

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

**Hibernia Peak Unit A
Hibernia Peak Unit B
Cane Springs Wash
Allotments**

Grazing Permit Renewals

**Environmental Assessment
DOI-BLM-AZ-C010-2016-0026-EA**



January 2018



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CHAPTER 1 –INTRODUCTION

In response to an application for grazing from the permittee in October of 2015, the Bureau of Land Management (BLM) Kingman Field Office (KFO) completed a land health evaluation entitled “An Evaluation of Standards for Rangeland Health for the Hualapai Mountains North Evaluation” (BLM 2016) herein referred to as the **2016 Evaluation**, which is provided in Appendix A. The 2016 Evaluation was completed to determine whether Arizona Standards of Rangeland Health (AZ Standards) (BLM 1997) are being met for the Hibernia Peak Unit A, Hibernia Peak Unit B (Hibernia A and B), and Cane Springs Wash Allotments.

This Environmental Assessment (EA) will develop and analyze a range of alternatives as part of the grazing permit renewal process for the Hibernia A and B and Cane Springs Wash Allotments. Hibernia A and B are operated as one allotment and are under a single plan entitled the Cane Springs Ranch Cooperative Management Plan and EA herein referred to as the Allotment Management Plan (AMP 1999).

This EA discloses and analyzes the potential environmental consequences of grazing permit renewals for the Hibernia A and B and Cane Springs Wash Allotments to determine whether any significant impacts could result from implementation of the Proposed Action. It has been prepared for compliance with the National Environmental Policy Act (NEPA 1970). It tiers to the 1995 Kingman Resource Management Plan Environmental Impact Statement (RMP EIS 1995) (BLM 1995) and incorporates by reference the 2016 Evaluation. All documents can be reviewed at:

BLM Kingman Field Office
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The 2016 Evaluation was completed in accordance with the AZ Standards established by BLM-AZ IM-99-012. The 2016 Evaluation period began in 1981 when trend monitoring was established.

1.1 Project Area

Evaluation Area

The Hualapai Mountains North Evaluation covered approximately 213,750 acres of public land in the northwest corner of Arizona in Mohave County. A map of the area is located in Appendix D (Figure 1) of this EA.

The Evaluation Area was comprised of seven livestock grazing allotments covering the northern end of the Hualapai Mountains. The allotments that were evaluated are: Walnut Creek, Lazy YU, Yellow Pine, Hualapai Peak, Hibernia Peak Units A and B, and Cane Springs Wash.

The Project Area encompasses three of these allotments, Hibernia A and B, and Cane Springs Wash. The permit renewals for these three allotments are being analyzed in this document.

1.2 Background

The Hualapai Aquarius Grazing EIS (1981) separated allotments into one of three Selective

Management Policy¹ (SMP) Categories (I, M, C), and then assigned allotments forage availability categories. The RMP EIS (1995) carried forward the decisions from the Hualapai Aquarius Grazing EIS (1981). The assignments for the three allotments are as follows:

	SMP Categories	Forage Availability
Hibernia Peak Unit A	I (Improve)	perennial ²
Hibernia Peak Unit B	C (Custodial)	ephemeral ³ -perennial ⁴
Cane Springs Wash	C (Custodial)	ephemeral-perennial

The Cane Springs Wash Allotment (Figure 2, Appendix E) was renewed using a grazing preference transfer on October 4, 2016 under the Authority of Section 402(C)(2) of the Federal Land Policy Management Act (FLPMA) of 1976. The BLM renewed the Hibernia A (Figure 3, Appendix E) and B (Figure 4, Appendix E) permits with the same terms and conditions pursuant to Section 416 of Public Law 111-88, pending compliance with applicable laws and regulations for a 10-year term beginning March 1, 2010.

KFO completed the 2016 Evaluation (Appendix A) and a *Determination for Achieving Standards for Rangeland Health and Conforming with Guidelines for Grazing Administration* (Determination Worksheet, Appendix B). The Worksheet indicates that all key areas for the three allotments are meeting rangeland health objectives and standards, as defined by AZ Standards, with the exception of Key Area 7 in Hibernia Peak B Allotment.

Key Area 7 (Figure 5, Appendix E) did not meet Upland Health Standard #1 (Upland Soils) because of the composition and frequency of an exotic invasive grass species known as Lehmann's lovegrass. Key Area 7 supports a diversity of native perennial plant species but the increase in Lehmann's lovegrass may be replacing some native grass species such as big galleta and possibly desert needlegrass. Lehmann's lovegrass is known to have replaced native grasses when they died on rangelands (Angell and McClaran 2001).

The Determination Worksheet (Appendix B) states the increase in Lehmann's lovegrass at this site is more than likely related to the influence of drought. The precipitation table shown in the 2016 Evaluation (Appendix A) displays that drought occurred in the spring seasons (March – June) 86% of the time since 1994 (22 years) and it occurred in the summer seasons (July – October) 40% over the same time-period. The source of the introduction for Lehmann's lovegrass at Key Area 7 is unknown. It was introduced into Hibernia Peak Unit A where it was

¹ Selective Management Policy Categories: This Policy is used extensively in administering grazing leases. The SPM requires that BLM apply its limited workforce and budget to those lands providing the greatest potential for improvement and public benefit. Grazing allotments are separated into three management categories: "I" (improve), "M" (maintain), and "C" (custodial). Generally, leases consisting of small, isolated tracts of public lands are managed as custodial. BLM's major emphasis on the custodial leases is with various administrative actions such as billings, lease renewals, and transfers. On the larger blocks of public land that offer the best opportunity for multiple use management initiatives, BLM works with the grazing lessees to take actions or authorize uses to achieve various resource management objectives.

² Perennial allotment: Perennial forage is available consistently each year through perennially producing grasses, forbs and shrubs. (BLM 1995)

³ Ephemeral allotment: Ephemeral forage consists of annual grasses and forbs that become productive only in response to adequate spring moisture and warm temperatures. (BLM 1995)

⁴ A perennial-ephemeral allotment has lands in both perennial and ephemeral classifications. (BLM 1995)

seeded after prescribed burning in the late 1980's. It has not been documented as currently being established in Hibernia Peak Unit A. Lehmann's lovegrass seed could have been transported into Hibernia Peak Unit B by any one of, or a combination of, livestock, vehicles, wind, or wildlife.

The RMP EIS (1995) identifies resource management objectives and management actions that establish guidance for managing a broad spectrum of land uses and allocations for public lands in the KFO. The RMP EIS (1995) allocated public lands within Hibernia A and B, and Cane Springs Wash Allotments as available for domestic livestock grazing. Where consistent with the goals and objectives of the RMP EIS (1995) and AZ Standards allocation of forage for livestock and the issuance of grazing permits to qualified applicants are provided for by the Taylor Grazing Act and the FLPMA.

1.3 Purpose and Need

The purpose of the action is to fully process the term grazing permits for the Hibernia A and B and Cane Springs Wash Allotments in accordance with all applicable laws, regulations, and policies and in accordance with Title 43 CFR 4130.2

The need for the action is to renew these grazing permits with terms and conditions for grazing use that would meet, or make significant progress towards meeting, the Standards and Guidelines for Rangeland Health, Resource Management Plan, and other pertinent multiple use objectives for the allotment.

The need for this action is established by the Taylor Grazing Act, FLPMA, and the RMP EIS (1995), which requires that the BLM respond to grazing applications to fully process permits to graze livestock on public lands identified as available for livestock grazing.

1.4 Decision to be Made

The Authorized Officer would decide whether or not to issue new grazing permits for the three allotments and if so, what terms and conditions would apply to each permit.

1.5 Conformance with Arizona Standards, and the Land Use Plan

Arizona Standards for Rangeland Health (AZ Standards):

The following standards are applicable to all three allotments:

- **Standard 1: Upland Sites**
Upland Soils exhibit infiltration, permeability, and erosion rates that are appropriate to soil type and landform (ecological site).
Soil conditions support proper functioning of hydrologic, energy, and nutrient cycles.
 - Soil condition indicators include: Bare ground or ground cover: litter; live vegetation (i.e., amount and type (e.g., grass, shrubs, trees, etc.); gravel and rock.
 - Signs of erosion: flow pattern, gullies, rills, plant pedestaling, etc.
- **Standard 2: Riparian-Wetland Sites**
Riparian-wetland areas are in Properly Functioning Condition (PFC).
 - Riparian-wetland functioning condition assessments are based on examination of hydrologic, vegetative, soil and erosion-deposition factors.
 - PFC is indicated by such factors as: Gradient; width-to-depth ratio; channel roughness and sinuosity of stream channel; bank stabilization; reduced erosion;

- captured sediment; ground-water recharge; and dissipation of energy by vegetation.
 - Productive and diverse upland and riparian-wetland plant communities of native species exist and are maintained.
 - Attributes include: Composition, frequency, structure, and distribution.
- Standard 3: Desired Resource Conditions (Vegetation)
Productive and diverse upland and riparian-wetland plant communities of native species exist and are maintained.
 - Upland and riparian-wetland plant communities meet Desired Plant Community (DPC) objectives.
 - DPC objectives will be developed to assure that soil conditions and ecosystem function described in Standards 1 and 2 are met.
 - DPC objectives will be used as an indicator of ecosystem function and rangeland health.
 - Indicators include Composition, Structure, and Distribution.

Kingman Resource Area RMP/Hualapai Aquarius Grazing EIS

The Proposed Action and Alternatives for all three allotments are in conformance with the Rangeland Management Decisions in the RMP EIS (1995) and include:

- Management of rangeland resources will be guided by the Hualapai Aquarius Grazing EIS (1981) and Range Program Summaries (RMP EIS 1995, pg. 24). The objectives for the rangeland management program are listed in the Hualapai Aquarius Grazing EIS (1981), pg. 39.
- Manage three allotments in the following categories: Hibernia Peak A (I) Improve, Hibernia Peak B and Cane Springs Wash (C) Custodial (RMP EIS 1995, pg. 461).
- Improve wildlife habitat by providing more forage, cover, and water (RMP EIS 1995, pg. 461) and objective from Hualapai Aquarius Grazing EIS (1981), pg.1.
- Reduce soil erosion and increase water infiltration by increasing vegetative ground cover and litter (RMP EIS 1995), pg. 461 and objective from the Hualapai Aquarius Grazing EIS (1981), pg. 1.
- Sustain livestock production by providing more and better quality forage (RMP EIS 1995, pg. 461) and objective from Hualapai Aquarius Grazing EIS (1981), pg. 1.
- Utilization of key species will be limited to 60% in one year, with an average utilization of 50%. Annual adjustments in stocking numbers may be made on the basis of actual use experience acquired in reaching the 50% utilization level of the current year's growth of key species within sample areas. If required, adjustments will be made in authorized grazing use during subsequent billing period.
- Development or revision of allotment management plans would be accomplished through consultation, cooperation, and coordination with affected interested parties, and other agencies. Management goals would be met through grazing programs including systematic, timed periods of grazing and rest from grazing, designed to meet the physiological needs of key forage plants and improved soil stability and watershed conditions. A specific grazing system would be designed to meet the needs of the public land resources and the rancher using public lands on each allotment or group of allotments under a single rancher's control. Changes necessary to meet vegetation, soil, watershed, water quality, wildlife, and wild horse and burro goals may include, but are not limited to: season of use, livestock numbers, kind or class of livestock, and

development of new range improvements (fences, waters, etc.). All actions would occur only after compliance with the NEPA (RMP EIS 1995, pgs. 71–72).

- Modify all fences in mule deer range and antelope range on public lands to meet BLM Standards (Manual 1737) as reconstructed or during major maintenance (RMP EIS 1995, pg. 589).
- Keep gravity fed troughs and water storage tanks filled year-round for water fowl and other wildlife, even if livestock are removed (RMP EIS 1995, pg. 589).
- BLM will manage for the conservation of candidate and BLM-Sensitive species and their habitats. BLM will ensure that actions authorized will not contribute to the need to list any of these species as threatened or endangered (RMP EIS 1995, pg. 29).

1.6 Scoping and Issues of Concern

It was determined through a Colorado River District (CRD) Management Strategy Planning effort in September of 2015 that the KFO would begin field land health evaluation work on the Hualapai Mountain North Area in early FY-16, so that the Hibernia A and B, and Cane Springs Allotments could be considered for NEPA analysis in mid-to-late FY-16. This proposal was scoped internally by the KFO Interdisciplinary Team on August 2, 2016.

Issues and concerns identified by the KFO Interdisciplinary Team included:

- Invasive Non-Native Species
 - How would the Proposed Action affect invasive, noxious, and non-native species on these allotments?
 - How would the Proposed Action affect the composition of Lehmann’s lovegrass on the Hibernia A and B Allotments?
- Grazing Management
 - How would the Proposed Action affect livestock grazing on the allotments?
- Recreation
 - How would the Proposed Action affect recreational opportunities and associated outcomes on the allotments?
- Riparian
 - How would the Proposed Action continue to improve the riparian habitat on Hibernia A and B?
- Vegetation
 - How would the Proposed Action affect the productivity of key species?
- Visual Resources
 - How would the Proposed Action affect scenic quality of the area?
- Wildfire
 - How would the Proposed Action affect habitat response to wildfires on these allotments?
- Wilderness
 - How would the Proposed Action affect wilderness characteristics on Hibernia Peak A Allotment?
- Wildlife including Special Status Species
 - How would wildlife special-status species and migratory bird habitat and population be affected by the Proposed Action?
 - How would the Proposed Action affect management of Hualapai Mexican vole habitat?

- How would the Proposed Action affect general wildlife's habitat?
- How would the Proposed Action affect wildlife's access to stock waters?

1.7 Consultation, Cooperation, and Coordination

The Cane Springs Ranch Cooperative Management Plan (1999) (Appendix C), is used to manage livestock on Hibernia A and B included the involvement of BLM and five other agencies: Arizona State Land Department, Arizona Game and Fish Department (AGFD), Natural Resource Conservation Service (NRCS), U of A Cooperative Extension Service, and the Big Sandy Natural Resource Conservation District.

Development of this Plan included numerous meetings, field trips, coordination, and cooperation to understand the needs for and to develop the 1999 AMP livestock management plan. The US Fish and Wildlife Service (FWS) was consulted in the meetings, participated on a field trip on September 11, 1998, and reviewed the overall management plan. The AMP (1999) is still in place today and provides guidance/direction for the continual improvement of resource conditions on both Hibernia A and B.

Monitoring of the Hibernia A and B Allotments has been conducted in a cooperative manner since implementation of the AMP (1999). All interested parties including the livestock grazing permittee are invited to participate in monitoring.

1.7.1. Native American Consultation and Coordination

Consultations occur as appropriate to fulfill Section 106 compliance and the CRD BLM Memorandum of Understanding (MOU) with the Hualapai Tribe (BLM 2012).

One new range improvement (Cedar Canyon Well) is being recommended as part of the proposed permit renewals. An archaeological survey and a thorough review of existing records on Hibernia A and B, and Cane Springs Wash Allotments indicates an absence of areas of cultural concern that would trigger project specific Native American consultation.

1.7.2 Public Review and Comments

Comments were accepted on this EA, DOI-BLM-AZ-C010-2016-0026-EA, for a 30-day period during the months of August and September 2017. The EA, Appendices and Maps were posted to the project webpage and notification sent to the interested parties during this comment period. Comments were received from the permittees and the Mohave Livestock Association. In November 2017, a meeting was held between the BLM and the permittees to discuss their comments on the document. In response to the comments, this Final EA incorporates and analyzes adding a range improvement, Cedar Well to the Proposed Action, which would aid in meeting the goals of the AMP. These comments and the BLM's responses can be viewed in Appendix F.

1.8 Relationships to Statutes, Regulations, or Other Plans

Listed below are statutes, regulations, policy and local area planning documents germane to the analysis area, Proposed Action, and alternatives.

- Clean Air Act of 1970
- National Historic Preservation Act of 1966
- Native American Graves Protection and Repatriation Act of 1990

- National Environmental Policy and Management Act of 1969
- Taylor Grazing Act of 1934 as amended
- Federal Land Policy and Management Act of 1976 as amended
- Public Rangelands Improvement Act of 1978
- Grazing regulations under 43 CFR 4100 and associated BLM Manual
- Arizona Water Quality Standards, Revised Statute Title 49, Chapter II
- Endangered Species Act of 1973
- Migratory Bird Treaty Act of 1918
- Executive Order 13186–Responsibilities of Federal Agencies to Protect Migratory Birds
- Desert Tortoise Habitat Management on the Public Lands: A Range-wide Plan, 1988. Management Plan for the Sonoran Desert Population of the Desert Tortoise in Arizona
- Arizona Interagency Desert Tortoise Team, 1996
- The Wilderness Act of 1964
- Arizona Desert Wilderness Act of 1990

Other BLM Plans

The following documents are applicable to the specific allotments as referenced:

- *Hualapai Habitat Management Plan (BLM 1987)*
Improve mule deer habitat by relieving limiting habitat factors such as water, forage, or cover (pg. 13).
- *The Wabayuma Peak Wilderness Management Plan, Environmental Assessment, and Decision Record (BLM 1995a)*
Hibernia Peak Unit A is also analyzed within this document, which contains the following objective:
 1. Conduct routine inspection and maintenance of range improvements (fences, spring developments, etc.) located within the wilderness area, using non-motorized and non-mechanized means. According to the plan, all other maintenance will require prior BLM approval and additional environmental assessment. Emergency repair to range improvements using motorized or mechanized equipment shall require prior written approval by the BLM (BLM 1995a, pg. 25).
- *Cane Springs Ranch Cooperative Management Plan and EA (BLM 1999) (Appendix C)*
Hibernia Peak A and B Allotment Objectives:
 1. Achieve a 50% average utilization level on key forage species listed in the Allotment Management Plan and limit utilization of key forage species to 60% each year.
 2. Maintain or increase the frequency of the key species over the next 10 years.

CHAPTER 2 – PROPOSED ACTION AND ALTERNATIVES

Descriptions and analyses are presented such that Cane Springs Wash Allotment is addressed first, followed by Hibernia A and B Allotments.

2.1 Alternative 1- The Proposed Action Alternative

The BLM is proposing to fully process term grazing permits (10-year term) on the Hibernia Peak Unit A (#00053), Hibernia Peak Unit B (#00083), and Cane Springs Wash (#00016) Allotments,

in accordance with all applicable laws, regulations, and policies. These three allotments total approximately 52,000 acres of public land.

Terms and Conditions

The Proposed Action for the Cane Springs Wash Allotment would be to issue the grazing permits under the same terms and conditions as the current permit, as described below.

The Proposed Action for Hibernia Peak A and B Allotments would be to issue the grazing permits under the same terms and conditions as the current permits with four specific modifications to the terms and conditions, as described below.

Table 1. Mandatory Terms and Conditions

Allotment Name	No. of Livestock	Kind of Livestock	Season of Use Begin / End	% Public Land	Type Use	AUM's ⁵
Cane Springs Wash	14 AUs⁶	Cattle	03/01 to 02/28	100%	Active	168
Hibernia Peak - A	460 AUs	Cattle	10/15 to 04/16	95%	Active	2,615
Hibernia Peak - B	410 AUs	Cattle	03/01 to 02/28	48%	Active	2,362

Other Terms and Conditions

- Cane Springs Wash Allotment:
 - Provide the BLM a certified actual use record by March 15 of each year. This report will detail the number of livestock and period of use (43 CFR 4100).
- Hibernia A and B Allotments:
 - The provisions of the Cane Springs Ranch Cooperative Management Plan signed in July 1999 are included as the terms and conditions of this permit herein referred to as the AMP (1999).
 - Provide the BLM a certified actual use record by March 15 of each year. This report will detail the number of livestock and period of use (43 CFR 4100).

Modifications specific to Hibernia Peak A and B Allotments

1. Hibernia A and B Allotments would be combined into one allotment.
2. The combined allotments would be categorized as an “I” (Improve) allotment.
3. Detailed Actual Use records would be maintained for livestock management activities in all pastures during the grazing year. Detailed records include:
 - a. Actual use by pasture, the start date, number of animals in pasture, any animal removed and period of use. Additional considerations such as death/loss, number of cattle that got out of a pasture, and how long they were out. Water problems related to livestock distribution would also be documented in the records.
 - b. This written record would be made available upon request.
4. Hualapai Mexican vole habitat would continue to be monitored so that a 20% use level in vole habitat from livestock would not be exceeded.

⁵ AUMs: Animal Unit Months

⁶ AUs: Animal Units or cattle numbers

Modifications #1 and #2 are proposed to update BLM's SMP status and to improve administrative efficiency with regard to managing the allotments. Hibernia Peak Unit A was originally categorized as *Improve*, and Hibernia Peak Unit B as *Custodial*. As a result of a land exchange that occurred in August 1999, Hibernia Peak Unit B now fits more appropriately under the *Improve* category.

Modification for #3 is to improve administrative effectiveness.

Modification for #4 is based on the Hualapai Mexican vole being a BLM Sensitive Species.

Range Improvement

Cedar Canyon Well

The grazing permittee requested a Cooperative Range Improvement Permit for the development, operation, and maintenance of a new well facility on the Hibernia Peak Unit B allotment. The new well facility would be located on an existing well pad left over from a well facility developed at this location sometime in the past. This new facility would be located at the west end of North Pasture in Township 19 North, Range 14 West, Section 30 (NW $\frac{1}{4}$ SE $\frac{1}{4}$). All that remains of the old well facilities is the pad, casing and an access road to the site.

Project development would involve drilling and casing a new borehole on the existing well pad and installation of a solar pumping system, pipelines, storage tank, troughs and corral.

Maintenance responsibility for this range improvement would be assigned to the grazing permittee, as a term and condition of the cooperative range improvement permit.

AMP Overview

The Cane Springs Ranch Cooperative Management Plan authorized in July 1999 is proposed for inclusion as part of the terms and conditions of the new grazing permit. This Plan would continue to guide livestock management into the future. The Best Pasture Grazing Systems overall objective is to move cattle into the pasture or pastures with the best forage conditions, while providing rest from grazing in every pasture over time. A lack of adequate livestock water (distribution and/or volume) has restricted the permittee's ability to graze one pasture at a time. However, management flexibility built into the plan authorizes grazing to occur at any time of the year and authorizes grazing in multiple pastures at the same time. This flexibility allowed the permittee to maintain an economically viable ranch operation while maintaining and/or improving the health of the vegetative plant communities across the allotment.

For detailed information on the AMP (1999) refer to Appendix C entitled (Cane Springs Ranch Cooperative Management Plan) of this EA.

2.2 Alternative 2 - No Action (No Change to Current Terms and Conditions)

Under the No Action Alternative, the current permits for Hibernia A, Hibernia B and Cane Springs Wash Allotments would be renewed under the same terms and conditions as the current permits (as described under the Proposed Action). The only differences between the Proposed Action and the No Action permits are that there would not be any modifications for the terms and conditions as described for Hibernia A and B Allotments and Cedar Canyon Well would not be developed.

2.3 Alternative 3 - No Grazing Alternative

Under this alternative, the permits would not be issued, and livestock grazing would not be authorized on the Hibernia A and B, and Cane Springs Wash Allotments at this time.

2.4 Alternatives Considered but Eliminated From Detailed Analysis

An alternative adjusting the stocking rate was not evaluated as both utilization objectives and AZ Standards are being met at all key areas for all three allotments with the exception of Key Area 7 on Hibernia Peak Unit B Allotment. The Determination Worksheet (Appendix B), states that livestock grazing was not the causal factor for not meeting Standard 1 of the AZ Standards at Key Area 7, hence a change to grazing management is not warranted per the grazing regulations found in 43 CFR 4100.

Internal scoping by the ID Team did not identify unresolved conflicts about the Proposed Action with respect to alternative uses of available resources. Therefore, no additional alternatives are considered for analysis in this document.

CHAPTER 3 -AFFECTED ENVIRONMENT & ENVIROMENTAL EFFECTS

3.1 Methodologies

The section is included to provide a rationale for why practices, terms, methods, etc. are used when making determinations and findings with regards to conditions on the allotments. Methodologies are also listed in specific sections where they relate to an individual resource.

Much of the guidance that resource specialists follow is cited at first mention of the protocol or practice in the document (i.e., saying it is a properly functioning condition, etc.). Unless stated otherwise, the explanations provided below are applicable throughout this document.

Quantifying Subjective Terms

“Design Criteria” and “Mitigation Measures”

- Design criteria and mitigation measures are considered synonymous phrases in this EA. They refer to actions planned for (in advance of designing an alternative) such that when implemented, it/they are intended to reduce or eliminate impacts to the environment. Analysis in this EA assumes that both [design criteria and/or mitigation measures] would be implemented.

“Cumulative Impacts” and “Cumulative Effects” are two separately used titles in this EA.

- *Cumulative Impacts* refers to direct⁷ and indirect⁸ activities in the short-term (within the first year) that can occur from the Proposed Action or from any forms of multiple-use that are expected (and identified in this EA) to occur on the allotments to any of the resources.
- *Cumulative Effects* refers to those actions that could occur as stated in #1 (above) in conjunction with any of the individual or in combination with different forms of multiple-

⁷ Direct Impacts: Effects caused by the proposed action.

⁸ Indirect Impacts: Effects that are caused by the proposed action later in time or farther removed in distance.

use that are expected to occur in the allotments to any of the resources in the long-term. “Likely” is considered to have greater than a 66% probability.

“Long-term” – For this EA, “long-term” projects are defined as those where impacts are expected to last ten years or beyond for most resources. One decade has been selected for reasons that include, but are not limited to:

- Observations made by specialists with regards to their professional experience and understanding of cause and effect relationships for their respective resources.
- Native desert vegetation can, depending upon the species, take ten years [or more] to become firmly established in arid zones where water is often a growth limiting factor.
- Soils exposed to both fire severity (duration) and intensity (temperature), not uncommon where drought resistant vegetation exists, can remove viable seed sources (as well as result in the mortality of biological activity in the upper three inches of a soil horizon) resulting in delayed decomposition and nutrient cycling necessary for plant growth.
- When grazing permits are issued or renewed, it is for a ten year period.
- BLM guiding documents (i.e., Resource Management Plans, etc.) are normally reviewed at five year increments and are scheduled for revision (providing personnel and budget are available) every twenty years.
- Identifying direct and indirect impacts initiated by management-induced activities for long-range planning requires assumptions to be made with regards to understanding interactions between physical, biological, ecological, and sociological processes.

“Negative impacts” are expected to reduce rangeland conditions to or below the minimum AZ Standards. *Negative* can also refer to an individual or groups’ attitude towards something that is not desirable.

“Positive impacts” are expected to improve rangeland conditions beyond the minimum AZ Standards. *Positive* can also refer to an individual or groups’ attitude towards something that is desirable.

3.2 Resources and Uses Considered for Analysis

This section describes the environmental consequences of resources/concerns identified by the ID Team as: not present, *or* present not affected, *or* present and potentially affected (Table 2). The analyses are written such that direct and indirect comments are provided directly beneath the applicable alternative to which the comments refer. The table below lists the resources and uses and describes their status in relation to the Proposed Action, and rationale for whether the topic will be carried forward for detailed analysis. Resources or uses determined to not be present or present, but not affected by the Proposed Action need not be carried forward or discussed further as shown by the rationale provided. Resource or uses determined to be present and may be carried forward in the document if there are issues which warrant a detailed analysis.

Table 2 Resources and Uses

Resource/Use	Determination and Rationale
Access	(Not Present)
Air Quality	(Present but not analyzed) Rationale: Mohave County is classified as an “Attainment area” for PM-10 and under the proposed action it is not anticipated that livestock will exceed air quality standards. Livestock management under the proposed action should continue to improve plant cover which in turn should reduce soil movement

Resource/Use	Determination and Rationale
	by water or wind.
ACEC	(Present Not Affected) Rationale: Part of the Hualapai Mountain ACEC (Figure 1, Appendix D.), established for the Hualapai Mexican vole, a BLM Sensitive species, occurs on Hibernia Peak A Allotment in an area called Pine Flat. This 960 acre portion of the ACEC would have no impacts from the Proposed Action as it is fenced and excluded from livestock grazing.
Aquatic	(Present and Potentially Affected) Analyzed in Section 3.6.5.
Birds of Conservation Concern & BLM Sensitive Species	(Present and Potentially Affected) Analyzed in Section 3.6.10.
Cultural Resources	(Present Not Affected) Rationale: Class III cultural resource inventories have been conducted at locations determined to be cattle congregation areas within each of the allotments considered for permit renewal (reports BLM-03-99-40 and BLM-AZ-310-16-41). These surveys document that no historic properties are present at those locations that are likely to be impacted by grazing activities. In addition, a cultural clearance has been completed with no historical property findings for the one new range improvement being recommended for the proposed permit renewals.
Energy (Oil/Gas)	(Not Present)
Environmental Justice	(Not Present)
Farm Lands-Prime/Unique	(Not Present)
Fire Management	(Present and Potentially Affected) Analyzed in Section 3.6.1 and 3.6.2.
Floodplains	(Not Present)
Forestry And Woodland Products	(Not Present)
Grazing/Rangelands	(Present and Potentially Affected) Analyzed in Section 3.6.3.
Human Health & Safety (HH&S)	(Present not affected) Rationale: Livestock and livestock management activities do not pose a danger to humans as most cattle are not aggressive towards people. Management activities such as round-ups, fixing improvements etc. are done in remote areas away from the public and being done by individuals with extensive knowledge of livestock handling.
Lands/Realty	(Present not affected) Rationale: No new land actions are proposed or anticipated in the project area.
Migratory Birds	(Present and Potentially Affected) Analyzed in Section 3.6.10
Mining/Minerals	(Not Present)
Native American Traditional Values	(Present not Affected) Rationale: No Native American traditional values were

Resource/Use	Determination and Rationale
	identified; therefore, there would be no impacts to sites of traditional religious and cultural significance.
Non-Native, Invasive & Noxious Species	(Present and Potentially Affected) Analyzed in Section 3.6.2.
Recreation	(Present and Potentially Affected) Analyzed in Section 3.6.4.
Riparian	(Present and Potentially Affected) Analyzed in Section 3.6.5.
Socio-Economics	(Present and Potentially Affected) Analyzed in Section 3.6.6.
Soils	(Present and Potentially Affected) Analyzed in Section 3.6.7.
Threatened Endangered (T&E) Critical Proposed or Candidate Species and/or Critical Habitat	(Not Present)
Vegetation	(Present and Potentially Affected) Analyzed in Section 3.6.8.
Visual Resources	(Present Not Affected) Rationale: The allotment contains acres designated as Visual Resources Management Classes I (314 acres in Wabayuma Peak Wilderness), II, III, and IV. Continuing livestock grazing as proposed is not expected to affect visual resources. Range improvements with implementation of applicable Best Management Practices and/or assigned mitigation measures are not expected to change the existing character of the landscape and would meet the VRM objectives associated with all classes.
Water Quality	(Present and Potentially Affected) Analyzed in Section 3.6.9.
Wild Horses & Burros	(Not Present)
Wild & Scenic Rivers	(Not Present)
Wildlife & Special Status Species	(Present and Potentially Affected) Analyzed in Section 3.6.10.
Wilderness	(Present and Not Affected) Rationale: The Proposed Action would not affect the Wabayuma Peak Wilderness as it has been excluded from livestock grazing through a fenced enclosure called the Pine Flats Enclosure. Approximately 314 acres of the wilderness, is located in the northwest corner of the Hibernia Peak Allotment (Unit A). This area was selected for its high degree of naturalness. Livestock grazing is an existing use within the wilderness. The Wabayuma Peak & Mount Tipton Wilderness Management Plan, Environmental Assessment, and Decision Record (USDI BLM 1995a) allows for “all routine maintenance and inspection of range developments will be completed using non-motorized and non-mechanized means.” These developments include allotment boundary fences (Duncan-Herridge & Smith-Statler fences). The existing wilderness values of naturalness, outstanding opportunities for solitude, and primitive and unconfined recreation would be retained under any of the alternatives.
Wilderness Characteristics	(Not Present) Rationale: No additional wilderness characteristics have been

Resource/Use	Determination and Rationale identified in the allotments.
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3.3 Cumulative Impacts

The following activities and uses represent past and present actions that have occurred and could occur at any time within the three allotments. These activities and uses are considered when analyzing the cumulative impacts on each resource.

- BLM activities (monitoring; vegetative and wildlife habitat improvement projects; invasive, non-native species control efforts; fire management activities to reduce the threat and impact of wildfire (e.g., wildfires, fuels reduction projects, etc.)
- Recreational activities: wildlife viewing, hunting, camping, etc.
- Public forms of multiple-use (gaining access to/from private or public lands) across the allotments
- Maintenance of permitted land actions (i.e., power line right-of-ways, etc.)
- Multiple-use related activities (county surveys, etc.)
- Mineral exploration, extraction, and/or development
- State/county services (weed eradication; invasive, noxious, non-native species control efforts; road construction and maintenance, etc.)

3.4 Reasonably Foreseeable Activities

In addition to any of the resources that may be affected and that are being analyzed, new developments could also occur. New developments that occur on public lands require site-specific environmental analysis. As such, impacts for them would be analyzed at a later time and are not included in this analysis. Events likely to occur within the next ten years include:

- Projects (i.e., lands/realty right-of-way requests; transportation corridor applications, etc.) that are developed with regard to population growth (see *Socio-Economics Section 3.6.6*) would be analyzed under additional environmental analysis at the time those projects are proposed and when more information is available.
 - Arizona Dept. of Transportation/Cane Springs Wash Section of US 93
A section of the highway is proposed to be expanded from a two-lane highway to a four-lane highway. The EA has been completed and a Decision Record has been signed.
- Water development actions related to population and/or mining development along the Big Sandy River corridor are expected to put an additional strain on the Big Sandy aquifers, with potential impacts that could affect the livestock waters.
- KFO Allotment Range Improvements.
The KFO ID team analyzes and recommends for authorization, range improvement requests for allotments within the KFO. It would be expected that site-specific environmental analysis under the NEPA will be required on range improvements for new projects such as installing new fences and/or water developments. The permittee has requested the authorization to new range improvement projects herein known as the Cedar Canyon Well located in the Hibernia Peak Unit B of the North Pasture.

3.5 General Project Setting - Landscape Setting

The Hibernia A and B, and Cane Springs Wash Allotments are located in the northwest corner of

Arizona, in Mohave County, southeast of Kingman, Arizona (Figure 1, Appendix D). The Project Area includes approximately 52,000 acres of public land, with the acreage divided as follows:

Allotment Name	Hibernia Peak A	Hibernia Peak B	Cane Springs Wash
Public Land Acres	28,480 acres	20,800 acres	2,310 acres

The Project Area is located primarily on the northeastern slopes of the Hualapai Mountains in a transition zone between the Mohave and Sonoran Deserts. Vegetation is a mix of Mojave and Sonoran Desert Scrub, Desert Grassland, Desert Grassland with trees and shrubs, Arizona Interior Chaparral, and Ponderosa Pine-Oak.

3.6 Resources Present and Brought Forward for Analysis

The following sections contain descriptions of elements determined to be present, potentially affected by the alternatives, and carried forward for detailed analysis in this document.

3.6.1 Wildfire(s) Impacts Common to All Resources under All Alternatives

Affected Environment

Wildfires occur annually across Arizona, primarily during the summer months. Climate and vegetation community or type influences wildfire occurrence and behavior. The vegetation community varies with elevation and aspect across the three allotments. Hibernia Peak Unit A Allotment is dominated by Arizona interior chaparral. North-facing upper elevation slopes in Hibernia Peak Unit B Allotment are primarily composed of Arizona interior chaparral (dominated by mountain mahogany) while south-facing slopes support a desert grassland community. Across lower elevations of Hibernia Peak Unit B and Cane Springs Wash Allotments, Mojave-Sonoran desert scrub dominates.

Arizona interior chaparral (Figure 6, Appendix E) is a distinctive vegetation community composed of closely spaced shrubs, most with small evergreen sclerophyllous leaves and deep root systems (Carmichael et al. 1978). This high density of shrubs, coupled with a climatic regime that promotes fire, produces vegetation susceptible to periodic stand-replacing fires. Fire has played an important evolutionary role in this vegetation community, and consequently, interior chaparral species have developed mechanisms for regenerating successfully after fire by sprouting and/or by fire-stimulated germination of seeds (Hanes 1971). Interior chaparral is generally considered a climax community that persists after recurrent fires (Carmichael et al. 1978). Arizona interior chaparral has been classified in Fire Regime Group IV (35-100+ year frequency, stand replacement severity). Wildfires were a natural but infrequent part of this vegetation community.

In lower elevation Mojave-Sonoran desert scrub communities, wildfires can be carried by invasive annual grasses (e.g., red brome) which have become established and proliferate after wet winters. Red brome and other annual grasses can increase fuel loading and continuity across these communities and create conditions where wildfires are easily ignited and carried across the landscape, especially after wet winters. Annual invasive grasses usually cure by mid-May, when fire season typically begins. The Mojave-Sonoran desert scrub plant community is not considered fire adapted, and native species do not readily recover from the effects of wildfire. Mohave-Sonoran desert scrub can be classified in Fire Regime Group III (35-200 year

frequency, low and mixed severity). Prior to the introduction of annual invasive grasses, fire size would have been small because of discontinuous fuels.

Over the last twenty years (1996 to 2016) there have been a total of 14 wildfires recorded on the three allotments. Of the 14 recorded wildfires:

- 0 occurred on Cane Springs Wash Allotment
- 8 occurred on Hibernia Peak Unit A Allotment
- 6 occurred on Hibernia Peak Unit B Allotment
- All wildfires were started by lightning except one
- The largest recorded wildfire burned 20 acres on Hibernia Peak Unit A in 1996

Environmental Effects

Management practices implemented since the AMP (1999) for Hibernia Peak Unit A and B Allotments has allowed the Arizona interior chaparral and desert grassland communities to progress toward its DPC. This has allowed chaparral and desert grass communities to progress towards a more natural fire regime. This progress is partly a result of the AMP (1999) which provides for pasture rest during growing seasons, thus allowing plants to recover from the impacts of grazing. However, the presence of invasive annual grasses in Hibernia Peak Unit B, has the potential to create conditions where large fires could occur outside the natural fire regime. Under the Proposed Action the vegetative communities should continue to progress towards the potential natural community, which would reduce the amount of invasive annual grasses and allow fire to play a more natural role in the maintenance of these plant community. Also, as part of the AMP (1999) prescribed fire has been used on Hibernia Unit A allotment as a tool to open, closed stands of chaparral vegetation and reduce fuel loads in these same chaparral communities. Creating opening in chaparral allow for animal access and reduced fuel loads help minimize the potential for large summer wildfires.

Cumulative Effects

As more and more plant communities move toward DPC across the KFO, an increasing number of these plant communities should return to a more natural fire regime The Proposed Action should allow plant communities to someday reach DPC and restore the natural fire regime to these allotments. Prescribed burning on these allotments along with other allotments in the Hualapai Mountains has helped maintain open stands and reduce fuel loads within chaparral plant communities. Which minimize the potential for large summer wildfires and the negative impacts associated with large hot wildfires during this time of the year.

3.6.2 Invasive, Noxious, and Non-native Species

Affected Environment

Invasive, non-native annual species are present at the lower elevations in the allotments. Some of these have been in Arizona for more than 50 years and are common throughout the state and Mohave County. The most common invasive species are red brome and Mediterranean grass. Cheatgrass is also present but, less common than red brome. The presence of red brome is variable. In years with above average winter and spring precipitation, red brome is widespread across the desert floor. In low rainfall years, red brome is restricted to the base of desert shrubs.

Perennial native invasive species can also be found on the allotments. For example, snakeweed,

a native invasive plant, is found on all three allotments and is common within disturbed sites.

Vectors for the spread of the undesirable invasive species noted above include animals (i.e., wildlife and livestock when seeds become attached to hair, hooves, and/or in feces), or by wind, water, and motorized equipment (vehicles, ATV's, etc.) that travel along roads going into, out of, and through the allotments.

Lehmann's lovegrass, a perennial non-native invasive exotic species is found on four of the five key areas on Hibernia Peak Unit B Allotment but not in any of the key areas for Hibernia Peak Allotment Unit A. In 1987, a Fire Prescription Plan was developed that includes portions of Hibernia Peak Unit A, which is dominated by the Arizona interior chaparral plant communities. In that same year, portions of the allotment were burned with a subsequent reseeding that included Lehmann's lovegrass in the seed mix. At that time, little scientific research was available on Lehmann's lovegrass with regards to its invasive properties. Lehmann's lovegrass is the dominant grass species in Key Area 7 of Hibernia Peak Unit B Allotment (Figure 2, Appendix E). Research conducted in Arizona and New Mexico suggests this invasive species is problematic. After establishment and with time it can become a dominant species over native vegetation. The reason for the spread of this species into the allotment is unknown; however, common vectors include animals (livestock and wildlife), wind, water, and vehicles traveling through the allotments.

Literature offers different conclusions as to the effects of livestock grazing on Lehmann's lovegrass. Dwight Cable (1971) suggests that Lehmann's lovegrass replaces native grasses whether they are grazed by livestock or not. McClaran and Anable (1992) suggest that traditional disturbance [i.e., man-induced and animals, etc.] for the spread of invasive species does not hold true [it will come in regardless] for Lehmann's lovegrass. They also note that the "exclusion of livestock grazing did not affect density or percentage of Lehmann's lovegrass compared to grazed areas outside exclosures, but native grass density was greater in grazed areas". Research suggests that drought conditions favor the establishment of Lehmann's lovegrass. Robinett (1992) found that following drought, Lehmann's lovegrass was able to opportunistically increase by replacing the native grasses that had died.

A review of National Oceanic and Atmospheric Administration (NOAA) Wikeup Station Precipitation Data collected over the last 35 years indicates when drought occurred (annually and seasonally) on the allotments. Rainfall during the growing seasons (i.e., spring and summer) is vital to plant productivity more so than total annual precipitation. The graphs in Figure 7 and 8, Appendix E depict the spring and summer growing season rainfall between 1981 and 2015. Trend data for the 35-year timeframes reveal a downward trend for seasonal rainfall during both spring and summer months.

Figure 7, Appendix E representing spring rainfall, shows the years where drought has occurred (66%) throughout the 35-year timeframe and severe drought occurred 60% for the same period of time. Between 1994 and 2015, only three spring years have exceeded drought conditions, resulting in 86% of the spring years experiencing drought and 77% of them in severe drought.

Figure 8, Appendix E representing summer rainfall, shows the years where drought occurred at 40% throughout the 35-year timeframe and severe drought occurred at 34% for the same period

of time. Between 1994 and 2015, 12 summer rainfall years were at or above drought conditions, resulting in 45% of the summer years experiencing drought and 35% of them in severe drought.

Alternative 1 - Proposed Action Alternative

Environmental Effects

Research suggests that once Lehmann's lovegrass is introduced into an allotment, whether sites are grazed or ungrazed, it can be expected to persist and spread (Cable 1971). Information from the Santa Rita Experimental range suggests that livestock grazing and its relevance to the abundance of native grasses have little to no effect on Lehmann's lovegrass (Angell and McClaran 2001, McClaran and Anable 1992, McClaran 2003).

Proper range practices, which the permittee has implemented by following the AMP (1999), should help prevent the spread of some invasive non-native plant species (Sheley 1995). The USFS's recommendations for Lehman's lovegrass is winter or spring grazing when livestock would select non-native lovegrasses over native grasses (USFS 2014). The AMP (1999) provides for the USFS's recommendations. Continuance of the management practices under the AMP (1999) for Hibernia A and B allotments would be expected to result in maintaining or improving DPC objectives, subsequently enhancing the ecological health of the plant community. This would be expected to increase the frequency, cover, recruitment, and composition of native key perennial plant species, potentially resulting in a reduction of interspaces between perennial plants. Conservative management actions by the permittee could be one of the factors in minimizing the loss of native grass cover.

Wildlife, wind, water, and vehicles could continue to be vectors for the spread of invasive species such as red brome, cheatgrass, and Lehmann's lovegrass. Red brome is already present and widespread throughout the area.

Further spread of invasive species already on the allotments by any of the aforementioned vectors cannot be totally prevented. However, meeting or exceeding DPC objectives could limit the spread of undesirable plant species by the reduction of interspaces between plants. Composition and cover of desired forage would be expected to be maintained or improved under the Proposed Action and could potentially reduce open space between perennial plants where invasive grasses, forbs, and shrubs can grow.

Cumulative Effects

The US Highway 93 Cane Springs Wash project to be implemented on the allotments by the Arizona Department of Transportation and or travelers through the allotments could allow for the introduction of invasive, noxious, and non-native species by any of the activities listed under the *Reasonably Foreseeable Activities (Section 3.4)* and *Cumulative Impacts (Section 3.3)*.

The introduction of invasive species not yet found on the allotments could occur through activities noted under the *Reasonably Foreseeable Activities (Section 3.4)* and *Cumulative Impacts (Section 3.3)* i.e. human induced activities such as recreation, etc. or from other actions such as animal transport. In the future, BLM could require the washing of vehicles to help reduce the spread of invasive plants for some permitted activities.

Alternative 2 - No Action Alternative

Under the No Action Alternative, *Environmental Effects* and *Cumulative Effects* would be the same as those described under Alternative 1 – the Proposed Action with the exception of the well, which would not be authorized under this alternative.

Alternative 3 - No Grazing Alternative

Environmental Effects

Wildlife, wind, water, and vehicles could continue to be vectors for the spread of invasive species such as red brome, cheatgrass, and Lehmann's lovegrass. Red brome is already present and widespread throughout the area. Young and Evans (1978) found that removal of grazing by domestic livestock does not automatically lead to the disappearance of some invasive species.

The removal of livestock may result in maintaining or increasing the frequency, cover, recruitment, and composition of key perennial plant species. Removal of livestock grazing would be expected to maintain DPC objectives. Maintaining the DPC objectives throughout these allotments would be expected to help reduce the spread of undesirable plant species.

Cumulative Effects

Further spread of invasive species already on the allotments by wildlife, wind, water, and vehicles traveling through the allotments cannot be totally prevented. However, meeting or exceeding DPC objectives could limit the spread of undesirable plant species by the reduction of interspaces between plants. Composition and cover of desired forage would be expected to be maintained or improved under the No Grazing Alternative, and it could potentially reduce open space between perennial plants where invasive grasses, forbs, and shrubs can grow.

3.6.3 Grazing Management

Affected Environment

The original intent of the AMP (1999) was to develop site-specific objectives that promoted meeting rangeland conditions as stated in the RMP/EIS (1995). Currently, implementation of the AMP (1999) is allowing Hibernia A and B Allotments to achieve the standards defined in the AZ Standards. In order to meet the objectives for the aforementioned documents, the grazing schedule for the Hibernia A and B Allotments focuses on growing season rest for both upland and riparian vegetation. Growing season rest in plant communities is critical for tree and vegetative regeneration and establishment. More about the Plan objectives can be found in the 1999 AMP (Appendix C).

The AMP (1999) allows for grazing in summer and late spring for drought conditions and economics on Hibernia Peak Allotment (Unit A); however, the permittee has never needed to exercise this option.

In order to implement the AMP (1999), it was necessary for the permittee to develop adequate water sources in each pasture within the allotments. This required a large investment and commitments from the permittee and cooperators that signed the AMP (1999) such as AGFD, the U of A Cooperative Extension Service, and NRCS to develop new waters. During the first eight years the permittee voluntarily ran lower numbers of livestock until adequate waters could be developed in each pasture. Efforts expended for the conservation and outstanding stewardship shown by the permittee resulted in the Society of Range Management issuing a Ranch Manager

of the Year award in 2009.

Alternative 1 - Proposed Action Alternative

Environmental Effects

The Cane Springs Wash Allotment would be expected to sustain economic viability in the ranch operation by receiving high quality and low-cost forage. There is no long-term monitoring data available for the Cane Springs Wash Allotment, however, Key Area 1, established in 2016, determined that the composition of key species is as expected for the ecological site, and use limits on key forage plant species was within limits. Therefore, it was determined that the allotment is meeting standards.

Hibernia A and B are expected to sustain economic viability in the ranch operation by providing high quality and low-cost forage to the operator that is possible as a result of implementing the AMP (1999). Using the Best Pasture Grazing System (grazing one pasture at a time) helps to reduce labor and fuel costs by reducing the number of waters to be checked and maintained. Although, most of the watering facilities are left on year-round across these allotments, only the waters in pastures being grazed need to be checked every few days. Another benefit of the grazing system is that cattle are gentler and thus easier to round up and manage. Livestock are expected to be healthier (e.g., heavier, etc.) when the rangelands are managed under a Best Pasture Grazing System.

The grazing permittee requested the development of a new well facility on an old well site, which was abandoned sometime in the past. This new facility would be located near Cedar Canyon in the west end of North Pasture. This water facility would provide a perennial source of water in area where the only other water source was a spring in Cedar Canyon which was once perennial and is now seasonal. Because, the well is located in the footprint of a historic well site, there would be little disturbance (short-term) to the natural resources from construction activities. Since, the well is only replacing the loss of water from a spring in Cedar Canyon, it should help maintain proper livestock distribution across the North Pasture.

Composition and frequency of key species have improved across all key areas on the Hibernia A and B Allotments under the AMP (1999). It would be expected that the trends and conditions would continue to meet or exceed the AZ Standards over the next decade utilizing the current grazing schedule.

Hibernia A and B Allotments would be combined into one allotment under this Alternative. Combining the allotments into one allotment promotes efficiency with regard to billing, actual use reporting, and other administrative activities. Changing the Selective Management Policy category to an "I" (Improve) allotment would allow for more opportunities with regard to potential funding that can enhance management opportunities such as increased funding for maintenance of existing range improvements or for the development of new range improvements needed in the future.

Use limits for Hualapai Mexican vole habitat were not specific in the AMP EA (1999). The modifications for the management of the Hualapai Mexican vole habitat would ensure that monitoring of use levels would continue. The permittee is and has been following this

management strategy since implementation of the AMP (1999).

Cumulative Effects

Livestock use limits in Hualapai Mexican vole habitat would be expected to maintain, into the future, the required habitat elements needed for the vole habitat on the Hibernia A Allotment.

Working with cooperators during development of the Hibernia A and B Allotments AMP (1999) were central to resolving issues that were occurring when the AMP was developed. The cooperation and collaboration between the partners today continues. This allows for problems to be mitigated as they develop. For example, the AGFD supported a Cooperative Stewardship Access Agreement to allow the public to drive on roads across private land to access the allotments (see *Recreation and Wilderness Section 3.6.4*).

AGFD, FWS, U of A Cooperative Extension Service, NRCS, and BLM have all had a positive experience with the permittee of the Hibernia A and B Allotments over the past seventeen years. This cooperation of partners would be expected to continue into the future.

Alternative 2 - No Action Alternative

Environmental Effects

Hibernia A and B Allotments would continue to be managed as two separate allotments and billing. Actual Use reporting and other administrative activities would not be as efficient under this alternative compared to the Proposed Action, Alternative 1. Leaving Hibernia B Allotment in the management category of “M” (Maintain) category would not be expected to improve the opportunities for potential funding to enhance management on this allotment. The Cane Springs Wash Allotment would continue under current management.

Under this alternative, the proposed development of Cedar Canyon well would not be authorized. Without a perennial source of water on the west side of this pasture, livestock grazing would be confined to the eastern portion of the North Pasture causing livestock distribution problems. Also, since there is less water available for livestock grazing, fewer cattle can be placed in this pasture forcing the permittee to use two pastures at the same time and making it harder follow the AMP (1999).

If the use limits in Hualapai Mexican vole habitat are not clarified, then higher use levels in the habitat of this species may not occur. However, monitoring of use levels would continue and should help use limits in vole habitat from being excessive.

Cumulative Effects

Effects are expected to remain the same under the No Action Alternative as under the Proposed Action Alternative.

Alternative 3 - No Grazing Alternative

Environmental Effects

The BLM would begin preparation of an amendment of the RMP EIS (BLM 1995) and initiate a process in accordance with 43 CFR 4100 regulations to eliminate livestock grazing on these allotments. Following the successful completion for all of the processes that need to be initiated, all livestock would then be removed from the allotments. Since no grazing would occur, there

would be no livestock capacity determinations, no utilization or grazing intensity guidelines, no grazing management systems, and no implementation or effectiveness monitoring; however, monitoring would continue under other programs to determine land health.

- To prevent unauthorized grazing use on public lands, BLM would assign maintenance responsibility for existing boundary fences to permittees on adjoining or adjacent allotments.
- Without permitted grazing, there would no longer be a permittee to provide year around maintenance of water facilities on any of the allotments. Water developments within the allotments may (or not) be maintained or reclaimed. There is potential that the BLM, other agencies or private individuals could maintain the waters following livestock removal.
- Without the permitted grazing operation, the permittee could sell their private land which could result in a loss for public access across private land to access public lands.
- In the absence of livestock grazing the plant community may develop more quickly into the potential natural plant community. However, it would be expected that the exotic Lehmann's lovegrass would continue to occupy areas where it already exists. Composition and frequency of key species have improved across all key areas on the Hibernia A and B Allotments and it would be expected that the trends and conditions under the No Grazing Alternative would continue to meet or exceed the AZ Standards over the next decade.
- Although the county would be expected to maintain the county roads, other gravel/dirt roads now maintained by the permittee across public lands would be discontinued. Maintained roads are less erosive than non-maintained roads; however, roads are frequently classified as one of the most soil eroding factors on the landscape (Brock and Green 2003). Grading, while bringing up highly erodible fine soil material, can remove ruts, which if left unmaintained would create long flow paths increasing erosion. Individuals attempting to traverse these roads could encourage road deterioration, thus resulting in additional runoff and erosion. Over time, unmaintained roads could become unnavigable, and eventually could naturally re-vegetate and reclaim, reducing erosion and runoff. It is possible that some roads would not reclaim and could create bigger erosion issues over time which may need to be reclaimed using heavy equipment, depending on the soil type, slope, road location and other factors.
- The Cedar Canyon Well facility would not be developed and therefore there would be no disturbances to the natural resources from construction activities.

Cumulative Effects

Over time, unnavigable roads could naturally reclaim, limiting motorized access to public lands. This would help to reduce runoff and erosion. Without a network of maintained roads, human intrusion into wildlife habitats could become less frequent and fragmentation of habitats could be lessened.

Without livestock grazing the plant community would continue to evolve to the potential natural plant community. Some areas may not develop to PNC because of the presence of the exotic species Lehmann's lovegrass.

3.6.4 Recreation and Wilderness

Affected Environment

The 2016 Evaluation shows that livestock management practices stated in AMP (1999) have improved the vegetation communities in Hibernia A and B Allotments. The improved habitat conditions can maintain and/or improve wildlife populations. Results from such improvements can enhance recreational opportunities for wildlife viewing, hunting, photography, and other dispersed recreational activities.

Several different types of user groups partake in recreational activities on the allotments. AGFD supports a Cooperative Stewardship Access Agreement whereby the permittee allows access across deeded private land for the public in return for funding assistance with range improvements (including road improvements for hunting season) for both wildlife and livestock related projects. Cooperative partnerships such as these have increased access to public land by providing access across private lands that may not otherwise be afforded to the general public. Other groups that recreate in the Project Area include Boy Scouts of America Troops, the Botanical Society, Off-Highway Vehicle (OHV) groups, the Mohave Sportsmen Club, the AGFD Juniors Programs, permitted outfitter and guides, and private hunters.

There are no developed recreational assets located within the allotments. The remainder of the area in the allotments, excluding wilderness, is open to dispersed recreation uses and to OHV use on existing roads, trails and navigable washes. In addition, Special Recreation Permits are granted on a discretionary basis and analyzed under their own site-specific environmental analysis, ensuring that these uses are consistent with grazing management. Grazing and recreation are both existing uses that fall within FLPMA's multiple use mandate.

Approximately 310 acres in the extreme northwest portion of the Hibernia Peak Unit A Allotment became part of the Wabayuma Wilderness as a result of the Arizona Desert Wilderness Act of 1990. This area is excluded from livestock grazing due to the Hualapai Mexican vole exclosures around Pine Flat.

Alternative 1: Proposed Action Alternative

Environmental Effects

The Proposed Action would be expected to continue meeting AZ Standards, such that maintaining, and improvements made to, land health result in additional opportunities for wildlife viewing, hunting, and photography in Hibernia A and B Allotments. Recreational opportunities exist in Cane Springs Wash Allotment as they do in Hibernia A and B, but they are more limited because of the smaller size of the allotment.

Recreationists may (or may not) encounter negative experience(s) when:

- grazing is in season and the recreating public are in close proximity to the grazing cattle,
- recreationists need to open and close gates to access and leave areas where gates exist, and/or
- operators are gathering/treating/moving livestock at specific times of the year

Cumulative Effects

Cumulative effects would be the same as described for the Environmental Effects of the Proposed Action.

Alternative 2 - No Action Alternative

Under the No Action Alternative, *Environmental Effects* and *Cumulative Effects* would be the same as those described under Alternative 1 – the Proposed Action.

Alternative 3 - No Grazing Alternative

Environmental Effects

Rangeland health conditions are expected to remain similar to those already created under the AMP (1999). Visitors would not see cattle which could be positive or negative.

Without the maintenance of base waters by the permittee on the allotments, it would be expected to cause a reduction in the:

- Number of water sources available to wildlife
- Number of wildlife species
- Number of opportunities for wildlife viewing, hunting, and photography opportunities

Livestock waters could be removed, and therefore, big game and big game hunting may be reduced or eliminated around current water locations; however, some opportunities would remain for hunting at springs and there is potential that the BLM, other agencies, or private individuals could maintain the waters following livestock removal. Less road maintenance across these allotments could affect recreational motorized access to and across public lands.

Cumulative Effects

Activities identified in the *Reasonably Foreseeable Activities Section 3.4*, *Cumulative Impacts Section 3.3* and *Wildfire(s) Impacts Common to All Alternatives Section 3.6.1* would continue to occur under the No Grazing Alternative. Over time, unnavigable roads could limit motorized access to and across public lands and could eliminate motorized access in some areas completely.

Reduction in perennial water due to drought, along with reduced or eliminated year-round livestock water across these allotments could affect big game populations and big game hunting opportunities on these public lands in the future.

3.6.5 Riparian

Affected Environment

Cane Springs Wash Allotment has no riparian areas; however, xeroriparian habitat is found in the drainages.

The Hibernia A and B Allotments have two large canyons which support riparian habitat (Figure 9, Appendix E.), which is scarce in a desert environment. The two canyons, Hibernia Canyon and Bull Canyon, extend through both allotments. The majority of the riparian habitat occurs in Hibernia Peak Unit A. Hibernia Peak Unit B has pockets of riparian vegetation. These canyons have intermittent flow and enough subsurface flow in the upper reaches to support areas of continuous riparian vegetation. Hibernia Canyon has a mixture of woody species such as Fremont's cottonwood, red willow, and velvet ash. It has an understory of waterweed, seep willow, and deer grass. The riparian area, in Bull Canyon, primarily supports velvet ash with scattered red willow, Fremont's cottonwood, and Arizona walnut. The understory has deer grass, seep willow, and waterweed. Both canyons were found to be in proper functioning condition (BLM 2016).

The allotments have many springs, five of which were evaluated. Three were inventoried in Hibernia Peak Unit A Allotment and two in Hibernia Peak Unit B Allotment. Two of the springs did not support riparian vegetation. One was dry and the other, although not dry, was piped to a trough to provide water for livestock. Little riparian vegetation exists, suggesting minimal water is available to support riparian vegetation. Three springs were found to be in proper functioning condition (BLM 2016).

The allotments primarily have xeroriparian vegetation in the drainages. Xeroriparian washes are linear, infrequently flooded sites that have surface water for only brief periods and often just for a few hours in a year. The perennial plant community consists of a mix of cheeseweed, woolly-fruited bursage, catclaw acacia, and occasional plants of Emory mint bush, and velvet mesquite. Both Hibernia A and B Allotments have xeroriparian habitats (Figure 10, Appendix E.) in the many ephemeral drainages (desert washes) that occur throughout these allotments and in the dryer portions of Hibernia and Bull Canyons.

Alternative 1 - Proposed Action Alternative

Environmental Effects

There are no riparian areas on the Cane Springs Wash Allotment.

A fall and winter system of grazing, such as is implemented under the AMP (1999), is often recommended for riparian areas. During this time, stream bank temperatures are cool enough to discourage animals from congregating in riparian areas (Bellows 2003), and dormant plants are generally not as palatable.

The focus of the Proposed Action in Hibernia Peak Unit A, which is the Mountain Pasture, is to continue following the AMP (1999), which provides seasonal rest in the upland and riparian habitats during the summer and late spring growing seasons. It is deferred from livestock grazing during this time as it contains the majority of riparian habitat, and habitat for the BLM Sensitive Species, Hualapai Mexican vole (see *Seasons of Use* in *Section 2.1*). If AMP (1999) management objectives are met, grazing could be allowed for drought and economic purposes during the growing season (May 1 to Oct. 15), in the Mountain Pasture. However, the permittee has never exercised this option.

Riparian areas are multi-layered complex habitats with trees, shrubs, and herbaceous vegetation that provide a wide range of niches for aquatic and terrestrial wildlife species. The loss of any component of a riparian area can reduce cover and forage for some wildlife species. Riparian habitats are temporary in nature, and portions can be removed by flood events. However, as long as the vegetation has the opportunity to establish, grow, and reproduce on a regular basis, the riparian vegetation and habitats could be maintained.

Implementation of management actions outlined in the AMP (1999) have led to the successful attainment of AZ Standards for Standard 2 (Riparian Health) in Hibernia and Bull Canyons as well as at the evaluated springs that produce riparian habitat. The 2016 Evaluation documents that these areas were found to be in proper functioning condition, with one exception. The exception was for a spring where most plant available water had been developed for livestock use.

The management actions under the AMP (1999) have allowed rest during the summer and late spring grazing periods and discouraged livestock from congregating in the riparian areas. This has been beneficial to the riparian vegetation allowing it to establish and grow and has reduced streambank erosion that can be caused by livestock grazing. The development of water sources on the uplands outside riparian habitat helps reduce grazing pressure on riparian vegetation.

With continued implementation of the AMP (1999), BLM expects to continue achieving the AZ Standard for Standard 2 (Riparian Health) and DPC objectives. It is expected by meeting DPC objectives the xeroriparian areas would also be maintained on all three allotments.

Recreational and public use in riparian and xeroriparian across the allotments are expected to continue. Negative impacts could include crushing riparian and xeroriparian vegetation and/or erosion of stream banks by motorized vehicles.

Cumulative Effects

Continuing to implement management actions under the AMP (1999) for Hibernia A and B Allotments would maintain riparian habitats in proper functioning condition.

Recreational and public use in riparian and xeroriparian across the allotments are expected to continue into the future. Impacts could include crushing riparian and xeroriparian vegetation and/or erosion of stream banks by motorized vehicles.

Other forms of multiple-use such as those mentioned in the *Reasonably Foreseeable Activities (Section 3.4)* and *Cumulative Impacts (Section 3.3)* would continue to occur in all three allotments and could negatively impact riparian and xeroriparian areas. For example, navigable washes, open to motorized travel, can result in crushing of vegetation and streambank erosion which could with increased use lead to rutting, gullying, and other types of erosion. Xeroriparian habitats in all three allotments are expected to be maintained as long as AZ Standards and DPC objectives are met.

Alternative 2 - No Action Alternative

Under the No Action Alternative, *Environmental Effects* and *Cumulative Effects* would be the same as those described under Alternative 1 – the Proposed Action.

Alternative 3 - No Grazing Alternative

Environmental Effects

Under the No Grazing Alternative, conditions are expected to be similar as described for Alternative 1. Springs developed for livestock could be returned to their natural flowing states and potentially create and support areas of additional riparian habitats on Hibernia A and B Allotments.

Cumulative Effects

With no grazing of livestock, the riparian habitats are expected to be maintained in proper functioning condition.

Recreational and public use in riparian and xeroriparian across the allotments are expected to continue into the future. Impacts could include crushing riparian and xeroriparian vegetation

and/or erosion of stream banks by motorized vehicles. The roads would no longer be maintained by the permittee. This could allow for natural reclamation to occur where these roads cross riparian or xeroriparian areas.

Other forms of multiple-use such as those mentioned in *the Reasonably Foreseeable Activities (Section 3.4)* and *Cumulative Impacts (Section 3.3)* would continue to occur in all three allotments and could negatively impact riparian and xeroriparian areas. For example, navigable washes, open to motorized travel, can result in crushing of vegetation and streambank erosion which could with increased use lead to rutting, gullyng, and other types of erosion. There are no maintained roads in navigable washes on these allotments. Xeroriparian habitats in all three allotments are expected to be maintained.

3.6.6 Socioeconomics

Affected Environment

Due to the nature of the location of impacts and the availability of data, the socioeconomic study area is different from the planning area. The study area includes Mohave County as a whole and, for some topics, the State of Arizona, rather than including the Hibernia Unit A, Unit B and Cane Springs Wash Allotments alone.

The population of Mohave County, Arizona, grew by 30% during the period from 2000 to 2013. There were more deaths than births in the County during this time; consequently, all of the population growth can be attributed to in-migration, the majority of which came from within the U.S. Like many parts of the U.S., Mohave County saw decreases in many economic indicators during the period between 2006 and 2012. In spite of the downturn, total employment, earnings, and personal income increased in the County from 2000 to 2012. Non-labor income did not decline during the economic downturn, increasing more than 58% from 2000 to 2012. This is an indication that retirement income and other investment income has become a more important part of total income in the County, steadily increasing since 1970 (adjusted for inflation). By 2012, non-labor income made up 51% of all personal income in Mohave County.

As is the case in the U.S. as a whole, the services sector has become an increasingly important employment category in Mohave County. Jobs in services related industries grew by 601% from 1970 to 2000, while non-services related jobs grew by 287% during the same time period. In the year 2000, services related jobs made up 68% of total employment in the County.

Farm employment increased by 34.8% from 2001 to 2012, although total farm employment continues to provide less than 1% of all jobs in the County. From 1998 to 2012, total farm employment in Mohave County increased by approximately 60%. In contrast, total farm employment in the U.S. as a whole declined more than 15% during the same time period. This is an indication that farming and ranching continue to be important aspects of local culture and industry within the study area, in spite of making up a relatively small portion of overall economic activity in the region in dollar terms.

While farm employment increased in the County, total farm income decreased from 1990 to

2000, declining by 27%. This is in contrast with the previous three decades during which farm income had increased over time, and the farming sector is the only major industrial sector in the County that experienced a decline in personal income during that time period. In 2000, farm income made up 0.5% of all personal income in Mohave County. From 2001 to 2012, the decline in farm income continued, decreasing by an additional 35.3%. During this period, however, several other major industrial categories also experienced decreases in total personal income, with the construction industry seeing the biggest downturn, a 64.9% reduction in income paid to workers within the County. It remains to be seen how post-recession recovery will affect the various industry sectors within the study area.

Patterns of economic change in Mohave County closely parallel those of Arizona as a whole during the time from 2000 to 2012, but average earnings per job in the County have outperformed those in the State overall. By almost every measure, the economy of Mohave County outperformed that of the State of Arizona from 1970 to 2012.

In comparison to the U.S. as a whole, at 1.5%, farm employment in Mohave County, at 0.9%, makes up approximately 1/3 less as a portion of total employment. In 2012, personal income from farming, including livestock production operations, was 0.3% of all personal income in the County. Also in 2012, cash receipts from crops were roughly double those of livestock related operations. It should be noted that a large portion of crops produced in the region is grown in support of the livestock industry, primarily in the form of alfalfa hay for cattle operations. Public lands provide an important source of forage for cattle operations within the region, as total acres of farmland dedicated to grazing comprise a small portion of total farming and ranching acres in the County.

The permittees operate a cow calf operation, which is permitted for 654 AUs per year. Depending on the condition and number of cattle for any given year the permittees report an 85% calf crop.

In Arizona, it is estimated that for every dollar of livestock output sold, an additional \$1.00 in economic activity is generated within the State. For each full-time job in the livestock industry, an estimated 1/3 additional full-time position is supported within the regional economy, and for each \$1.00 of wages paid within the livestock industry, approximately \$2 in additional labor income is generated. Based on estimated annual gross revenues of over \$492,000 (assuming a stocking rate of 654 AUs), the present total value to the Arizona economy generated by potential livestock production on the Hibernia Unit A, Unit B and Cane Springs Wash Allotments over ten years is just over \$8,450,000.

The ranch-level economic impacts of changes in permitted AUs under the range of alternatives, shown below, are based on the following assumptions (and may be conservative for some items):

- Permitted AUs for seasonal grazing on these allotments serve as the limiting factor that determines total annual herd size
- For AUM calculation purposes, mother cows are assumed to weigh 1,000 pounds, although actual range animals are understood to weigh less

- Calves are sold at a weight of 500 pounds
- Under the proposed action and the no action, the calf crop success rate is 85%
- Under private land grazing alternatives, the calf crop success rate is assumed to be 92%
- If an alternate feeding location is not available, excess mother cows (above the allowed stocking rate) will be sold at a weight of 800 pounds and a market price of \$0.64 per pound
- Infrastructure improvements have a useful life of 10 years, and the interest rate paid on loans taken out to fund infrastructure improvements is 6%
- 15% of calves are retained as replacement heifers
- Calves will be sold at an average market price of \$2.35 per pound
- Present values are calculated using a discount rate of 3%

Estimated non-fee operating costs on federal allotments and private pastures are taken from the national formula used to calculate Congressionally-approved grazing fees. Estimated fees for grazing on private lands are derived from National Agricultural Statistics data and Land Grant University statistics, where those are available.

Although some alternatives include grazing on private land as an option, it is recognized that there is very limited or even no private grazing land available within the study area, depending on environmental conditions. However, other options do exist, including shipping animals to distant areas or even to other states where feeding facilities exist. The potential for a low probability that any of these options for feeding livestock in an alternate location is feasible is also recognized.

Alternative 1 - Proposed Action Alternative

Environmental Effects

The income to Mohave County could be proportionally higher due to the AUs for seasonal grazing on these allotments. With no change in livestock management, the impact to the community could remain similar to the current impacts to the permittee, county and the state.

In the management of the grazing permit, the permittees hire approximately three year-round employees to manage livestock waters and administer the business. They may employ additional labor of one or more individuals on a seasonal basis.

The sale of calves at stockyard by the permittee benefits the financial needs of the permittee and provides capital to purchase goods and services for continuation of the grazing operation and personal needs.

Cumulative Effects

Cumulative local and regional socioeconomic impacts of the selected alternative are expected to be determined by the production and operation decisions made by the rancher, as well as being affected by local market conditions and regional and national economic variables.

Alternative 2 - No Action Alternative

Under the No Action Alternative, the *Environmental Effects* and *Cumulative Effects* would be the

same as those described under Alternative 1 – the Proposed Action.

Alternative 3 - No Grazing Alternative

Environmental Effects

The annual gross revenues of over \$492,000 could be lost income to Mohave County (assuming a stocking rate of 0 AUMs), the total lost value to the Arizona economy generated by potential loss in livestock production on the Hibernia A and B and Cane Springs Wash Allotments over ten years is just over \$8,450,000.

Under the No Grazing Alternative, net revenue to the livestock industry would be expected to fluctuate between \$31,000 and \$492,000 the first year, depending on the availability of an alternate feeding location and the market prices realized either upon selling the herd or selling calves raised in any alternate location. Should livestock grazing no longer occur on these allotments, the Mohave County revenues from grazing fees are expected to be eliminated. The permittee would have to purchase or rent pasture to support the permittees livestock in an alternate location or sell the livestock associated with the Hibernia A and B and the Cane Springs Wash Allotments.

Cumulative Effects

Under the No Grazing Alternative, a loss of net revenue could occur in Mohave County from not re-authorizing livestock grazing on these allotments over the next ten years. The closing of these three allotments to livestock grazing could compound any loss of revenue in Mohave County which may have already occurred from other allotments not currently permitted for livestock grazing.

3.6.7 Soils

Affected Environment

Arizona Interior Chaparral is commonly associated with coarse textured and poorly developed soils (Schalau and Twaronite 2010). The soils and ecological sites on the three allotments have been mapped and correlated to the National Cooperative Soil Survey Order soil survey standards (Soil Survey Manual, Soil Taxonomy, and National Survey Handbook). This information is published in the Soil Survey of Mohave County, Arizona, Central Part 2005 by the NRCS available at the following website:

(http://www.nrcs.usda.gov/Internet/FSE_MANUSCRIPTS/arizona/AZ697/0/Mohave%20Central.pdf).

Corresponding details on ecological site information, correlated to soil map unit information, is also found on the NRCS website:

(<http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/technical/alphabetical/ecosite/?cid=stelprdb1049096>).

A review of the Soil Survey (2005) revealed that many of the soils with slopes lower than 15% are considered sandy loams, gravelly, and have clay content ranging up to and over 20%. Some of the soils that exist on the allotments are shown in the following table:

Table 3 Major Soil Series Found on the Hibernia Peak Units A & B and Cane Springs Wash Allotments.

Soil Series Name	Map Unit ID	Map Unit Composition	Slope, Depth, and Total Acres
Docdee -Rock Outcrop Complex	42	70% Far soils and 20% Rock Outcrop	10% to 45%, 5 to 20 inches and 1,107 Ac.
Hassel -Lampshire-Rock Outcrop Complex	58	50% Hassel, 25%Lampshire soils and 20% Rock Outcrop	10% to 30%, 20 to 40 inches and 1,588 Ac.
Dudleyville-Vinton-Riverwash Complex	69	40% Dudleyville, 30%Vinton and 20% Riverwash	1% to 3%, 60+ inches and 581 Ac.
Lampshire-Rock Outcrop Complex	74	65% Lampshire soils & 20% Rock outcrops	20% to 60%,4 to 20 inches and 16,640 Ac.
Tombstone-Caralampi -Eloma Complex	81	35 %Tombstone, 30% Caralampi and 25% -Eloma soils	10% to 50%, %, 60+ inches Depth and 401 Ac.
Nickel-Topawa family-Eba Family complex	84	35 % Nickel, 30% Topawa, and 25% Eba soils	10% to 50%, 60+ inches Depth and 21,415 Ac.
Romero-Chiricahua-Rock Outcrop Complex	106	45% Romero, 30 % Chiricahua soils & 20% Rock outcrops	3% to 35%, 6 to 20 inches and 5,810 Ac.
Romero-Lampshire-Rock Outcrop Complex	107	60% Lampshire, 20% Romero soils & 20% Rock outcrops	35% to 70%, 4 to 20 inches and 5,250 Ac.
Stagecoach-Topawa-Eba Complex	118	35% Stagecoach, 30% Topawa-25 % Eba soils	10% to 50%, 60+ inches Depth and 8,915 Ac

To determine the functional status of the three rangeland health attributes (soil/site stability, hydrologic function, and biotic integrity) an interdisciplinary team reviews the ratings of the 17 indicators of rangeland health (Prichard et al. 2003) on a site-by-site basis and formats the interpretation into a collective rating. Based on the rating, it is determined if more information is needed or if the site requires management action (Pellant et al. 2005).

The 2016 Evaluation found that Standard 1, Upland Health, was met at all key areas except at Key Area 7 on Hibernia Peak B Allotment, where Lehmann’s lovegrass is the dominant grass species. Upland soils exhibited infiltration, permeability, and erosion rates appropriate to soil type, climate, and landform (ecological site) for the areas examined. Assessment results from all other key areas indicate a “none to slight” departure from normal for the attributes measured.

Under all alternatives, it is reported that soils in the Project Area are receiving higher than normal amounts of nitrate via atmospheric deposition (Glick et al. 2011). The higher rates of nitrate could be another factor that is contributing to the spread of some non-native invasive species such as red brome on the allotments (Comer et al. 2013).

Alternative 1 - Proposed Action Alternative
Environmental Effects

The Rangeland Health Evaluation (BLM 2016) findings show that Standard 1 for soils is being met on all of the allotments. Under this alternative, livestock grazing could continue to have a localized, negative effect on soils associated with congregation areas such as watering sites and corrals through soil compaction caused by the concentration and/or trailing of livestock. Soil compaction results in accelerated erosion by allowing rapid run-off of water due to the lack of filtration. It also impedes seed germination. Grazing animals can apply compressional and shear forces to the soil. Moisture is an important factor relating to the degree of impact. With coarse textured sandy soils, crusts are better able to withstand disturbances in moist soils than in dry soils.

The meeting of the DPC objectives for all three allotments promotes healthy soils from cooling and protection by vegetative cover and by allowing infiltration of rainfall. The rotation of pasture use in Hibernia Peak A and Hibernia Peak B Allotments, allows areas of compacted soils to improve (de-compact) slightly during periods of non-use. The soils in the Cane Springs Wash allotment would have no periods of non-use and therefore no opportunity for soils to de-compact. The vast majority of soils in these three allotments could be expected to continue to meet the Upland Health Standard 1.

The Cedar Canyon Well facility would be located at an old well site which was developed and then abandoned sometime in the past. Initially ground disturbance would occur during the construction of this range improvements resulting in negative short-term soil disturbances. The concentration of livestock at this facility could have a localized negative effect on soils associated with soil compaction.

Cumulative Effects

Under the Proposed Action Alternative, Standard 1 for soils on these allotments would continue to be met. The expansion of US 93 from a two-lane to four-lane highway could result in an increase in soil erosion caused by plant removal, general construction, and drainage alterations. These effects could be mitigated by highway design features and reclamation.

Alternative 2 – No Action Alternative

Under the No Action Alternative, the *Environmental Effects* and *Cumulative Effects* would be the same as those described under Alternative 1 – the Proposed Action with the exception of the well, which would not be authorized under this alternative.

Alternative 3 - No Grazing Alternative

Environmental Effects

Soils in the three allotments would not be affected from livestock grazing or impacts associated with livestock grazing. Initially ground disturbance may occur to remove range improvements resulting in negative short-term soil disturbances which are expected to recover over the long-term.

It is likely that without livestock grazing, that Standard 1 for soils would continue to be met on all of the allotments. Soils in cattle congregation and trailing areas may remain visible on the landscape but, could slowly disappear over time.

The Cedar Canyon Well facility would not be developed and therefore there would be no

impacts to soil from construction activities or livestock concentration.

Cumulative Effects

Under the No Grazing Alternative, Standard 1 for soils on these allotments would continue to be met. Over time conditions could return to a more natural state. Unmaintained roads could naturally reclaim which in turn would limiting motorized access and thus soil disturbance. Trailing, concentration areas, and compaction of soils by livestock would be reduced. Trailing impacts, concentration areas, and compaction of soils by wildlife would continue however at a much reduced rate since wildlife numbers are typically well below those of livestock. This could help to reduce run-off and erosion.

3.6.7.1 Biotic Soil Crusts

Affected Environment

Space existing between higher plants can include highly specialized organisms that may include cyanobacteria, green algae, lichens, mosses, microfungi, and other bacteria. Soils with these organisms are often referred to as cryptogamic soils and create what is referred to as biological soil crusts.

Biological soil crusts have been observed on the allotments in small amounts on the Cane Springs Wash and Hibernia B Allotments. Cover data for biological soil crusts is collected at each key area when it is encountered. However, biological soil crusts are uncommon and rarely encountered as a cover point and likely have always been uncommon due to the coarse, rocky, and sandy nature of the soils in the allotments. Due to the expected low occurrence of the biological soil crusts and the high amount of coarse, rocky, and sandy soils in the allotments as mapped by NRCS, biological soils crusts are not analyzed further in this EA.

3.6.8 Vegetation (Upland)

Affected Environment

The project area is in a transition zone between the Mojave and Sonoran Deserts. The plant communities are a mix of Mojave-Sonoran desert scrub, desert grassland (south facing slopes), Arizona interior chaparral, pinyon pine (on north slopes above 5,600 feet), and ponderosa pine-oak.

The Cane Springs Wash Allotment is below 3,200 feet and has a Mojave-Sonoran desert scrub plant community.

Hibernia Peak Allotment Unit A is primarily Arizona interior chaparral with approximately 60 acres of ponderosa pine-oak in the northwest corner of the allotment.

On the Hibernia Peak Allotment Unit B above the 3,200-foot elevation, a transition begins with the Hibernia Peak B Allotment supporting a desert grassland community on the south slopes and an Arizona interior chaparral community with shrubs, trees, and perennial grass on the north slopes. Below the elevation of 3,200 feet, desert scrub is the dominant plant community.

Key plant species are monitored to evaluate the effects of grazing on the plant communities. The more common key species are big galleta, black grama, bush muhly, sideoats grama, Mormon tea, false mesquite, and twinberry. The key plant species are listed in the 2016 Evaluation (BLM

2016) and are defined as forage species of sufficient abundance and palatability. Scientific names for plants mentioned in this EA are provided in the 2016 Evaluation (BLM 2016).

It is assumed that proper management of key species could provide for the physiological requirements of most of the other desirable species that are uncommon, or of low abundance, and thus not measured on the allotments. DPC objectives were developed for each key area and are used as an indicator of ecosystem function and rangeland health. Tables listing the DPC objectives for each allotment are found in the 2016 Evaluation. Plant composition objectives were based on the ecological site descriptions of species composition and compared to species present and historical data. Frequency objectives were also developed and based on historical and current frequency of the key species.

Standard 1, Upland Health for soil, hydrology, biotic vegetation and soil components are being met at all key areas, on all three allotments, with the exception of Key Area 7 on the Hibernia Peak B Allotment (BLM 2016). Lehmann's lovegrass, an exotic invasive, was found to be the dominant grass species in Key Area 7. It was also present at other key areas on the allotment.

The 2016 Evaluation developed a data summary for each of the three AZ Standards. Standard 3 evaluates whether vegetation objectives are being met. (Figure 1, Appendix D) shows the location of the key areas. For a detailed discussion on why objectives are met (or not met), refer to the conclusion sections for each key area in the 2016 Evaluation.

(Figure 11, Appendix E) depicts 11 years out of the last 35 where either drought (32%) or severe drought (23%) conditions are identified at the Wikieup Station.

The precipitation data shown in (Figure 11, Appendix E) is relative to the plant community on the Cane Springs Wash Allotment, and to the Hibernia A and B Allotments managed under the AMP (1999). The thirteen years prior to 1994 were relatively wet with only one year of drought. It is important to note the above graph only shows annual precipitation and does not show differences in seasonal rainfall. The NOAA data collected at the Wikieup Station over the last 35 years shows a downward trend on the annual precipitation graph above of approximately 11 inches to around 7 inches between 1981 and 2015.

A few examples of improvements, despite drought conditions, for key species (all of which are explained in the 2016 Evaluation), are summarized as follows:

- Key Area 2:
Both black grama and cane beardgrass almost doubled in frequency. Green sprangletop and slim tridens were not detected in 1987 but are currently measured in 2014 at 2% and 1% respectively, improving species diversity at this key area. In 1992, Black grama had a frequency of 33% and by 2014 it had increased to 58%. During the same timeframe cane beardgrass increased from 14% to 26%.
- Key Area 8:
The desired plant community meets or exceeds the composition objectives for desirable perennial grass species as it relates to the ecological site description. The frequency of black grama, bush muhly, and big galleta has significantly increased at this key area. Vigor and productivity of desirable native species is very high and there were many young plants. Slim tridens was not detected in 2008 but measured in 2014 at 2%

improving species diversity at this key area. The composition of black grama and bush muhly is above the levels found in the ecological site description. Of concern is the presence of invasive Lehmann's lovegrass; however, the frequency of this species has remained static from 2008 to 2014.

Alternative 1: Proposed Action Alternative

Environmental Effects

Livestock grazing has the potential to affect many aspects of the plant community including abundance, vigor, and reproductive capabilities of palatable forage plants. Plant community impacts can vary with timing, intensity, selectivity, and frequency of use by livestock (Holechek et al. 2001).

Cane Springs Wash Allotment

This allotment is run year-round with low numbers (14) of livestock. Yearlong livestock grazing practices provide no scheduled rest or deferment in any pasture. It would be expected that a continuation of low grazing pressure on the plant community would result in maintaining the DPC objectives found in the 2016 Evaluation.

Hibernia A and B Allotments

The Proposed Action for Hibernia Peak Unit A Allotment would continue with the scheduled summer and late spring growing season rest. Livestock grazing Hibernia Peak Unit B Allotment would continue to be a Best Pasture grazing system which uses the principles of a deferred grazing system. Hibernia Peak Unit B Allotment pastures would alternatively receive rest in spring and summer as well as the winter and fall seasons depending on the weather and when the pastures were used the previous year. Both allotments would be expected to continue to maintain and improve under this alternative. The periodic deferment and moving of livestock as proposed in the AMP (1999) for all pastures during both the summer and spring growing seasons should continue to allow key forage plants the opportunity to grow, set seed, and replenish root reserves. The grazing system under the Proposed Action may mitigate grazing impacts on vegetation by adjusting the timing of use (growing seasons rest as recommended by Canfield 1939, Holechek et. al. 2001, and Holechek et al. 2001a). It would be expected that the DPC vegetation objectives can be sustained or improved under this alternative. This type of management would be expected to support healthy rangeland ecological conditions and sustainable livestock grazing use.

Overall, the key forage plants have improved in composition and frequency over the evaluation period (Figures 12 and 13, Appendix E). This is in spite of drought conditions that have occurred during the same timeframe.

The development of Cedar Canyon Well facility would initially affect the vegetation during the construction of this range improvements resulting in negative short-term disturbances which are expected to recover over the long-term. Seasonal rotation of pasture use in Hibernia Peak A and Hibernia Peak B Allotments should allow the vegetation around livestock waters to be maintained or improve over time.

Cumulative Effects

It would be expected that in time the native plant communities would continue to develop towards the potential native plant community as described in the ecological site descriptions for

the area. It is unknown how Lehmann's lovegrass would respond however it would be expected that it would continue to occupy the areas where it is currently found and potentially increase on the allotments.

Alternative 2 - No Action Alternative

Environmental Effects and *Cumulative Effects* would be the same as described under the Proposed Action with the exception of the impacts associated with constructing the well, which would not be authorized under this alternative.

Alternative 3 – No Grazing Alternative

Environmental Effects

Under the No Grazing Alternative, livestock grazing would cease. It would be expected that the DPC objectives would be maintained. Key species would have more of an opportunity to complete all phenological growth stages compared to the Proposed Action and No Action Alternatives. Key forage plant frequency, composition, and cover of key species are expected to be maintained or increased. Vegetation recovery following drought could occur at a faster rate compared to the Proposed Action and No Action Alternative as complete rest from livestock grazing is the most effective way to achieve range recovery following drought (Howery 1999). Lehmann's lovegrass would be expected to be present and could continue to increase (frequency and composition) under the No Grazing Alternative.

No vegetation would be trampled or grazed by cattle. Standing biomass levels would be expected to increase. Impacts over time to the ecological function of the plant communities are expected to be confined to disturbances from all events listed under the *Reasonably Foreseeable Activities* (Section 3.4) and *Cumulative Impacts* (Section 3.3) with the exception of grazing related actions.

Vegetation monitoring data to determine if standards are being met would be expected to continue to be collected at all key areas.

The Cedar Canyon Well facility would not be developed, so there would be no disturbance to the vegetative resources from construction activities.

Cumulative Effects

Effects would be expected to be the same as those described in the *Environmental Effects*.

3.6.9 Water Quality (Drinking and Ground)

Affected Environment

The three allotments are located in the Big Sandy River Basin. The water courses that originate in the Hualapai Mountains and flow eastward through the allotments are Blue Tank Wash, Pilgrim Wash, Bull Canyon, Hibernia Canyon, Wagon Wheel Wash, Hair Clipper Wash, and Moss Wash. These drainages flow into Knight Creek or Cane Springs Wash which then flow to the Big Sandy River. The Big Sandy River turns south and empties into the Bill Williams River which then flows westward to the Colorado River. Through most of these washes surface water only flows during rainfall events large enough to cause surface flooding. Smaller portions of these drainages contain short stretches of intermittent flow.

The Arizona Department of Water Quality notes that water levels have fluctuated in the Big Sandy Basin where Cane Springs Wash empties into the Big Sandy River. Water levels have

gained 1 foot from 1991-1993 to 2003-2004 (ADWR 2010). Water levels are unknown since 2004.

Seasonally there is flowing (lotic) water within the allotments at the upper elevations in Hibernia Canyon. There is non-flowing (lentic) surface water within the allotments on public land at several springs (BLM 2016). The amount of water produced by each spring is variable depending upon groundwater conditions such as rock substrate and position within the aquifer.

The KFO RMP (BLM 1995) recognizes non-point source pollution as a factor which could affect water quality from various sources including from livestock grazing. This can be mitigated through appropriate grazing management, such as has been implemented with the AMP (1999).

PFC evaluation and water resource data are gathered in riparian zones where observations and measurements are taken. Examples include measuring pH, water temperature, total dissolved solids, salinity, and water conductivity. Observations include noting whether soils are saturated (which can be an indicator of sulfuric conditions), the health and vigor of the plant community, etc.

Alternative 1: Proposed Action Alternative

Environmental Effects

Concerns for non-point pollution that can affect water quality include high nitrate concentrations, high salt content, and erosion. This use is not expected to cause a reduction in water quality because the same management actions would be implemented under the AMP (1999) into the future.

Continuing to meet AZ Standards in the upland and riparian areas would help to mitigate the potential for non-point source pollution as a result of livestock grazing. Reasons include that plant cover in uplands and riparian areas would be maintained when DPC objectives are met. For example, when soils are stabilized by plant cover on the landscape, erosion has less potential to degrade uplands and water in riparian areas.

One new water facility is being proposed on the west side of the North Pasture in Cedar Canyon and may have an effect on surface water at the springs in the watershed above this facility. However, the springs in the canyon above the well are seasonal or dry during the majority of the year. In the last few years these once reliable perennial springs, only flowing during wetter and/or cooler times of the year. This new water development would provide a perennial source of water for livestock and wildlife in this area.

Existing water developments would be expected to be maintained and livestock use at these sources would continue. Areas expected to be most disturbed (less perennial plant cover and greater soil compaction) by livestock grazing include those nearest water developments. Under the AMP (1999) the impacts of livestock grazing around water developments have been and are expected to be reduced because of deferred grazing, which has and would continue to allow for rest and recovery of grazed vegetation around water sources.

Cumulative Effects

Non-point pollution concerns from the Proposed Action would remain the same or possibly improve over time with an increase of plant cover. Plant cover can reduce sediment runoff from

the uplands. Some of these effects can be related to livestock grazing, wildlife, and the activities listed in the *Reasonably Foreseeably* and *Cumulative Impacts* sections (Sections 3.4 and 3.3). Arizona Standards are expected to continue to be met in the future which would help to mitigate the potential for non-point source pollution as a result of livestock grazing (see *Environmental Effects*).

Existing water developments would remain, and livestock use at these sources would continue at these improvements. Livestock would continue to have the greatest influence on vegetation in those areas closest to water. These areas may have less perennial plant cover and greater soil compaction as a result of livestock grazing. These impacts are expected to be somewhat mitigated by the proposed deferred grazing (see *Environmental Effects*). Activities listed in the *Reasonably Foreseeably* and *Cumulative Impacts* sections (Sections 3.4 and 3.3) would still have the potential to promote non-point pollution into the allotments and have the potential to affect water quality on the allotments.

Alternative 2 - No Action Alternative

Environmental Effects and *Cumulative Effects* would be the same as described under the Proposed Action with the exception of the well, which would not be authorized under this alternative.

Alternative 3 – No Grazing Alternative

Environmental Effects

No change in water quantity would be expected from the No Grazing Alternative. Water quality at springs currently open to livestock may possibly improve, with the removal of livestock. Wildlife are expected to use water on the allotments however impacts on water quality and quantity, associated with wildlife grazing at springs, and in intermittent and perennial reaches of drainages would be expected to be small, as wildlife numbers are low in this area.

Cumulative Effects

Non-point pollution concerns would be reduced as one contributor to pollution, livestock grazing, would be eliminated. Non-point pollution effects from wildlife and other activities, listed in the *Reasonably Foreseeably* and *Cumulative Impacts* sections (Sections 3.4 and 3.3), would continue.

Meeting Arizona Standards in the upland and riparian areas would help to mitigate the potential for non-point source pollution as a result of wildlife and other activities. Plant cover in uplands and riparian areas are expected to increase or be maintained. Maintaining plant cover stabilizes soils. When soils are stabilized, there is less erosion and thus less potential to degrade uplands and water in riparian areas or at springs.

Water quality at springs may remain the same or improve over time in the absence of livestock grazing. The water flow in the intermittent reaches of the drainages would be expected to be maintained.

Events from Reasonably Foreseeably Activities and Cumulative Impacts would still have the potential to effect water quality on the allotments in the future.

The Cedar Canyon Well facility would not be developed, therefore there would be no impacts to water quality or ground water.

3.6.10 Wildlife including Special Status Species and Migratory Birds

Wildlife considered in this EA includes federally listed species, critical habitat for federally listed species, candidate and proposed species, BLM Sensitive species, Birds of Conservation Concern, migratory birds, and general wildlife.

3.6.10.1 Federally Listed, Critical Habitat, Proposed, and Candidate Species

Affected Environment

A review of the FWS list for threatened or endangered species, critical habitat, proposed, and candidate species was completed in 2017. None of the species that appeared on the list are present in the project area. There is no suitable or critical habitat in the allotments for the southwestern willow flycatcher, yellow-billed cuckoo, relict leopard frog, California least tern, round-tail chub, or the northern Mexican gartersnake. There is potentially suitable habitat for the Mexican spotted owl in the ponderosa pine-oak forest in the upper elevation of Hibernia Peak Unit A allotment; however, this area (Pine Flat) has been removed from livestock grazing. Therefore, there would be “No Affect” to any federally listed, critical habitat, proposed, or candidate species from the Alternative 1-Proposed Action or from Alternative 2-No Action. Because there is a determination of “No Affect” for these species and for Critical Habitat, impacts will not be further analyzed.

3.6.10.2 BLM Sensitive Species, Migratory Birds, Birds of Conservation Concern and General Wildlife

Affected Environment and the Environmental Effects

BLM sensitive animal species that occur or may occur within the Allotments are shown in Table 4. There are no sensitive plant species found on the allotments. Information on occurrence and habitat needs for many of these species on these allotments are limited because sensitive species are usually rare to uncommon within at least a portion of their range.

Table 4. Special status species that occur or have potential habitat in the Allotments.

Species	BLM Sensitive	Birds of Conservation Concern	Known to occur in Allotments	Potential habitat in Allotments
American peregrine falcon	X	X		X
Prairie falcon		X		X
Golden eagle	X			X
Western burrowing owl	X	X		X
Le Conte's thrasher	X	X		X
Bendire's thrasher		X		X
Costa's hummingbird		X		X
Bell's vireo		X	X	
Gray vireo		X		X
Lucy's warbler		X		X
Yellow warbler (sonorana spp.)		X		X
Black-chinned sparrow		X		X

Species	BLM Sensitive	Birds of Conservation Concern	Known to occur in Allotments	Potential habitat in Allotments
Cave myotis (<i>Myotis velifer</i>)	X			X
Fringed myotis (<i>Myotis thysanodes</i>)	X			X
Arizona myotis (<i>Myotis occultus</i>)	X			X
California leaf-nosed bat (<i>Macrotus californicus</i>)	X			X
Spotted bat (<i>Euderma maculatum</i>)	X			X
Townsend's big-eared bat (<i>Corynorhinus townsendii</i>)	X		X	
Greater Mastiff Bat (<i>Eumops perotis californicus</i>)	X			X
Hualapai Mexican vole <i>Microtus mexicanus hualpaiensis</i>	X		X	
Sonoran desert tortoise (<i>Gopherus morafkai</i>)	X		X	
Long-fin dace (<i>Agosia chrysogaster</i>)	X		X	

Migratory Birds: There are many species of migratory birds that occur on the allotments. Some of these are BLM Sensitive bird species *and* Birds of Conservation Concern (U.S. Fish and Wildlife Service 2008) (Table 4). All migratory birds are protected under the 1918 Migratory Bird Treaty Act (16 USC 703), which prohibits the taking of any migratory birds, their parts, nests, or eggs. Additional protection is provided by the Neotropical Migratory Bird Conservation Act of 2000 (16 USC 80). Migratory birds occur within the KFO, many of which are known to use the habitat types present in these allotments. In April 2010, BLM and FWS entered into an MOU to promote the conservation of migratory birds, as required in Executive Order 13186 (BLM 2010). These species are protected by law and it is important to maintain habitat for these species so migratory patterns are not disrupted. In the MOU, the FWS developed a list of Migratory Birds that are considered as “Birds of Conservation Concern.” The Birds of Conservation Concern in the allotments are presented below.

American peregrine falcon: Historically, the peregrine falcon ranged throughout North America and much of the rest of the world. Shooting, taking of eggs and young, poisoning, and habitat destruction all contributed to the decline of peregrine falcons from much of their historic range. There is no suitable nesting habitat on the Cane Springs Wash Allotment for this species. Peregrines in Hibernia A and B Allotments would nest on high, remote cliff ledges and forage in adjacent mountains and valleys. The peregrine falcon was delisted from the Federal endangered species list in 1999.

Prairie falcon: No suitable nesting habitat exists on Cane Springs Wash Allotment. Nesting habitat is present in Hibernia A and B Allotments on high, remote cliff ledges. Falcons would forage on all three allotments. They primarily eat other birds.

Golden eagle: This species could be found nesting in Hibernia A and B Allotments where topography features include tall cliffs. Cane Springs Wash Allotment does not contain suitable

nesting habitat for this species. It could forage in large open areas, primarily on rabbits and other small mammals, on all three allotments.

Western burrowing owl: Suitable habitat for the western burrowing owl may be found in the project area however, there are no records of nesting owls in this area. This species primarily occurs in open areas with short vegetation and bare ground in desert, grassland, and shrub-steppe environments (Corman and Wise-Gervais 2005). Burrowing owls eat small mammals, reptiles, amphibians, birds, and large insects. Burrowing owls are dependent on the presence of mammals such as kangaroo rats and ground squirrels, whose burrows are used for nesting and roosting (Corman and Wise-Gervais 2005) Cane Springs Wash and Hibernia Peak Unit B Allotments may provide habitat for this species.

Le Conte's thrasher: This species is uncommon and usually much localized in distribution. It has not been documented in the project area. This species is omnivorous, and will eat arthropods such as beetles, scorpions, spiders, grasshoppers, butterflies, moth larvae, and small lizards and snakes. It also eats seeds and berries. Habitat for this bird is found in open creosote bush and scattered mesquite habitats (Monson and Phillips 1981). Habitat where this species chooses to nest has pockets of clumped plants of taller greythorn, wolfberry, catclaw acacia, and cholla. Cane Springs Wash and Hibernia Peak Unit B Allotments may provide habitat for this species.

Bendire's thrasher: This species has been documented nearby the project area. It is omnivorous eating insects, spiders, seeds and berries. Typical habitat for this bird consists of trees, shrubs, and cacti adjacent to open areas. Cane Springs Wash and Hibernia Peak Unit B Allotments may provide habitat for this species.

Costa's hummingbird: Dry desert washes, canyons, and rocky slopes are favored nesting areas for this species (Corman and Wise-Gervais 2005). This species is a nectar feeder; however, it feeds insects to its' young. Paloverde, ocotillo, catclaw acacia and saguaros are often present in its habitat. Cane Springs Wash and Hibernia Peak Unit B Allotments may provide habitat for this species.

Bell's vireo: This is a bird species which can be found on Hibernia A and B Allotments in spring and creek riparian habitats. Dense catclaw acacia, velvet mesquite thickets, or cottonwood/willow, velvet ash, and seepwillow areas are the preferred habitats for this bird (Corman et.al. 2005). The diet of this species consists of insects and spiders.

Gray vireo: Habitat for this species may be found in the grasslands and chaparral plant communities (Corman and Wise-Gervais 2005) of Hibernia A and B Allotments where desert trees of Mohave thorn, California juniper, and velvet mesquite occur. This species primarily eats arthropods and some fruit.

Lucy's warbler: Habitat for this species can be found on all three allotments. It is a cavity nester, nesting in tree trunks, hollow limbs, and rigid yucca leaves (Corman and Wise-Gervais 2005). It is an insectivore.

Yellow warbler: This species is tied closely to moisture-loving deciduous trees such as those

found in Hibernia and Bull Canyons. It may occur in Hibernia A and B Allotments in riparian areas. This species eats insects such as caterpillars, beetles, and wasps (Corman and Wise-Gervais 2005).

Black-chinned sparrow: This species is typically found in the chaparral plant community but can also be found in grasslands with scattered trees (Corman and Wise-Gervais 2005). Hibernia A and B Allotments may provide habitat for this species. Its' diet is unknown but like related sparrows, probably eats seeds in the winter and insects in the summer.

Mammals:

Hualapai Mexican vole: Historical and potentially suitable habitat for this BLM Sensitive Species can be found in the northwest corner of Hibernia Peak Unit A Allotment. Habitat for this species includes north facing slopes with an understory of grasses and forbs under a canopy of ponderosa pine-Gambel oak forests, and/or moist sedge habitats along permanent and semi-permanent water sources. The Pine Flat Enclosure has removed livestock grazing from vole habitat with the exception of the high elevation portion of Bull Canyon that exists downstream of the enclosure. This species feeds on grasses and forbs and relies on heavy grass and forb cover for concealment as it forages.

Bats: A number of BLM Sensitive bat species may be present on the allotments (Table 3). Brief habitat descriptions are presented for these species. All of the listed bat species are insect eaters.

Cave myotis: This species prefers cave habitat but, will choose other roosting areas if a suitable roosting cave is not available. These alternate areas can include mines, rock crevices, abandoned buildings, barns, and under bridges. They would be found primarily at lower elevations (Lower Sonoran and Mojave deserts life zones of the southwest in areas dominated by creosote bush, paloverde, brittlebush, and cactus on the Cane Springs Wash and Hibernia B Allotments.

Fringed myotis: This species typically roosts above 4,000 feet elevation in tightly packed groups in rock crevices, caves, mines, large snags, under exfoliating bark, and in buildings. These sites may be day or night roosts. It may hibernate at lower elevations. It eats mostly small beetles and some moths that it forages from low desert scrub up to pine forest plant communities (AGFD 2011). Hibernia A and B Allotments may provide habitat for this species.

Arizona myotis: This species is generally observed at higher elevations usually in ponderosa pine and oak-pine woodland near water. It is found along permanent water or in riparian forests in some desert areas. Hibernia Peak Unit A Allotment may provide habitat for this species.

California leaf-nosed bat: This species preferred habitats are caves, mines, and rock shelters, mostly in lower elevation Sonoran and Mojave Desert scrub. Roost sites are usually located near foraging areas. This species roosts by day in caves, and in abandoned mines and tunnels. Cane Springs Wash and Hibernia Peak Unit B Allotments may provide habitat for this species.

Spotted bat: This species is dependent on large isolated cliffs for roosting. It can forage in the canyons leading from the Big Sandy River (not on the allotments) into the project area and up to the higher elevations of the allotments.

Townsend's big-eared bat: This species is associated with areas containing caves and cave-like structures for roosting habitat. Generally, they are found in the dry uplands throughout the West, including Arizona desert scrub, oak woodlands, oak-pine forests, and pinyon-juniper forests. This species is known to roost in Hibernia Peak Unit A Allotment.

Greater western mastiff bat: This bat is a year-round resident in Arizona where it ranges in elevations from 240–8,475 feet. It forages from the air or on the ground for insects. It forages over extensive areas of desert scrub and can be found up to 15 miles from the nearest likely roosting sites. It is found roosting in rugged rocky canyons with abundant crevices (AGFD 2002). It has not been documented in the project area; however, suitable roosting and foraging habitat is present in the allotments.

Reptiles: One BLM Sensitive reptile, the Sonoran desert tortoise, is found on all three allotments.

Sonoran desert tortoise: In the project area the Sonoran desert tortoise primarily inhabits rocky hillsides and gravelly desert washes below 4,800 feet. This species is found on all three allotments (Figure 12, Appendix E). Category 3 habitat, for the desert tortoise, is present on roughly 32,653 acres or 87% of the project area (BLM 1995). Of this acreage, it includes 9,543 acres in Hibernia Peak Unit A, all of the 20,800 acres on Hibernia Peak Unit B, and all of the 2,310 acres in Cane Spring Wash Allotment.

Fish:

Long-fin Dace:

This desert fish has occasionally been found in Hibernia and Bull Canyons. It is believed that this species moves up these canyons from the Big Sandy River when flooding conditions allow. This movement results in temporary occupation until the surface water recedes and dries up. This species does not persist on the allotments as no permanent habitat on public land is available on any of the allotments for this species.

General Wildlife and Migratory Birds:

Habitat for many wildlife species occurs within these allotments. Species found include animals typical of the Mojave and Sonoran Deserts such as the Merriam's kangaroo rat, gray fox, bobcat, coyote, speckled rattlesnake, collared lizard, red spotted toad, cactus wren, and black-throated sparrow. Upland game species include Gambel's quail, mourning dove, white-winged dove, black-tailed jackrabbit, and desert cottontail. Big game species include mule deer, javelina, and mountain lion.

Environmental Effects for all Alternatives

Analysis Method

Each alternative will be compared to the current environmental conditions and grazing practices and the effects from each alternative will be described. Effects analysis will focus on upland and riparian wildlife habitats, special status species, Sonoran desert tortoise, and migratory birds. The analysis will disclose the impacts to habitats and how they affect wildlife's ability to survive and reproduce.

The following assumptions were used to facilitate the analysis of special status species,

migratory birds, and general wildlife habitats:

- Assumption 1: Upland habitats that are meeting Standards 1 and 3 are either providing adequate habitat or have the ecological processes in place that would allow for the development of adequate habitat for upland special status species, migratory birds, and general wildlife.
- Assumption 2: Riparian habitats that are meeting Standard 2 are either providing adequate habitat for riparian dependent special status species, migratory bird species, wildlife species, and plant species, or they have the appropriate processes in place to make progress towards the development of suitable habitat.

Applicable to Alternatives 1 and 2

Basis for the expected outcomes from changes in grazing management for wildlife habitat

Habitat for wildlife species, migratory bird species, and special status species must provide for food, cover, survival, and reproduction of each species. Not every plant community will provide all of the components necessary for every species. However, if plant communities are able to maintain their vigor and diversity, and ecological processes are functioning properly, then plant communities could provide what habitat they are capable of and could progress toward their capability. Impacts to general wildlife species from livestock consists primarily of alterations to the vegetative community. If a vigorous native plant community is maintained within its natural range of variation, then habitat could be provided for the natural variety of species on the allotments. These species would be able to exploit their respective niches and populations could be expected to sustain themselves. Therefore, impacts to general wildlife and special status species, are considered with the analysis of impacts to vegetation.

Impacts specific to Migratory Birds

Livestock grazing can impact migratory bird species by altering forage abundance through grazing and altering the abundance and quality of nest substrates through grazing or trampling. Cattle could occasionally trample ground nests or knock nests out of small shrubs as they pass, causing nest failure. These events are expected to be rare unless cattle are stocked at high densities, which is not proposed under these alternatives. When pastures are grazed in the spring and/or summer, less cover for ground nesting birds would be available. This could make finding a suitable nest site more difficult, or increase nest exposure to predators, and indirectly reduce food resources (insects and seeds), all potentially reducing nest success. Pastures that are deferred during the summer and late spring when bird species are nesting could provide sufficient cover for ground nesting birds and have increased food resources (seeds and insects). In the long-term, a plant community that meets the DPC objectives should provide the necessary resources to meet the food and nesting requirements for migratory birds.

Sonoran Desert Tortoise

The desert tortoise can be affected by cattle grazing in several ways as described below.

Crushing of tortoise: Tortoise can be crushed by cattle; however, no data exists on the frequency at which cattle trample desert tortoise. Cattle pose a low degree of risk to above ground adult desert tortoise and possibly sub-adults, simply because cattle would likely try to avoid stepping on what essentially would appear to them to be a rock (Boorman 2002). Because they are small, hatchlings are more likely to be stepped on than sub-adult or adult tortoises.

Collapsing of burrows: Avery and Neibergs (1997) found that more burrows of desert tortoise were partially or completely destroyed in areas that were grazed by cattle than in a fenced area. The Sonoran Desert tortoise prefers to burrow in rocky habitats and not on the flatlands of the habitat areas. On these three allotments tortoise burrows would typically be found in drainage cut banks or under boulders, and therefore, unlikely to be collapsed by livestock.

Cover: The desert tortoise needs vegetation to provide cover from thermal extremes, for shelter site construction, and for concealment from predators (Cordery et al. 1993). Livestock grazing can reduce this cover and could require tortoises to travel further to find adequate cover, exposing them to predators and temperatures extremes. It would be expected that if allotments are meeting standards, adequate cover would be available to the desert tortoise.

Forage Competition: Desert tortoise consume a wide variety of plants. Preferred forage plants for tortoise include perennial and annual grasses, forbs, vines, mallows, and shrubby buckwheat (Van Devender et al. 2002, Arizona Interagency Desert Tortoise Team 1996). Grasses make up the bulk of tortoise diets. Tortoise in Bonanza Wash (tributary to Burro Creek, in the Big Sandy River watershed) ate 94.3% perennial grasses (Van Devender et al. 2002). Three-awn, bush muhly, big galleta, globemallow, and shrubby buckwheat, which are key forage species for livestock in the allotments are also important forage species for desert tortoise (Van Devender et al. 2002). A decline in abundance or elimination of key forage species would reduce the amount and quality of forage available to desert tortoises.

Grazing management with periodic deferment would be expected to provide plant communities the opportunity to maintain high vigor and reproductive capability which is necessary to achieve or maintain the DPC objectives (e.g., cover and composition of key forage species, and frequency).

The construction and maintenance of range improvements and cattle gathering activities may bring workers into contact with desert tortoises. Sonoran desert tortoise (*Gopherus morafkai*) may occur within Hibernia A and B Allotments. Desert tortoise have been observed within Cane Springs Wash Allotment. The proposed renewal is located within deserts tortoise habitat Category III. The construction and maintenance of range improvements and cattle gathering activities may bring works into contact with desert tortoises. Harassment of desert tortoise would be prohibited and mitigation below for any encounter would be implemented.

Tortoise handling guidelines and brief presentation from a BLM employee would be conducted prior to the commencement of construction or maintenance to better educate workers and lower any chances of impacts.

Care shall be taken not to disturb or destroy desert tortoises or their burrows. Pursuing, shooting, hunting, trapping, killing, capturing, snaring or netting desert tortoises are prohibited by Arizona State Statute. Any sightings of desert tortoise shall be immediately reported to the KFO, Wildlife Biologist. If a desert tortoise is endangered by any activity that activity shall cease until the desert tortoise moves out of harm's way on its own accord or is moved following the attached guidelines "Guidelines for Handling Sonoran Desert Tortoises Encountered on Roads and Vehicle Ways" (Attachment 3).

All personnel will report any sightings of desert tortoise and other wildlife species and federally listed migratory birds (such as peregrine falcon, bald eagle, brown pelican, etc.) to the Kingman Field Office, Wildlife Biologist.

Alternative 1 - Proposed Action Alternative

Environmental Effects

Special Status Species, Migratory Birds, and General Wildlife

Implementing the Proposed Action on these allotments to maintain the DPC objectives would be expected to maintain or improve the ecological condition of the wildlife habitat on all three allotments (see *Sections 3.6.8 Vegetation* and *3.6.5 Riparian* discussions). This would provide for the habitat needs (i.e., forage, cover, nesting sites, and shelter) of wildlife including special status species, Hualapai Mexican voles, and migratory birds. This alternative is designed to maintain Standards 1, 2, and 3, and it is anticipated that habitats for wildlife, sensitive species, and migratory bird habitats would be sustained.

Under the current livestock grazing regimes, all three allotments are meeting standards. Because the DPCs objectives have been met, food and nesting requirements for the expected variety and abundance of migratory birds is presumed to have been met.

Periodic rest from livestock grazing during the summer and late spring growing seasons would be expected to maintain or improve the frequency, cover, and productivity of key species (e.g., bush muhly, black grama, big galleta etc.), consequently improving habitat for those species of wildlife that use these plants for cover and foraging.

Maintaining or improving key species productivity, cover, and meeting the DPC objectives may improve habitat for insects; thus, indirectly maintaining or improve foraging conditions for BLM Sensitive Species of bats and birds, Birds of Conservation Concern, migratory birds, and general wildlife such as lizards and small mammals. Livestock grazing is not expected to affect the nesting of the peregrine falcon, prairie falcon, or the golden eagle. The nests of these three species are found on inaccessible cliff faces. These species forage over large areas, and livestock grazing is unlikely to affect the amount of available prey (rabbits, small mammals, and birds). This alternative would not affect the roosting sites (caves, cliffs, mines, rocky areas) of bats. This alternative is designed to provide sufficient seed production for seed eating species and adequate forage for insects, which are important prey species to bats and many birds, reptiles, and small mammals.

During the migratory bird breeding season, grazing could result in the destruction of nests of ground nesting bird species; however, cattle would not be present during the nesting season every year in every pasture. During periods of pasture deferment contact between livestock and nesting birds would be expected to be eliminated or reduced. However, an increase in contact could occur in those years when grazing is scheduled during the breeding season. Ground nests could potentially be trampled during those times.

Keeping waters operating on public land yearlong, even when livestock are not in the pasture, would provide wildlife with year-round water. Those species that are more water dependent, such as mule deer and Gambel's quail, could continue to use an area after livestock have been moved. However, during round ups, or when gates around waters are closed to prevent livestock

use of waters, some of the watering facilities would become unavailable to larger animals such as mule deer.

The Cedar Canyon water development in the North Pasture would provide a perennial source of water which would help replace the loss of water from nearby springs which are no longer perennial water sources for livestock and wildlife.

Construction and maintenance of the range improvements could cause a temporary disturbance to wildlife. This disturbance is not expected to occur for more than a week in any one area and typically lasts less than 1 day. These activities would cease at night allowing wildlife access to water.

The modification of livestock management under this alternative for the management of Hualapai Mexican vole habitat would help to assure that the habitat of this species would continue to be monitored so that a 20% use level in vole habitat from livestock would not be exceeded. This would ensure that livestock grazing impacts in vole habitat would be minimized and that the tall perennial grass and herb cover this species needs, would be maintained.

Under the Proposed Action the risk of desert tortoise being crushed or their burrows being collapsed by livestock is greater than under the No Grazing Alternative as livestock would not be present under the No Grazing.

The Proposed Action would be expected to continue to provide for periodic growing season rest which could allow the plant community to maintain or exceed the DPC objectives. If DPC objectives are exceeded, habitat for desert tortoise could be enhanced as plants that provide food and thermal cover and concealment from predators could become more common.

Because desert tortoise and livestock have similar diets and consume many of the same key species, forage competition/overlap could still be present, however not exceeding use limits would be expected to leave adequate forage available for the desert tortoise.

Under the Proposed Action livestock grazing would be seasonally deferred. Cattle would not be present in every pasture for every year in all seasons. This could reduce potential forage overlap between the desert tortoise and livestock in those years when livestock are not present. Summer and late spring are the seasons when desert tortoise is the most active. Potential forage overlap would be reduced during those years in those pastures that have spring and or summer deferment. When pastures are scheduled for grazing in the summer and spring, livestock would be present and concentrated during the desert tortoise active season and forage overlap during these times may occur.

Under the Proposed Action for Hibernia A and B Allotments, grazing management with periodic deferment would be expected to achieve or maintain the DPC objectives (e.g., cover and composition of key forage species and trend). This would be expected to benefit desert tortoises by sustaining or increasing cover and available forage. Low livestock numbers on public land on the Cane Springs Wash Allotment would be expected to mitigate the potential negative effects to vegetation and thus desert tortoise habitat, from year-round livestock grazing.

Impacts to desert tortoise are expected to be greatest around cattle concentration areas, such as

cattle troughs, salt and mineral blocks etc., where vegetation receives the heaviest use. Adherence to the use limits and rotational grazing would help to mitigate these effects by giving vegetation intermittent rest during the growing seasons on Hibernia A and B Allotments.

In Cane Springs Wash and Hibernia Peak Unit B Allotments, ephemeral grazing could be authorized during years of abundant ephemeral forage production. When authorized, cattle grazing could occur in any pasture outside of the scheduled rotation. Forage overlap would be expected to occur during these times but would be expected to be mitigated by the sheer amount of ephemeral forage available to desert tortoise and ungulates. The desert tortoise is considered in the design criteria (turnout criteria is 280 pounds per acre minimum of ephemeral forage when authorizing ephemeral use in tortoise habitat) of the Proposed Action.

Cumulative Effects

Reasonably Foreseeable Activities and Cumulative Impacts could affect special status species, migratory birds, and wildlife in a myriad of ways through the actions stated in *Sections 3.4 Reasonably Foreseeable Activities*, and *2.1 Alternative 1- The Proposed Action Alternative*. Impacts could include habitat alteration or removal, increased erosion; harassment, displacement, and/or mortality of wildlife. Displacement and/or mortality can be indirect impacts associated with road building. It could also indirectly be caused by the introduction and establishment of invasive species as they can alter the native plant species composition, cover, and production which provides habitat to wildlife.

Cane Springs Wash and Hibernia Peak Unit B Allotments are expected to receive ground disturbance and permanent habitat removal by the addition of two lanes on Hwy-93 in the near future. Readers are encouraged to review the Environmental Assessment for US 93–Wikieup to Interstate (ADOT 2001) for expected impacts of that project.

Maintenance activities such as road blading and vegetation removal from the existing Mead - Phoenix Transmission project is expected to continue in the Cane Springs Wash and Hibernia Peak Unit B Allotments. Impacts include habitat removal and long-term habitat disturbance.

Alternative 2 - No Action Alternative

Environmental Effects

The environmental and cumulative effects are similar as stated under the Proposed Action Alternative 1 with the exception that there would be no modification of livestock management in Hualapai Mexican vole habitat. The habitat of the BLM Sensitive Species, the Hualapai Mexican vole, would continue to be monitored however, a greater than 20% use level in vole habitat could occur. This could affect habitat quality for the Hualapai Mexican vole as utilization levels and impacts associated with livestock grazing, in vole habitat, would not be minimized, and adequate tall perennial grass and herb cover may not be maintained for this species.

The Cedar Canyon Well facility would not be developed, so there would be no disturbance to the vegetative resources from construction activities. No perennial source of water would be available for wildlife, since no new water facility would be developed in this portion of the Hibernia unit B allotment.

Cumulative Effects

Similar to Alternative 1, with the exception that there are potential grazing impacts to the habitat of the Hualapai Mexican Vole that would not be mitigated because of the lack of modifications to the livestock grazing use limits.

Alternative 3 – No Grazing Alternative

Environmental Effects

Total removal of cattle from all of the allotments would be expected to maintain or improve Rangeland Health Standards for Hibernia A and B, and the Cane Springs Wash Allotments. It would be expected that Standards 1, 2 and 3 would continue to be met or exceeded under this alternative. Habitat for BLM Sensitive Species, Migratory Birds or Birds of Conservation Concern and general wildlife would be sustained or improved for most species as described under Alternative 1. Upland and riparian areas would provide suitable habitat or have the ecological processes in place that would allow for the maintenance and development of adequate habitat for wildlife, special status species, migratory birds, and desert tortoise. Competition or forage overlap between wildlife and livestock would not occur. The risk of livestock stepping on nests of migratory birds, stepping onto tortoise, or collapsing of desert tortoise burrows would be eliminated.

The Cedar Canyon Well in the North Pasture would not be developed and therefore would not provide a perennial source of water for wildlife.

Waters on public and private lands that are currently maintained by the grazing permittee could potentially be abandoned, and more water dependent species such as mule deer and Gambel's quail, could be more restricted in their use of these allotments as a result of less water availability. It is possible that BLM, other agencies, or private entities could take over maintenance of the public waters for year-round use by wildlife.

Cumulative Effects

Impacts are expected to be similar to Alternative 1, with the exception of not having any impacts associated with livestock grazing. With the absence of livestock grazing, habitat conditions for BLM Sensitive Species, Migratory Birds, Birds of Conservation Concern, and general wildlife are likely to be maintained or improved as the habitats could reach the potential natural community more quickly.

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DETERMINATION

*Achieving Standards for Rangeland Health
and
Conforming with Guidelines for Grazing Administration
for the
Hibernia Peak (Unit A & B) and Cane Springs Wash Allotments*



Field Office: Kingman

Watershed Name/Number: Big Sandy Valley

Grazing Allotment Name/Number: Hibernia Peak Unit A (#00053), Hibernia Peak Unit B (#00083), and Cane Spring Wash (#00016)

Public Land (acres)-approximate: Upland 52,000 ac. Riparian/Wetland <10 ac. Total: 52,010 ac.

Streams on Public Land (miles): <2 mi.

Date(s) of Determination: 08/09/2017

Name of Permittee(s): Anita Waite and Clay Overson

Assessment Participants (Name/ Discipline/Interest):

Kingman Field Office/Resource Staff:

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Rebecca Peck	Wildlife Biologist
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Standard 1 (Upland Sites)

Check those that apply:

Meeting the Standard (*At 8 out of 9 Key Areas*)

Not Meeting the Standard, Livestock Grazing Management Practices are Significant Factors

Not Meeting the Standard, but Making Significant Progress towards

Not Meeting the Standard, Livestock Grazing Management Practices are **not** Significant Factors (*At 1 out of 9 Key Areas*)

Rationale/Information Sources:

Each Key Area was evaluated using sixteen of the seventeen indicators for upland health in combination with other monitoring data to determine if a key area study area was meeting Standard I.

Out of a total of nine Key Areas for all three allotments, eight Key Areas were determined to be meeting Standard I. The only exception is Key Area #7 in the North pasture of Hibernia Peak Unit B Allotment.

At Key Area 7, all soil and hydrological indicators are close to or within what is expected for those ecological sites. All of the biotic indicators are within what is expected with the exception of the three indicators No. 12 (Functional/ Structural Groups), No. 16 (Invasive Plants), and No.

17 (Reproductive Capability of Native species). All three indicators were rated as a “moderate to extreme” departure from the expected. The reason for the rating is directly related to the non-native Lehmann’s lovegrass which has significantly increased since 2008, becoming the dominant grass species on this site.

Based on rainfall data from the NOAA weather station in Wikieup, Arizona, prolonged seasonal drought conditions at the end of the evaluation period (the last 23 years) may have played a major role in the increase of lovegrass. According to research, Lehmann’s lovegrass is a very drought tolerant species and can out compete native species under dryer than normal conditions (see Appendix 2 for rainfall data in the attached Hualapai Mountains North Evaluation, 2016.). In addition, the physiology of Lehmann’s lovegrass gives this species an advantage over the native grasses even under normal conditions. This species breaks dormancy earlier in the spring, grows later into the fall, and reproduces both vegetatively and through seed. It is a large robust grass, which forms dense mats and produces millions of very small seeds.

It has been determined that no one management activity has been identified as the causal factor for the establishment and composition of Lehmann’s lovegrass on Hibernia Peak Unit B Allotment. The plant community on this allotment has met or exceeded all indicators at all key areas with the exception of three indicators at Key Area 7 on Hibernia Peak Unit B Allotment. Overall erosion, hydrological and vegetation conditions are rated high on this allotment. It is likely there are a combination of factors that contributed to the establishment, maintenance, and increase of Lehmann’s lovegrass. However, prolonged seasonal drought in 19 (86%) out of the past 22 springs, and this species’ physiology, seems to be the major drivers in the species increase in frequency and composition at Key Area 7. Based on the monitoring data and review of the research literature it has been determined that livestock grazing under the current Allotment Management Plan known as the Cane Springs Ranch Cooperative Management Plan was not a significant factor in the establishment or current composition/frequency of Lehmann’s lovegrass at Key Areas on Hibernia Peak Unit B Allotment.

Standard 2 (Riparian-Wetland Sites)

There are several springs and seeps on these allotments of which a sample was evaluated for riparian conditions or values. There are two intermittent drainages (Hibernia and Bull Canyons) which provide some riparian habitat on the Hibernia Peak Unit A Allotment and pockets of riparian habitat on Hibernia Peak Unit B Allotment. There is no riparian habitat on the Cane Springs Wash allotment.

Check those that apply:

X Meeting the Standard

- Not Meeting the Standard, Livestock Grazing Management Practices are a Significant Factor
- Not Meeting the Standard, but Making Significant Progress towards
- Not Meeting the Standard, Livestock Grazing Management Practices are **not** Significant Factors

Rationale/Information Sources: Four springs were chosen for inventory and evaluation. In addition, two permanent study sites were established and monitored in Hibernia and Bull Canyons. The results are summarized and presented in Standard 2-Riparian Wetland Areas

section of the attached document titled *An Evaluation of Standards for Rangeland Health for the Hualapai Mountains North Evaluation, 2016*. This document substantiates the above conclusions.

Standard 3 (Desired Resource Conditions)

Check those that apply:

Meeting the Standard (*At all Key Areas and Riparian Areas*)

Not Meeting the Standard, Livestock Grazing Management Practices are Significant Factors

Not Meeting the Standard, but Making Significant Progress towards

Not Meeting the Standard, Livestock Grazing Management Practices are **not** Significant Factors

Rationale/Information Sources: Each key area was assessed and a determination made in the attached document titled *An Evaluation of Standards for Rangeland Health for the Hualapai Mountains North Evaluation, 2016*. This document substantiates the above conclusions.

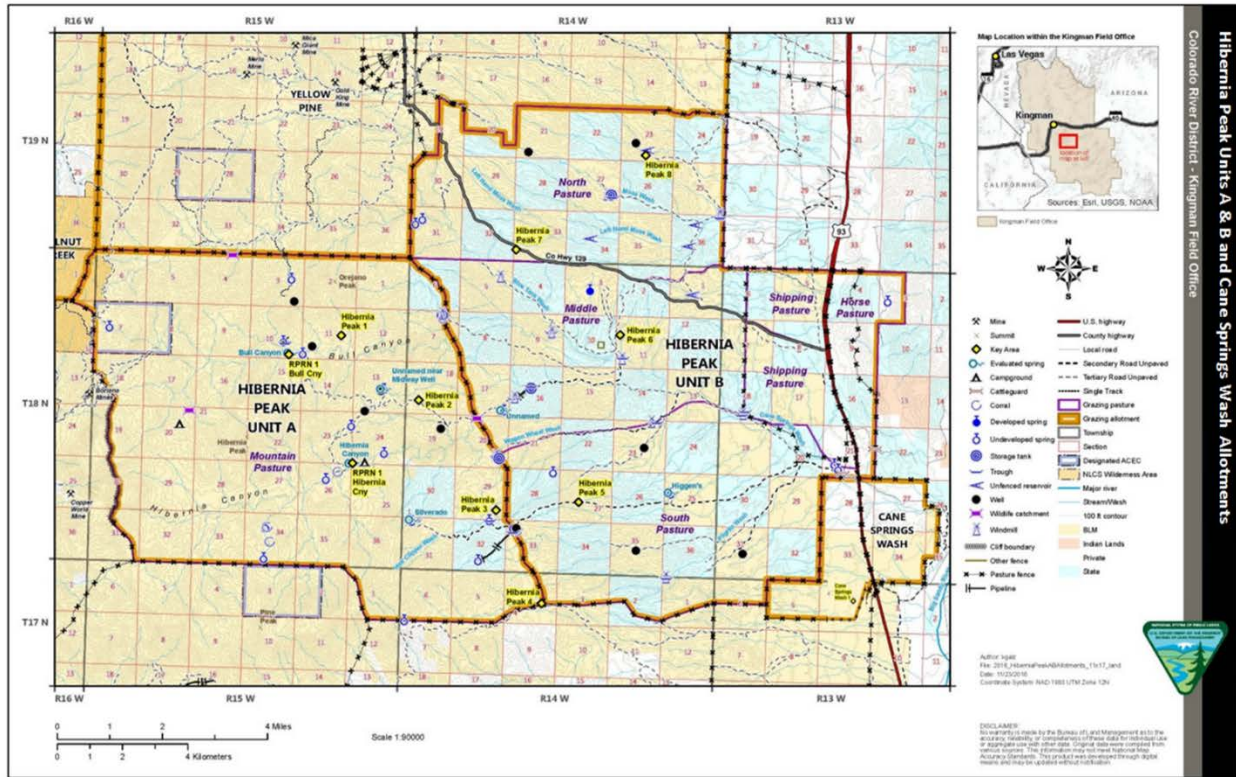
Amanda M. Dodson

Amanda Dodson
Field Manager

Aug 9, 2017

Date

APPENDIX D - PROJECT MAP



Map 1: Location of Allotments, Key Areas, and Area of Critical Environmental Concern

APPENDIX E - PROJECT PHOTOS



Figure 1 Cane Springs Wash Allotment, Key Area 1



Figure 2 Hibernia Peak Unit A, Key Area 3



Figure 3 Hibernia Peak Unit B looking east toward Big Sandy River Valley, 2015



Figure 4 Key Area 7, Hibernia Peak Allotment Unit B, Oct. 20, 2015



Figure 5 Arizona Interior Chaparral

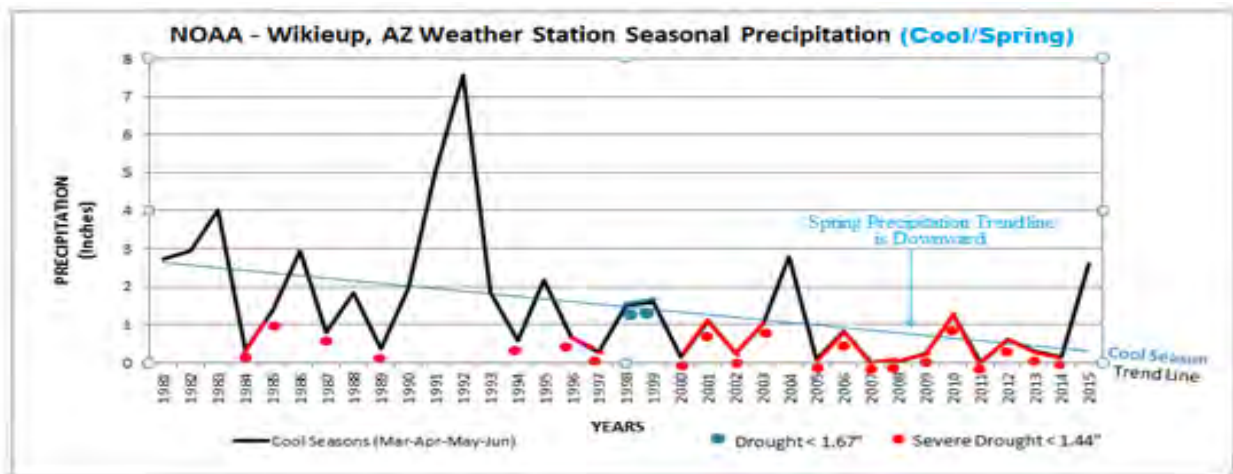


Figure 6 Cool/Spring Precipitation at Wikieup Weather Station

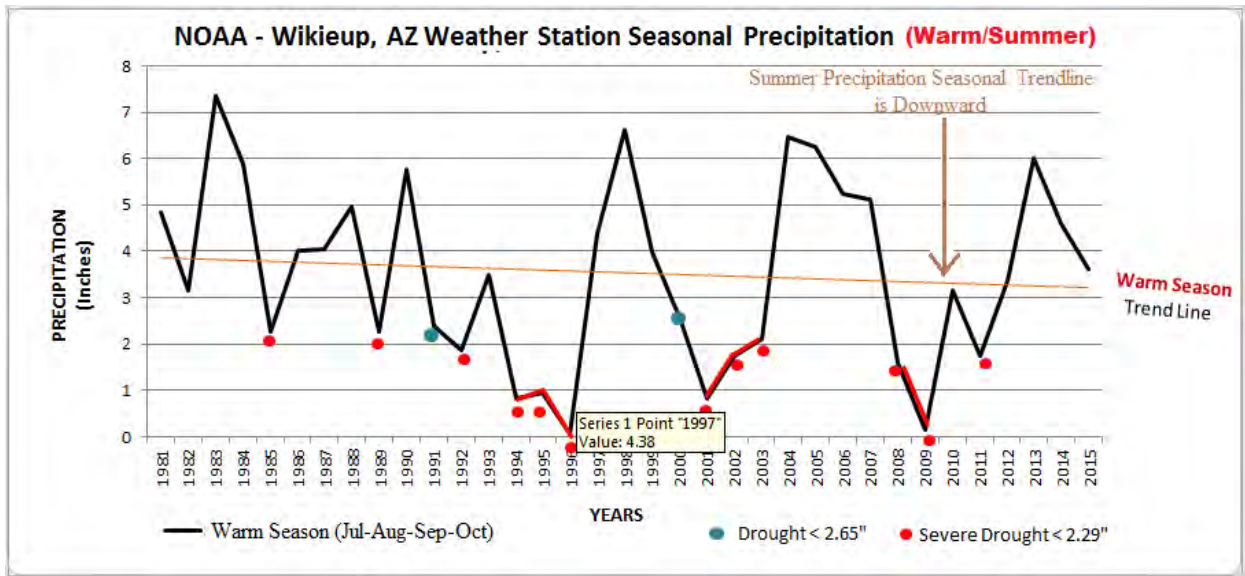


Figure 7 Warm/Summer Precipitation at Wikieup Weather Station



Figure 8 Hibernia Canyon Riparian Area, March 24, 2016



Figure 9 Example of a Xeroriparian Area

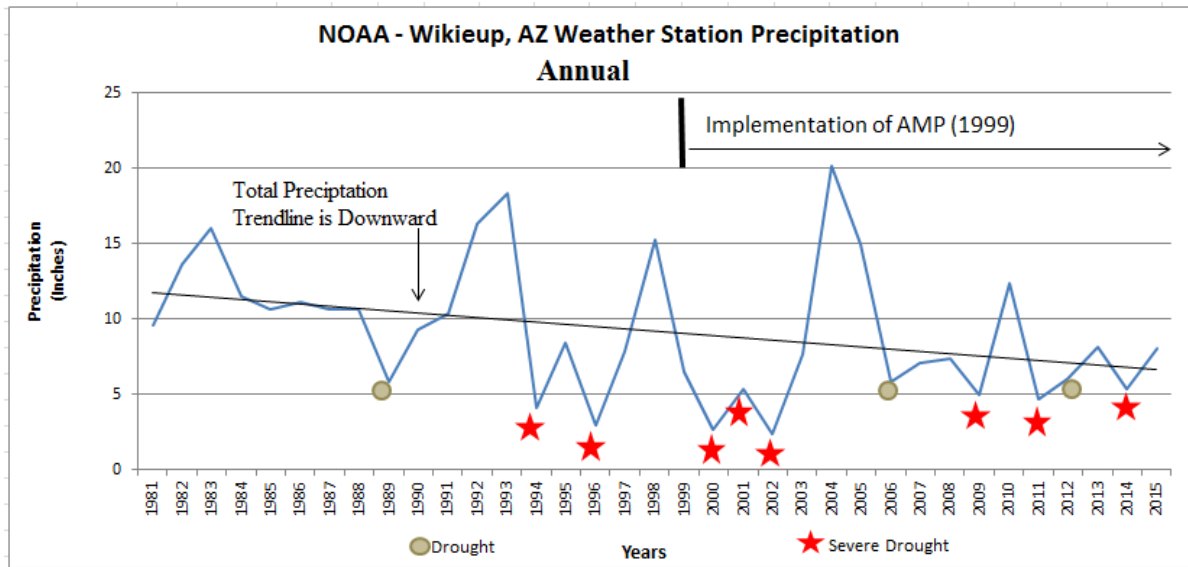


Figure 10 Wikieup Precipitation Station data collected by NOAA between 1981 and 2015. Years identified with yellow circles and red stars indicate the years representing the 11 years out of 35 having drought and severe drought.

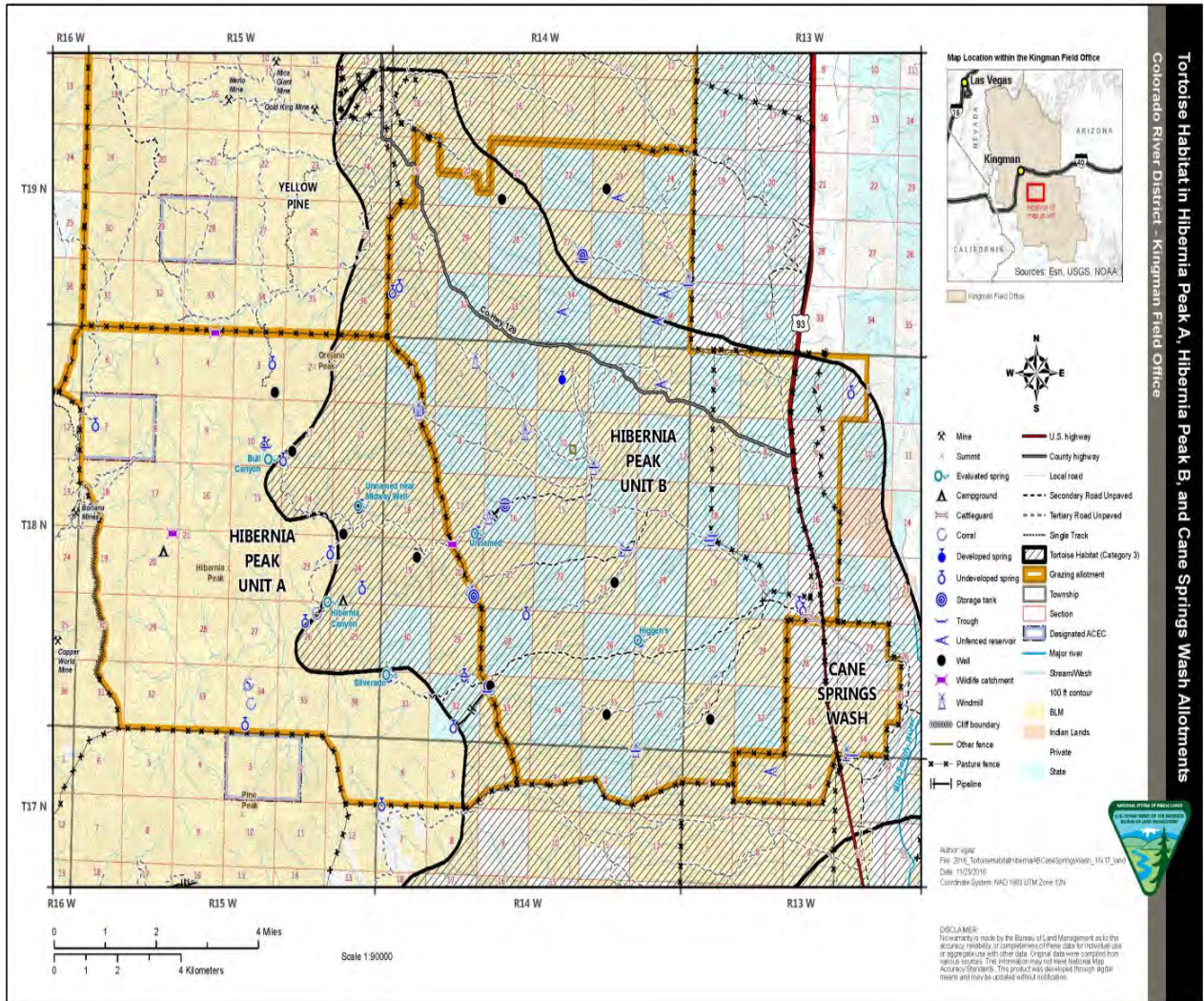


Figure 11 Sonoran Desert Tortoise Habitat

Appendix F – Response to Comments

Table 1: Summarized Public Comments Received on the EA and BLM’s responses

#	Comment	Response
1	New infrastructure needs to be considered in renewing any permit to help permit holders manage the range to its fullest potential as need arises:	<p>Agree, if this infrastructure is needed to help obtain or maintain Standards for Rangeland Health.</p> <p>Added Cedar Well as a new range improvement to the EA for analysis (see Proposed Action in Chapter 2 and Analysis in Chapter 3 of the EA).</p>
2	Stocking Rate Evaluation needs to be done.	<p>These allotment were being evaluated for Rangeland Health Standards using data sets that can’t be used in the estimation carrying capacity or stocking rate. BLM needs utilization data collected as soon as cattle are removed from a pasture and needs several years of data. Data collection has been started on this, but more is needed before the stocking rates can be reevaluated.</p>
3	Need to address the effect of the No Grazing alternative on health of the plant community.	<p>Added some research information on the negative impacts to the plant communities from the No Grazing Alternative to the EA (see Chapter 2).</p>
4	Request for a range improvement permit for Cedar Well on the Hibernia Peak Allotment.	<p>Added this range improvement to the EA for analysis (See Chapters 2 and 3 of the EA).</p>
5	Request for a permit for two roads one to an earthen tank and the other to a water facility and corrals on the Cane Springs Wash Allotment.	<p>Since these improvements are both covered under a range improvement permit, the access roads required for installation and maintenance are also authorized under these permits (Trout Creek Well/Corral # 030361 and Earthen Tank #030485). The permit for these improvements allows the permittee to maintain the existing access roads to these projects to provide required maintenance of these facilities.</p>
6	Was inspection and maintenance of range improvements accessible by motorized vehicle in wilderness area prior to this document?	<p>The only range improvement in wilderness on the Hibernia Peak allotment was the allotment boundary fence, which could be accessed via the Ridge Road. The fence, which was constructed to protect Vole habitat at Pine Flat from livestock grazing, also fenced out the wilderness area from the allotment as well. This vole fence is now the allotment boundary as the area behind the fence was removed from grazing through an agreement with the permittee in order to protect wilderness and recreation values at Pine Flat Spring.</p>

7	(Mandatory Terms & Conditions) the table needs to reflect the proposal to increase AUs due to more feed available due to good management practices.	The Land Health evaluation was conducted to determine if these allotments are meeting Standards for Rangeland Health in order to renew the grazing permits. The Hibernia Peak allotment has improved and warrants a stocking rate evaluation. Currently BLM does not have enough utilization data to complete this work. However, there is a plan in place to get utilization data after each and every move for the next few years in order to make a recommendation for stocking rate on this allotment in the near future.
8	Is there proof that the Hualapai Mexican vole is there? If it does not exist, why do we need a 20% use level?	The vole has been found near the spring in the Pine Flat area, below the fence in the upper reaches of Bull Canyon and these siting have been documented. Monitoring indicates that livestock have not gotten into the upper portions of Hibernia or Bull canyon below the fence around Pine Flat. Both of these canyons are rough, steep and not easy for cattle to access. The Mountain Pasture has become so productive that cattle don't have to range very far from water to meet their forage needs. The vole is a BLM Sensitive Species and conservative management where this species occurs is important to provide for the habitat needs of this species, hence the 20% use level in the areas where the vole exists. BLM will continue to monitor the habitat of this species.
9	Do not do all your long-term monitoring for all the key areas on the allotment in the same year. Stagger monitoring, doing a few each year, so the data will better reflect rainfall, utilization and frequency over the whole allotment each year.	Due to current staffing levels and the amount of allotments and associated workloads, monitoring data can only realistically be collected on around 20 of the 92 allotments per year. BLM staff tries to conduct as many studies as possible when collecting monitoring data on an allotment.
10	If there are no Hualapai Mexican Vole or other concerns in this ACEC, then the fence should be removed, for it is a costly maintenance project	This fence protects sensitive resource values (riparian, sensitive species habitat), and recreational camping. The fence removed the wilderness area from the allotment and protects recreation values by keeping livestock out of the public camping areas in Pine Flat. Pine Flat provides very popular camping sites adjacent to the Ridge Road in the Hualapai Mountains. The fence also protects the riparian area at Pine Flat Spring from livestock grazing and conserves habitat for the Hualapai Mexican vole at the spring

11	The graph of the Wikieup AZ. Weather Station does not show a true reflection of these allotment. It is at a lower elevation.	Hibernia and Cane Springs Wash are higher in elevation than Wikieup, however, the Wikieup Station is close to these allotments and in the same river valley. This makes the weather data collected in Wikieup a good data set to evaluate general weather conditions in the Big Sandy River Valley. Just as important the NOAA Weather Station in Wikieup has more than twenty years of rainfall data, the minimum number of years needed to calculate a good average monthly rainfall.
12	The proposed deferred grazing system is being held up by BLM failure to installing a cattle guard, which BLM started working on in 4/1/2015.	Due to a changeover in staff at the BLM, these documents were never finalized. The environmental analysis document and Proposed Decision were sent out for public comment on 11/07/2017.
13	Does the Mexican spotted owl exist on the allotment?	The Mexican spotted owl currently does not exist in the Hualapai Mountains. Potentially suitable habitat for this species does exist in the Hualapai Mountains. There are historically documented breeding records for this species in ponderosa pine habitat in the Hualapai Mountains.
14	Sonoran Desert Tortoise: Avery's study does not reflect tortoise habitat in Arizona. ”	The collapsing of desert tortoise burrows by livestock is a concern that needs to be addressed in an environmental analysis. The analysis in the EA points out that “The Sonoran Desert tortoise prefers to burrow in rocky habitats and not on the flatlands of the habitat areas. On these three Allotments tortoise burrows would typically be found in drainage cut banks or under boulders, and therefore, unlikely to be collapsed by livestock”.
15	The 1999 grazing system for Unit B is “Next-Best Pastures.” And two are grazed each year leaving one to rest. Many times two pastures are needed during the growing season (lack of water quantity and disbursement).	The 1999 Allotment Management Plan or AMP is focused on grazing one pasture at a time but allow the flexibility to use two or more pastures at same time if needed.