon determining that the existing grazing management practices or level of use on public land are significant factors contributing to failure to achieve the standards and conform with the guidelines that are made effective under 43 CFR 4180.2. Appropriate action means implementing actions that will result in significant progress toward fulfillment of the standards and significant progress toward conformance with guidelines.

Livestock grazing will continue where significant progress toward meeting standards is being made. Additional activities and practices would not be needed on such allotments. Where new activities or practices are required to assure significant progress toward meeting standards, livestock grazing use can continue contingent upon determinations from monitoring data that the implemented actions are effective in making significant progress toward meeting the standards. In some cases, additional action may be needed as determined by monitoring data over time.

New plans will incorporate an interdisciplinary team approach (Arizona BLM Interdisciplinary Resource Management Handbook, April 1995). The terms and conditions for permitted grazing in these areas will be developed to comply with the goals and objectives of these plans which will be consistent with the standards and guidelines.

ARIZONA STANDARDS AND GUIDELINES

Arizona Standards and Guidelines (S&G) for grazing administration have been developed through a collaborative process involving the Bureau of Land Management State S&G Team and the Arizona Resource Advisory Council. Together, through meetings, conference calls, correspondence, and Open Houses with the public, the BLM State Team and RAC prepared Standards and Guidelines to address the minimum requirements outlined in the grazing regulations. The Standards and Guidelines, criteria for meeting Standards, and indicators are an integrated document that conforms to the fundamentals of rangeland health and the requirements of the regulations when taken as a whole.

Upland sites, riparian-wetland areas, and desired resource conditions are each addressed by a standard and associated guidelines.

Standard 1: Upland Sites

Upland soils exhibit infiltration, permeability, and erosion rates that are appropriate to soil type, climate and landform (ecological site).

Criteria for meeting Standard 1:

Soil conditions support proper functioning of hydrologic, energy, and nutrient cycles. Many factors interact to maintain stable soils and healthy soil conditions, including appropriate amounts of vegetative cover, litter, and soil porosity and organic matter. Under proper functioning conditions, rates of soil loss and infiltration are consistent with the potential of the site.

Ground cover in the form of plants, litter or rock is present in pattern, kind, and amount sufficient to prevent accelerated erosion for the ecological site; or ground cover is increasing as determined by monitoring over an established period of time.

Signs of accelerated erosion are minimal or diminishing for the ecological site as determined by

monitoring over an established period of time.
As indicated by such factors as:
Ground Cover
litter
live vegetation, amount and type (e.g., grass, shrubs, trees, etc.)
rock
Signs of erosion
flow pattern
gullies
rills
plant pedestaling

Exceptions and exemptions (where applicable):
none

Guidelines:
1-1. Management activities will maintain or promote ground cover that will provide for infiltration, permeability, soil moisture storage, and soil stability appropriate for the ecological sites within management units. The ground cover should maintain soil organisms and plants and animals to support the hydrologic and nutrient cycles, and energy flow. Ground cover and signs of erosion are surrogate measures for hydrologic and nutrient cycles and energy flow.

1-2. When grazing practices alone are not likely to restore areas of low infiltration or permeability, land management treatments may be designed and implemented to attain improvement.

Standard 2: Riparian-Wetland Sites

Riparian-wetland areas are in properly functioning condition.
Criteria for meeting Standard 2:
Stream channel morphology and functions are appropriate for proper functioning condition for existing climate, landform, and channel reach characteristics. Riparian-wetland areas are functioning properly when adequate vegetation, land form, or large woody debris is present to dissipate stream energy associated with high water flows.

Riparian-wetland functioning condition assessments are based on examination of hydrologic, vegetative, soil and erosion-deposition factors. BLM has developed a standard checklist to address these factors and make functional assessments. Riparian-wetland areas are functioning properly as indicated by the results of the application of the appropriate checklist.

The checklist for riparian areas is in Technical Reference 1737-9 "Process for Assessing Proper Functioning Condition." The checklist for wetlands is in Technical Reference 1737-11 "Process for Assessing Proper Functioning Condition for Lentic Riparian-Wetland Areas." These checklists are reprinted on the pages following the Guidelines for Standard 3.

As indicated by such factors as:
Gradient
Width/depth ratio

Channel roughness and sinuosity of stream channel
Bank stabilization
Reduced erosion
Captured sediment
Ground-water recharge
Dissipation of energy by vegetation

Exceptions and exemptions (where applicable):
Dirt tanks, wells, and other water facilities constructed or placed at a location for the purpose of providing water for livestock and/or wildlife and which have not been determined through local planning efforts to provide for riparian or wetland habitat are exempt.
Water impoundments permitted for construction, mining, or other similar activities are exempt.

Guidelines:
2-1. Management practices maintain or promote sufficient vegetation to maintain, improve or restore riparian-wetland functions of energy dissipation, sediment capture, groundwater recharge and stream bank stability, thus promoting stream channel morphology (e.g., gradient, width/depth ratio, channel roughness and sinuosity) and functions appropriate to climate and landform.

2-2. New facilities are located away from riparian-wetland areas if they conflict with achieving or maintaining riparian-wetland function. Existing facilities are used in a way that does not conflict with riparian-wetland functions or are relocated or modified when incompatible with riparian-wetland functions.

2-3. The development of springs and seeps or other projects affecting water and associated resources shall be designed to protect ecological functions and processes.
Standard 3: Desired Resource Conditions
Productive and diverse upland and riparian-wetland plant communities of native species exist and are maintained.
Criteria for meeting Standard 3:
Upland and riparian-wetland plant communities meet desired plant community objectives. Plant community objectives are determined with consideration for all multiple uses. Objectives also address native species, and the requirements of the Taylor Grazing Act, Federal Land Policy and Management Act, Endangered Species Act, Clean Water Act, and appropriate laws, regulations, and policies.

Desired plant community objectives will be developed to assure that soil conditions and ecosystem function described in Standards 1 and 2 are met. They detail a site-specific plant community, which when obtained, will assure rangeland health, State water quality standards, and habitat for endangered, threatened, and sensitive species. Thus, desired plant community objectives will be used as an indicator of ecosystem function and rangeland health.

As indicated by such factors as:
Composition
Structure

Distribution

Exceptions and exemptions (where applicable):
Ecological sites or stream reaches on which a change in existing vegetation is physically, biologically, or economically impractical.

Guidelines:
3-1. The use and perpetuation of native species will be emphasized. However, when restoring or rehabilitating disturbed or degraded rangelands, non-intrusive, non-native plant species are appropriate for use where native species (a) are not available, (b) are not economically feasible, (c) cannot achieve ecological objectives as well as non-native species, and/or (d) cannot compete with already established non-native species.

3-2. Conservation of Federal threatened or endangered, proposed, candidate, and other special status species is promoted by the maintenance or restoration of their habitats.

3-3. Management practices maintain, restore, or enhance water quality in conformance with State or Federal standards.

3-4. Intensity, season and frequency of use, and distribution of grazing use should provide for growth and reproduction of those plant species needed to reach desired plant community objectives.

3-5. Grazing on designated ephemeral (annual and perennial) rangeland may be authorized if the following conditions are met:
ephemeral vegetation is present in draws, washes, and under shrubs and has grown to useable levels at the time grazing begins;
sufficient surface and subsurface soil moisture exists for continued plant growth;
serviceable waters are capable of providing for proper grazing distribution;
sufficient annual vegetation will remain on site to satisfy other resource concerns, (i.e., watershed, wildlife, wild horses and burros); and
monitoring is conducted during grazing to determine if objectives are being met.

3-6. Management practices will target those populations of noxious weeds which can be controlled or eliminated by approved methods.

3-7. Management practices to achieve desired plant communities will consider protection and conservation of known cultural resources, including historical sites, and prehistoric sites and plants of significance to Native American peoples.

Photo 11.3.1 Moore Canyon Allotment on 11-29-11 at evaluation site looking north.

Photo 11.3.2. Moore Canyon Allotment on 11-29-11 at evaluation site looking east.

Photo 11.3.3. Moore Canyon Allotment on 11-29-11 at evaluation site looking south.

Photo 11.3.4. Moore Canyon Allotment on 11-29-11 at evaluation site looking west.

Appendix 11.4. Special Status Species List for Cochise County (accessed 3 May 2012 at US Fish and Wildlife Service Ecological Services).

Common Name	Scientific Name	Listing Status	Effect Determination
beautiful shiner	*Cyprinella formosa*	T	No Effect – Known locations and suitable habitat are greater than 10 miles away
Canelo Hills ladies' tresses	*Spiranthes delitescens*	E	No Effect – Known locations and suitable habitat are greater than 10 miles away
Chiricahua leopard frog	*Lithobates [Rana] chiricahuensis*	T	No Effect – Known locations and suitable habitat are greater than 10 miles away
Cochise pincushion cactus	*Coryphantha robbinsorum*	T	No Effect – Known locations and suitable habitat are greater than 10 miles away
lesser long-nosed bat	*Leptonycteris curasoae yerbabuenae*	E	May Affect, Not Likely to Adversely Affect (Gila District Livestock Grazing Program BO, 2012), foraging habitat exists on-site, roosts not known nearby but potential roost sites may occur nearby, individuals may occur on site
Gila chub	*Gila intermedia*	E	No Effect – Known locations and suitable habitat are greater than 10 miles away
southwestern willow flycatcher	*Empidonax traillii extimus*	E	No Effect – Known locations and suitable habitat are greater than 10 miles away
desert pupfish	*Cyprinodon macularius*	E	No Effect – Known locations and suitable habitat are greater than 10 miles away
yellow-billed cuckoo	*Coccyzus americanus*	C	Effect determinations are not made during consultation for candidate species; known locations and suitable habitat are greater than 10 miles away
Gila topminnow	*Poeciliopsis occidentalis occidentalis*	E	No Effect – Known locations and suitable habitat are greater than 10 miles away
Huachuca water umbel	*Lilaeopsis schaffneriana ssp. recurva*	E	No Effect – Known locations and suitable habitat are greater

Common Name	Scientific Name	Listing Status	Effect Determination
			than 10 miles away
jaguar	*Panthera onca*	E	May Affect, Not Likely to Adversely Affect (Gila District Livestock Grazing Program BO, 2012); historical habitat, no recent documentation on-site, recent documentation approximately 30 miles away
Mexican spotted owl	*Strix occidentalis lucida*	T	No Effect – Known locations and suitable habitat are greater than 10 miles away
New Mexico ridgenosed rattlesnake	*Crotalus willardi obscurus*	T	No Effect – Known locations and suitable habitat are greater than 10 miles away
loach minnow	*Tiaroga cobitis*	E	No Effect-– Known locations and suitable habitat are greater than 10 miles away
northern aplomado falcon	*Falco femoralis septentrionalis*	E	No Effect-– Known locations and suitable habitat are greater than 10 miles away
spikedace	*Meda fulgida*	E	No Effect-– Known locations and suitable habitat are greater than 10 miles away
Yaqui chub	*Gila purpurea*	E	No Effect – Known locations and suitable habitat are greater than 10 miles away
Yaqui topminnow	*Poeciliopsis occidentalis sonoriensis*	E	No Effect – Known locations and suitable habitat are greater than 10 miles away
Yaqui catfish	*Ictalurus pricei*	T	No Effect – Known locations and suitable habitat are greater than 10 miles away
Arizona treefrog (Huachuca/Canelo DPS)	*Hyla wrightorum*	C	Effect determinations are not made during consultation for candidate species; known locations and suitable habitat are greater than 10 miles away
ocelot	*Leopardus (=Felis) pardalis*	E	May Affect, Not Likely to Adversely Affect (Gila District Livestock Grazing Program BO, 2012); historical habitat, no recent documentation on-site, recent

Common Name	Scientific Name	Listing Status	Effect Determination
			documentation approximately 20 miles away
Sonoran tiger salamander	*Ambystoma mavortium stebbinsi*	E	No Effect – Known locations and suitable habitat are greater than 10 miles away
Lemmon fleabane	*Erigeron lemmonii*	C	Effect determinations are not made during consultation for candidate species; known locations and suitable habitat are greater than 10 miles away
Huachuca springsnail	*Pyrgulopsis thompsoni*	C	Effect determinations are not made during consultation for candidate species; known locations and suitable habitat are greater than 10 miles away
San Bernardino springsnail	*Pyrgulopsis bernardina*	T	No Effect – Known locations and suitable habitat are greater than 10 miles away
northern Mexican gartersnake	*Thamnophis eques megalops*	C	Effect determinations are not made during consultation for candidate species; known locations and suitable habitat are greater than 10 miles away
desert tortoise, Sonoran population	*Gopherus agassizii*	C	Effect determinations are not made during consultation for candidate species; known locations and suitable habitat are greater than 50 miles away
Sprague's pipit	*Anthus spragueii*	C	Effect determinations are not made during consultation for candidate species; known locations and suitable habitat are greater than 40 miles away

E – Endangered
T – Threatened
C – Candidate species, may be analyzed under BLM Sensitive Species if present on allotment. Delisted species, may be analyzed under BLM Sensitive Species if within five years of delisting and present on allotment.

Appendix 11.5. Conservation measures and justification for effect determination for selected species from 2012 Gila District Grazing Program biological opinion.

Jaguar and Ocelot

1. The BLM will work with Wildlife Services, the Arizona Game and Fish Department, and the FWS as necessary with regard to minimizing the potential for effects to jaguars and ocelots related to predator control on BLM lands.
2. The BLM will inform any entity associated with the livestock grazing program to not subject jaguars or ocelots to any predator control activities.
3. The BLM will continue, at least annually, to inform permittees with allotments within the range of the jaguar or ocelot, as appropriate, of the potential occurrence of jaguars or ocelots in their allotments, the status of the jaguar and ocelot, and that take of jaguar or ocelot, including harm and harassment, is prohibited under the Act and could result in prosecution.
4. The BLM will maintain dense, low vegetation (mesquite, cottonwood, willow, etc.) in major riparian or xero-riparian corridors on BLM-administered lands within the jaguar and ocelot ranges to the extent possible under the BLM's grazing program.
5. The BLM will continue to implement grazing actions that improve conditions of riparian areas.
6. The BLM will appropriately report any observations of jaguars or ocelots. The BLM, FWS, and AGFD will share information concerning general jaguar and ocelot locations and movement so that appropriate grazing related notifications and actions can be taken to protect against adverse affects.

Following is the justification from the 2012 Gila District Grazing Program Biological Opinion for concurrence on "may affect, not likely to adversely affect" determination:

"Conclusion
After reviewing the status of the jaguar and ocelot, the environmental baseline for the action area, and the
effects of the proposed action, we concur that the proposed action may affect, but is not likely to adversely affect, the jaguar or ocelot based upon the following:
1. The proposed action is not anticipated to result in significant changes to habitat quality or quantity because the allotments will be managed to meet the standards and guidelines, which will not result in clearing of habitat, destruction of riparian areas, or fragmentation.
2. Any changes to prey habitat are likely to be localized, and not expected to significantly change prey
availability throughout the areas where jaguars or ocelots may occur.
3. The likelihood of a jaguar or ocelot occurring in the same area where predator control activities are
occurring is small and it shall require identification of the target animal to species before control activities
are carried out. If the identified animal is a jaguar or ocelot, that individual shall not be subjected to any
predator control actions."

Lesser long-nosed bat

1. The BLM will ensure that grazing related actions do not directly or indirectly affect day roost sites on BLM land as they are identified. The BLM will ensure that grazing program actions such as road construction and maintenance do not facilitate public access to known lesser long-nosed
bat roosts.
2. The BLM will support surveys for lesser long-nosed bats to facilitate better management of lesser long-nosed bats and their habitat. Within the foraging range of lesser long-nosed bats, the BLM will consider the bat's forage base in any allotment evaluation, and, if necessary, modify grazing actions appropriately to reduce adverse effects.
3. The BLM will conduct, prior to construction of range improvement projects, pre-construction surveys for paniculate agaves and saguaros that may be directly affected by construction activities, or in the case of new water sources, may occur within 0.5 mi of the proposed water source. If agaves or saguaros are found during pre-construction surveys, the following measures shall be implemented:
a. Locate fences, pipelines, waters, and other range improvement projects to reduce as much as possible injury and mortality of agaves and saguaros.
b. Limit disturbance to the smallest area practicable and locate projects in previously disturbed areas whenever possible.
c. Limit vehicle use to existing routes and areas of disturbance except as necessary to access or define boundaries for new areas of construction or operation.
d. Limit all workers' activities and vehicles to designated areas.
4. The BLM will not seed/plant non-native plants on any allotments in which paniculate agaves or saguaros occur.

Following is the justification from 2012 Gila District Grazing Program Biological Opinion for concurrence on "may affect, not likely to adversely affect" determination:

"Conclusion
After reviewing the status of the lesser long-nosed bat, the environmental baseline for the action area, and the effects of the proposed action, we concur that the proposed action may affect, but is not likely to adversely affect, the lesser long-nosed bat based upon the following:
1. The known roost sites are not expected to be disturbed or modified by the proposed livestock management because of inaccessibility or distance from actions. The BLM will make necessary management changes to protect any roosts found in the future that are in or near an allotment. Therefore, the effects to roosts are discountable.
2. Effects from the construction and maintenance of structures and improvements to forage plants will be
minimal because the BLM will survey before the actions are implemented and minimize effects to forage
plants. This will result in relatively few forage plants being affected, and will leave the majority of forage
plants in the area unaffected. Therefore the effects are insignificant, and, as a result, will not limit the use of the area for bats. Note: construction and maintenance of structures or improvements are not proposed.
3. Livestock management guidelines and prescriptions will be implemented that facilitate the regeneration and maintenance of bat food plants, including implementation of appropriate

drought management policies and managing to meet the standards and guidelines. This includes minimizing damage to bolting agaves, especially in low flowering years, through changes in management, including implementing drought management guidelines and managing to meet the standards and guidelines. These actions may result in some individual plants and bolts being affected in some years, but most foraging plants and bolts will be unharmed, and therefore, the effects are insignificant. Foraging areas will continue to be used by bats.
4. No critical habitat has been designated for these species, so none will be affected."

Appendix 11.6. BLM Sensitive Species with potential to occur on the Moore Canyon Allotment.

Common Name	Scientific Name	Habitat
Dalhouse spleenwort	*Asplenium dalhousiae*	A sky island perennial fern with a rosette of fronds that grows in shady, rocky ravines in moist soil among and at the bases of rocks, in Madrean oak woodland at 4,000 – 6,000 ft (1220-1830 m). A locality found in the Mule Mountains was growing on a northwest facing slope, and appears to be restricted to granitic substrates in southern Arizona. Associated with *Dasylirion* (sotol), *Garrya* (silktassel), *Heuchera* (alumroot), *Pinus* (pine), *Quercus* (oak), and *Rubus* (blackberry).
Arizona giant sedge	*Carex ultra*	The largest sedge of southern Arizona; populations often small and widely separated. Found on moist/wet alluvial soil, sand, and gravel near perennially wet springs and streams; undulating rocky-gravelly terrain at 2,040 - 6,000 feet (610-1800 m). Exposure is southeast-facing, often shaded.
Bartram stonecrop	*Graptopetalum bartramii*	Small succulent perennial with a basal rosette; grows as solitary rosettes or in clumps on ledges or slopes of steep walled canyons and cracks in rocky outcrops in shrub live oak-grassland communities along meandering arroyos on sides of rugged canyons. Usually heavy litter cover and shade where moisture drips from rocks, often with Madrean evergreen woodland at 3,650 - 6,700 ft (1113-2044 m) with north exposure. Dominant associated species include: *Agave schottii, Bouteloua curtipendula, Cercocarpus montanus, Choisya mollis, Dasylirion wheeleri, Fouquieria splendens, Juniperus deppeana, Muhlenbergia* spp., *Rhus trilobata,* and *Yucca baccata*.
Texas purple spike	*Hexalectris warnockii*	Purely parasitic, host plant unknown. Can remain underground without emergence for a long time making plant difficult to monitor. Found in humus beneath rocks and fallen oaks along streambeds at 5,000 - 7,000 feet (1525 - 2135 m), in shady canyon bottoms, up slope in oak-mixed conifer leaf litter. Rich humus soil and quartzite. Mixed oak woodland; cover is mostly silverleaf oak with some pines, madrones, and manzanita.
Great Plains narrow-mouthed toad	*Gastrophryne olivacea*	Mesquite semi-desert grassland to oak woodland, in the vicinity of streams, springs and rain pools. They are more terrestrial than aquatic in habits. They can be found in deep, moist crevices or burrows, often with various rodents, and under large flat rocks, dead wood, and other debris near water. In Arizona, elevation ranges from 1,400 – 4,700 ft (427-1434 m) within Madrean evergreen woodland, semi-desert grassland, and Sonoran Desert scrub.
American peregrine falcon	*Falco peregrinus anatum*	Discussed in Migratory Bird section. Optimum peregrine habitat is generally considered to be steep, sheer cliffs overlooking woodlands, riparian areas or other habitats supporting avian prey species in abundance.
golden eagle	*Aquila*	Discussed in Migratory Bird section. Usually found in open

Common Name	Scientific Name	Habitat
	chrysaetos	wooded country and barren areas, especially in hilly or mountainous regions. They nest on rock ledges, cliffs or in large trees.
cave myotis	*Myotis velifer*	Predominantly desertscrub of creosote, brittlebush, palo verde and cacti, but sometimes up to pine-oak communities. Roost in caves, tunnels, mineshafts, under bridges, and sometimes in buildings. Mostly between 300 and 5,000 feet (92 - 1,525 m).
greater western mastiff bat	*Eumops perotis californicus*	Lower and upper Sonoran desertscrub near cliffs, preferring rugged rocky canyons with abundant crevices. They prefer crowding into tight crevices a foot or more deep and two inches or more wide. Colonies prefer crevices even deeper, to ten or more feet. Considered a year-round resident in Arizona. Whether or not this bat hibernates during winter is unclear. Many roost sites do not seem to be occupied year-round, although they are likely to be occupied periodically. Elevation ranges from 240 – 8,475 ft. (73 - 2583 m).
Townsend's big-eared bat	*Corynorhinus townsendii*	Desertscrub, oak woodland, oak/pine, pinyon/juniper, and coniferous forests. In Arizona, summer day roosts are found in caves and mines from desertscrub up to woodlands and coniferous forests. Night roosts may often be in abandoned buildings. Elevation ranges between 550 and 8,437 feet (168 - 5272 m). Most records range above 3,000 feet (915 m).

Appendix 11.7. Bird Species of Conservation Concern within the Sierra Madre Occidental region (BCR 34).

Sierra Madre Occidental (BCR 34)
Bald Eagle (b)
Common Black-Hawk
Peregrine Falcon (b)
Mountain Plover (nb)
Yellow-billed Cuckoo (w. U.S. DPS) (a)
Flammulated Owl
Elf Owl
Blue-throated Hummingbird
Elegant Trogon
Lewis's Woodpecker
Arizona Woodpecker
Northern Beardless-Tyrannulet
Buff-breasted Flycatcher
Rose-throated Becard
Bell's Vireo (c)
Gray Vireo
Pinyon Jay
Bendire's Thrasher
Sprague's Pipit (nb)
Phainopepla
Olive Warbler
Lucy's Warbler
Yellow Warbler (sonorana ssp.)
Black-throated Gray Warbler
Grace's Warbler
Red-faced Warbler
Canyon Towhee
Rufous-winged Sparrow
Botteri's Sparrow
Five-striped Sparrow
Black-chinned Sparrow
Lark Bunting (nb)
Grasshopper Sparrow (nb)
Grasshopper Sparrow (ammolegus ssp.)
Baird's Sparrow (nb)
Chestnut-collared Longspur (nb)
Varied Bunting

ESA candidate, (b) ESA delisted, (c) non-listed subspecies or population of Threatened or Endangered species, (nb) non-breeding in this BCR

Appendix 11.8. Resources affected by the proposed action, as identified by the BLM Tucson Field Office interdisciplinary NEPA team during scoping on 2 July 2012. Those resources with impact are discussed under each alternative.

Resource	Determination	Rationale for Determination /Issue
Air Quality	NP	
Areas of Critical Environmental Concern	NP	
Cultural Resources/Paleo	NI	See Cultural Resource Compliance Documentation Record
Environmental Justice	NP	
Farm Lands (Prime or Unique)	NP	
Floodplain	NI	Low utilization and high vegetative cover is present.
Native American Religious Concerns	NP	
Threatened or Endangered Species	PI	Potential for impact to lesser long-nosed bat, jaguar, and ocelot analyzed in 2012 BO.
Wastes, Hazardous or Solid	NP	
Water Quality, Drinking or Ground	NP	
Wetlands/Riparian Zones	PI	Ephemeral washes may be impacted by livestock grazing.
Wild and Scenic Rivers	NP	
Wilderness	NP	
Wilderness Character	NP	
Invasive & Non Native Weeds	NI	Lehmann lovegrass is present on the allotment. Current utilization levels should deter further expansion and invasion.
National Energy Policy	NP	
Rangeland Health Standards	PI	The proposed action to renew grazing lease may impact land health.
Migratory Bird Treaty Act	PI	The proposed action may affect nesting cover and/or vegetation and/or forage/seed production and/or insect prey.
Recreation	NI	The proposed action may affect the recreational experience by users.
Wildlife	PI	The proposed action may affect habitat for wildlife through vegetation disturbance and removal, change in species frequency or composition, and change in water availability.
Lands/Realty	NP	
Access/Transportation	NP	
Visual Resources	NP	No visual difference between Moore Canyon allotment and neighboring lands.
Mineral Resources	NP	There are no mining actions present on the allotment.
Vegetation	PI	The proposed action involves vegetation utilization by livestock; changes in frequency, composition may occur.
Water Rights	NP	Water for livestock is on private property.
Grazing Program	PI	The proposed action involves the grazing program and renewal of an existing grazing lease.

NP = not present in the area impacted by the proposed or alternative actions
NI = present, but not affected to a degree that detailed analysis is required
PI = present with potential for impact and analyzed in detail in the EA