
United States Department of the Interior
Bureau of Land Management
Safford Field Office
Safford, AZ



Environmental Assessment
DOI-BLM-AZ-G010-2013-0017-EA

Spnazuma Permit Renewal



Key Area Transect South towards Jackson Mountain



Table of Contents

1	Introduction	3
1.1	Background	3
1.2	Purpose and Need	4
1.3	Decision to be Made	4
1.4	Conformance with Land Use Plan	5
1.4.1	RMP Decision Number and Narrative:	5
1.5	Relationship to Other Plans, Statutes, and Regulations	6
1.6	Scoping	8
1.6.1	Issues Identified:	8
2	Proposed Action and Alternatives	8
2.1	Design Features Common to the Proposed Action and the No Action Alternative	8
2.2	Proposed Action	9
2.3	No Action Alternative	11
2.4	No Grazing Alternative	11
3	Affected Environment	11
3.1	Resources Brought Forward for Analysis	15
3.1.1	Wildlife	15
3.1.2	Soils	17
3.1.3	Range	17
4	Environmental Consequences	17
4.1	Environmental Consequences of the Proposed Action	17
4.1.1	Wildlife	17
4.1.2	Range	18
4.1.3	Soils	18
4.2	Environmental Consequences of the No Action Alternative	18
4.2.1	Wildlife	18
4.2.2	Range	19
4.2.3	Soils	19
4.3	Environmental Consequences of the No Grazing Alternative:	19
4.3.1	Wildlife	19
4.3.2	Range	19
4.3.3	Soils	19
4.4	Cumulative Impacts to Affected Resources	20

4.4.1	Past, Present and Foreseeable Future	20
4.5	Cumulative Impacts of the Proposed Action and the Alternatives	21
4.5.1	Proposed Action	21
4.5.2	No Action Alternative	21
4.5.3	No Grazing Alternative	22
5	Consultation and Coordination	22
5.1	Compliance and Monitoring	22
5.2	Persons/Agencies Consulted	22
6	Literature Cited	23
7	Appendix 1: Arizona Standards & Guides Evaluation	24

1.0 Introduction

This Environmental Assessment (EA) has been prepared to disclose and analyze the environmental consequences of the proposed grazing permit renewal for the Spenazuma Allotment #46310 (Figure 1). The action culminates an evaluation conducted on the allotment under the Arizona Bureau of Land Management (BLM) *Standards for Rangeland Health and Guidelines for Grazing Management* (S&Gs) (Appendix 1). In addition, this EA determines if current grazing management practices would maintain desirable conditions and continue to allow improvement of public land resources, or whether changes in grazing management for the allotments are necessary. This EA is intended to evaluate the findings of the S&G evaluations as they relate to vegetation conditions and resource values in the allotments. This is done in an effort to balance demands placed on the resources by various authorized uses within the allotments. It was determined by the Interdisciplinary Assessment Team (IAT), during the assessment process, that resource conditions on the Spenazuma Allotment are either meeting Standards or making significant progress toward meeting the applicable Standards for Rangeland Health. This EA is intended to be used with the Spenazuma Allotment Evaluation & Rangeland Health Analysis (Appendix 1).

1.1 Background

The BLM is proposing to fully process the term grazing permit on the Spenazuma Allotment in accordance with all applicable laws, regulations, and policies. When the permit expired, the BLM renewed the permit with the same terms and conditions pursuant to Section 416 of Public Law 111-88, pending compliance with applicable laws and regulations. Compliance with all applicable laws and regulations includes consultation, coordination and cooperation with affected individuals, interested publics, States, and Indian Tribes; completion of the applicable level of National Environmental Policy Act (NEPA) review; consultation with the United States Fish and Wildlife Service (USFWS) under Section 7 of the Endangered Species Act; and ensuring that allotments are achieving or making significant progress toward achievement of land health standards.

1.2 Purpose and Need

The purpose of this action is to provide for livestock grazing opportunities on public lands where consistent with meeting management objectives, including the Arizona Standards for Rangeland Health and Guidelines for Livestock Grazing Management.

The need for this action is established by the Taylor Grazing Act (TGA), the Federal Land Policy and Management Act (FLPMA), and the Upper Gila-San Simon Grazing Environmental Impact Statement (BLM 1978) decisions were carried forward into the Safford Resource Management Plan (RMP) (1991) and the Statewide Land Use Plan Amendment for Implementation of Arizona Standards for Rangeland Health and Guidelines for Grazing Administration (1997) which require that the BLM respond to applications to fully process and renew permits to graze livestock on public land. In detail, the analysis of the actions identified in the applications for grazing permit renewals and the alternative actions is needed because:

- BLM Arizona adopted the Arizona Standards for Rangeland Health (Land Health Standards) and Guidelines for Livestock Grazing Management in all Land Use Plans (Arizona S&Gs) in 1997 (Appendix A). Land Health Standards and Guidelines for Grazing Administration was also amended into the Safford RMP. Land Health Standards for Rangelands should be achieving or making significant progress towards achieving the standards and to provide for proper nutrient cycling, hydrologic cycling, and energy flow. Guidelines direct the selection of grazing management practices and, where appropriate, livestock facilities to promote significant progress toward, or the attainment and maintenance of, the standards. This EA is intended to be used with the Final Spenazuma Allotment Evaluation & Rangeland Health Analysis.
- The SFO RMP 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 Safford Field Office. The SFO RMP allocated public lands within the Spenazuma Allotment, as available for domestic livestock grazing. Where consistent with the goals and objectives of the RMP and Land Health Standards, allocation of forage for livestock use and the issuance of grazing permits to qualified applicants are provided for by the Taylor Grazing Act (TGA) and the Federal Land Policy and Management Act (FLPMA).

1.3 Decision to be Made

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

1.4 Conformance with Land Use Plan

The proposed action is in conformance with the Safford Resource Management Plan (RMP) (1991) and the Statewide Land Use Plan Amendment for Implementation of Arizona Standards for Rangeland Health and Guidelines for Grazing Administration 1997. Arizona's Standards and Guides were developed through a collaborative process involving the Arizona Resource Advisory Council and the Bureau of Land Management State Standards and Guidelines team. The Secretary of the Interior approved the Standards and Guidelines in April 1997. The Decision Record, signed by the BLM Arizona State Director (April 1997) provided for full implementation of the Standards and Guides in all Arizona BLM Land Use Plans.

Implementation level decisions from the Upper Gila-San Simon Grazing Environmental Impact Statement (UG) (BLM 1978) were carried forward into the RMP. Through the above authorizing documents, BLM will continue to issue grazing permits and licenses, implement, monitor and modify allotment management plans and increase or decrease grazing authorizations as determined through the allotment evaluation processes. As necessary, National Environmental Policy Act compliance documents will be prepared prior to any action being implemented. The grazing decisions are incorporated into this Resource Management Plan/Environmental Impact Statement by reference and are common to all alternatives. Management direction pertaining to grazing for this allotment can be found in the Upper Gila-San Simon Grazing Environmental Impact Statement (BLM 1978), Appendix C, p. A-27. All other discipline management objectives pertaining to this allotment can be found in the RMP.

1.4.1 RMP Decision Number and Narrative:

CL19 Cultural resources stipulations will be included on all grazing leases and permits. UG-EIS page 4-2.

GM12 The general objective of the proposed action is to permit livestock to use the harvestable surplus of palatable vegetation—a renewable resource—and thereby produce a usable food product. The proposed livestock management program is based on the multiple-use management concept, which provides for the demands of various resource uses and minimizes the conflicts among those uses or activities. Although the various uses of the rangeland resources can be compatible, competition among uses requires constraints and mitigating measures to realize multiple-use resource management goals. The Specific objectives for each grazing unit are shown in appendix C. UG-EIS Page 1-6.

GM17 Deviation from the management system could be allowed for circumstances beyond the licensee's control, such as severe drought, but such deviations would require the District Manager's prior authorization. UG-EIS, Pages 1-8.

GM32 Proper stocking is an essential principle of range management, which should precede or coincide with the initiation of any grazing management system. With stocking rates in balance with the proposed grazing capacities, utilization of key forage species in the key areas would average about 40 percent over a period of years. At a

given stocking rate during years of high forage production (e.g. above normal rainfall) utilization in the use pasture might be as low as 20 percent. During years of low forage production utilization could be as high as 60 percent. UG-EIS Page 1-9.

VM02 Upland vegetation on public lands within the Safford District will be managed for watershed protection, livestock use, reduction of non-point source pollution, Threatened and Endangered species protection, priority wildlife habitat, firewood and other incidental human uses. Best management practices and vegetation manipulation will be used to achieve desired plant community management objectives. Treatments may include various mechanical, chemical and prescribed fire methods. RMP page 24 & 45. Partial ROD I page 10.

VM03 Ecological Site Inventories will be combined with the desired plant community concept to develop management objectives for activity plans as they are written or revised. RMP page 45.

VM04 Public lands will be managed to preserve and enhance the occurrences of special status species and to achieve the eventual delisting of threatened and endangered species. RMP page 45.

VM07 Land treatments (vegetation manipulation) will be used to decrease invading woody plants and increase grasses and forbs for; wildlife and livestock forage and watershed condition. Treatment areas will be identified in activity plans. Treatments may include various artificial (mechanical, chemical, or prescribed fire) methods. RMP page 45.

WF02 District management will focus on priority species and their associated habitats to maintain or enhance population levels. Threatened and endangered, proposed, candidate, State-listed and other special status species will be managed to enhance or maintain district population levels or in accordance with established inter/intra-agency management plans. District management efforts will be directed towards the enhancement of biological diversity. UG-EIS ROD Part I page 6.

WF14 Manage habitat for optimum wildlife populations, based on ecological conditions, taking into consideration local, yearly climatic variations. BLM will follow Arizona Game and Fish Department's five-year strategic plans for the various species and will assist the Department in accomplishing its goals for the various species. RMP page 34.

1/ RMP - Safford District Resource Management Plan

2/ UG-EIS - Upper Gila - San Simon Grazing Environmental Statement

1.5 Relationship to Other Plans, Statutes, and Regulations

Grazing permit renewals are provided for in 43 CFR 4100 where the objectives of the regulations are “....to promote healthy, sustainable rangeland ecosystems; to accelerate restoration and

improvement of public rangelands to properly functioning conditions; to promote the orderly use, improvement and development of the public lands; to establish efficient and effective administration of grazing of public rangelands; and to provide for the sustainability of the western livestock industry and communities that are dependent upon productive, healthy public rangelands” (43 CFR 4100.0-2). The proposed action would comply with 43 CFR 4100.0-8 which states, in part, “The authorized officer shall manage livestock grazing on public lands under the principle of multiple use and sustained yield, and in accordance with applicable land use plans.” The proposed action also complies with 43 CFR 4130.2(a) which states, in part, “Grazing permits or leases shall be issued to qualified applicants to authorize use on the public lands and other lands under the administration of the Bureau of Land Management that are designated as available for livestock grazing through land use plans”. The proposed action is consistent with the Fundamentals of Rangeland Health (43 CFR 4180.1) and Arizona’s Standards and Guidelines, which were developed through a collaborative process involving the Arizona Resource Advisory Council and the BLM State Standards and Guidelines team. The Secretary of the Interior approved the Standards and Guidelines in April 1997. These standards and guidelines address watersheds, ecological condition, water quality, and habitat for special status species. These resources are addressed later in this document. The proposed action conforms to the President’s National Energy Policy and would not have adverse energy impacts. The proposed action would not deny energy projects, withdraw lands, close roads, or in any other way deny or limit access to mineral materials to support energy actions. The regulations at 43 CFR Part 10 specifically require land use authorizations, including leases and permits, to include a requirement for the holder of the authorization to notify the appropriate Federal official immediately upon the discovery of human remains and other items covered by the Native American Graves Protection and Repatriation Act (see 43 CFR 10.4(g); the actual requirement for persons to notify the Federal agency official and protect the discovery is in 43 CFR 10.4(b) and (c). Executive Order 13186 requires the BLM and other Federal agencies to work with the USFWS to provide protection for migratory birds. Implementation of the proposed action is not likely to adversely affect any species of migratory bird known or suspected to occur on the allotments.

The proposed action would comply with the following laws and/or agency regulations, and are consistent with applicable Federal, state and local laws, regulations, and plans to the maximum extent possible.

- Taylor Grazing Act (TGA) of 1934
- Federal Land Policy and Management Act (FLPMA) of 1976 (43 U.S.C. 1701 et seq.)
- Public Rangelands Improvement Act (PRIA) of 1978
- Endangered Species Act (ESA) of 1973, as amended
- 43 CFR 4100 Grazing Administration - Exclusive of Alaska
- Arizona Water Quality Standards, Revised Statute Title 49, Chapter II
- Section 106 of the National Historic Preservation Act of 1966, as amended
- Native American Graves Protection and Repatriation Act of 1990 (25 U.S.C. 3001-3013; 104 Stat. 3048-3058)
- National Environmental Policy Act (NEPA) of 1969

- Executive Order 13186 – Responsibilities of Federal Agencies to Protect Migratory Birds

1.6 Scoping

Scope of Issues: The CEQ defines scoping as “...an early and open process for determining the scope of issues to be addressed and for identifying significant issues related to a proposed action” (40 CFR 1501.7). Scoping is an important underpinning of the NEPA process that encourages public input and helps focus the environmental impact analysis on relevant issues. Issues were identified by Safford Field Office Interdisciplinary Team, the grazing permittee, and interested publics. Distribution of scoping information typically heralds the beginning of the public component of the NEPA process. To encourage public participation, BLM mailed scoping information regarding the Spenazuma permit renewal proposal to interested individuals, organizations, and agencies on June 12, 2012.

Key Issues: Several environmental issues concerning the proposed project were identified by the NEPA interdisciplinary team members, and from the public comments during scoping.

1.6.1 Issues Identified:

- Would there be potential impacts to terrestrial wildlife species?
- Would historic and continued heavy use on lower pasture in the allotment cause resource impacts?
- What are the impacts from grazing on soils?
- What shrub composition levels are above amount determined as Desired Future Condition?

2.0 Proposed Action and Alternatives

2.1 Design Features Common to the Proposed Action and the No Action Alternative

The Spenazuma Allotment (#46310) has not been previously evaluated through the Standards and Guidelines process. The Spenazuma permit was issued on 12/02/2004 under the Appropriations Act with the following language: “In accordance with Sec. 325, Title III, H.R. 2691, Department of the Interior and related agencies Appropriations Act, 2004 (P.L. 108-108), which was enacted on November 10, 2003, this grazing permit is renewed under Section 402 of the Federal Land Policy and Management Act of 1976, as amended (43 U.S.C. 1752), Title III of the Bankhead-Jones Farm Tenant Act (7 U.S.C. 1010 ET SEQ.), or, if applicable, Section 510 of the California Desert Protection Act (16 U.S.C. 410AAA-50). In accordance with Public Law 108-108, the terms and conditions contained in the expired or transferred permit shall continue in effect under the renewed permit until such time as the Secretary of the Interior completes processing of this permit in compliance with all applicable laws and regulations, at which time

this permit or lease may be cancelled, suspended, modified, in whole or part, to meet the requirements of such applicable laws and regulations.”

The development of the alternatives for this EA was based on the results of interdisciplinary rangeland health assessments conducted by the BLM in November 2008. The field assessments indicated that the allotment is being managed effectively and is meeting rangeland health objectives in some key areas and progressing towards meeting rangeland health objectives and standards in others, as defined by the *Arizona Public Lands Standards for Rangeland Health and Guidelines for Grazing Management* (BLM 1997). The assessments did not indicate the need for changes in authorized use, but did offer improvement recommendations for future consideration (see *Standards for Rangeland Health and Guidelines Assessment for the Spenazuma Allotment.*).

Annual Meetings: When large changes are identified in monitoring data, an annual meeting between BLM and the grazing permittee would be conducted when needed to discuss previous year’s utilization, key area and trend monitoring results, and next year’s grazing schedule. Emergency situations such as drought would be handled on a case by case basis and would involve consultation and coordination between the agency and the permittee. If an agreement cannot be reached, the final decision concerning annual meeting recommendations, grazing schedule, and grazing use periods would be made by the authorized officer.

Flexibility: Due to annual fluctuations in forage production, which is influenced by yearly variability in precipitation, it may be either necessary to move livestock earlier or later than shown on the planned grazing rotation schedule. The rancher would contact the BLM prior to making changes to the grazing schedule. The permittee would keep records of the month and day when livestock were moved from pasture to pasture and would provide this actual use information to the BLM each year. Grazing schedules (*i.e.*, pasture rest, deferment, and rotation) in each alternative are subject to change from year to year, based on climatic conditions as well as other pertinent information such as trend monitoring and utilization data. When drought is declared by the authorized officer, permittees are contacted and educated on consequences of drought on forage production. The permittee is also reminded of the upper limit of utilization. Permittees are: 1) encouraged to voluntarily reduce numbers 2) if drought continues, permittees can be required to remove all cattle under a voluntary agreement or full force and effect decision and 3) if necessary, livestock can be spread throughout the allotment in order to avoid over utilization of forage species. All decisions should be made after monitoring studies are performed.

2.2 Proposed Action

The proposed action would renew the grazing permit for the Spenazuma allotment for a period of 10 years with the following Terms and Conditions (Table 1). The current permitted stocking rate (756 AUM’s) would remain and a deferred rotation grazing system would be implemented in 2013 (Table 2). Under this system, Upper and Kane Spring Pastures (USFS) would be grazed together with livestock use from November through April. At the end of April, the herd would be moved to either the 1x9 or the FZ pastures. Use in these two pastures would be alternated between the two, every other growing season.

Table 1. Mandatory Terms and Conditions for the Spenazuma Grazing Allotment.

Allotment	Livestock number	Kind	Grazing Period		Type %PL	Use	AUMS
			Begin	End			
46310	70	Cattle	3/01	2/28	90	Active	756

The following other terms and conditions would be carried forward on the renewed permit:

- The permittee would be required to submit a report of the actual grazing use made on this allotment for the previous year’s grazing period, March 1 to February 28. Failure to submit such a report by March 15 of the current year may result in suspension or cancellation of the grazing permit.
- In order to improve livestock distribution on the public lands, all salt blocks and/or mineral supplements would not be placed within a ¼ mile of any riparian area, wet meadow or watering facility (either permanent or temporary), unless stipulated through a written agreement or decision in accordance with 43 CFR 4130.3-2c.
- If in connection with allotment operations under this authorization, any human remains, funerary objects, sacred objects or objects of cultural patrimony as defined in the Native American Graves Protection and repatriation Act (P.L. 101-601; 104 Stat. 3048; U.S.C. 3001) are discovered, the permittee/lessee would stop operations in the immediate area of discovery, protect the remains and objects, and immediately notify the authorized officer of the discovery. The permittee would continue to protect the area of discovery until notified by the authorized officer that operations may resume.
- All troughs would be outfitted with wildlife escape structures to provide a means of escape for animals that fall in while attempting to drink or bathe.

Table 2. Proposed grazing system for the Spenazuma allotment that would be implemented in 2013.

Year	Pasture	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	Kane Spring (USFS)	X	X	X	X							X	X
1	1x9					X	X	X	X	X	X		
1	FZ												
1	Upper	X	X	X	X							X	X
2	Kane Spring (USFS)	X	X	X	X							X	X
2	1x9												
2	FZ					X	X	X	X	X	X		
2	Upper	X	X	X	X							X	X
3	Kane Spring (USFS)	X	X	X	X							X	X
3	1x9					X	X	X	X	X	X		
3	FZ												
3	Upper	X	X	X	X							X	X

2.3 No Action Alternative

Under this alternative, the current terms and conditions would be carried forward into the new term grazing permit. This alternative includes year-round continuous grazing of all pastures. No pastures would be rested during the growing season and the permitted stocking rate would remain at 756 AUMs.

2.4 No Grazing Alternative

This alternative would eliminate livestock grazing from the federal land managed by the BLM on the Spenazuma allotment. The permit would be canceled for the Spenazuma allotment. Livestock grazing would not be authorized. BLM would initiate the process in accordance with 43 CFR parts 4100 and amend the RMP.

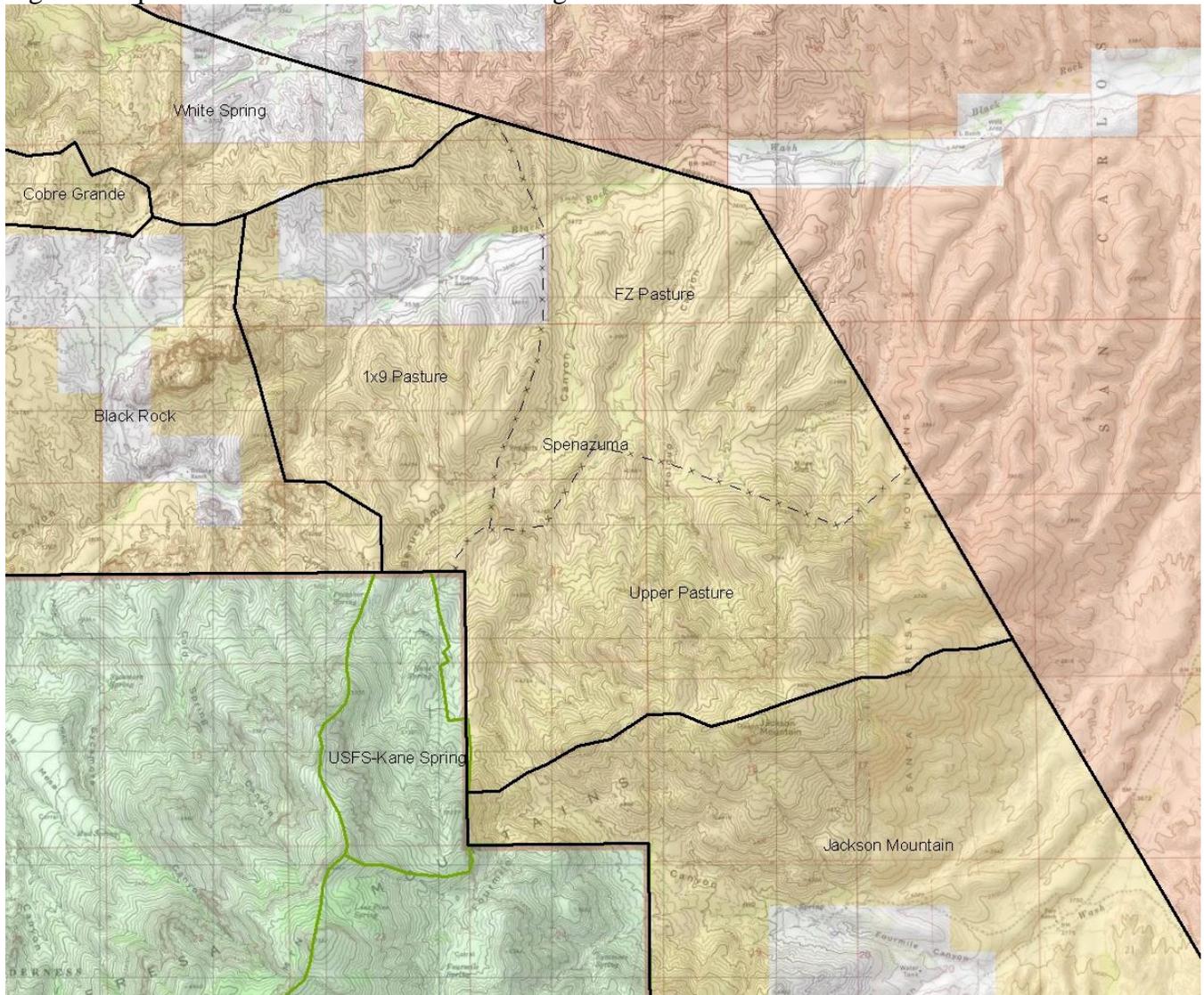
To exclude livestock from public land, approximately five miles of fencing would be constructed to keep livestock from private, forest service, and tribal lands from entering. Fence maintenance would be the responsibility of the BLM.

2.5 Alternatives Considered but Eliminated From Detailed Analysis

3.0 Affected Environment

The Spenazuma Allotment is in approximately 16 miles southwest of Fort Thomas. It is bordered on the south by the Coronado National Forest and the Jackson Mountain Allotment. The San Carlos Indian Reservation borders the allotment on the north and east. The Black Rock allotment is on the western border. The permittee also holds the permit for the adjacent Kane Springs Allotment on the Coronado National Forest. The BLM and Forest Allotments are run in conjunction with one another. Approximately 3,400 acres of the Spenazuma Allotment is in the northern portion of the Santa Teresa Wilderness Area. Elevation on the Spenazuma Allotment varies from 3,472 feet in the bottom of Black Rock Wash to 5,892 feet on top of Jackson Mountain. Steep, broken terrain forms the southern portion of the allotment near Santa Teresa and Jackson Mountain. The rest of the allotment is dissected by moderately steep slopes that grade down into Black Rock Wash. Refer to Figure 1 for location and land ownership of the Spenazuma allotment.

Figure 1. Spenazuma Allotment and surrounding area.



Spenazuma Permit Renewal EA



The BLM is required to consider many authorities when evaluating a Federal action. Those elements of the human environment that are subject to the requirements specified in statutes, regulations, or executive orders, and must be considered in all EAs, have been considered by BLM resource specialists to determine whether they would be potentially affected by the proposed action. These elements are identified in Table 3, along with the rationale for the determination on potential effects. If any element was determined to be potentially impacted, it was carried forward for detailed analysis in this EA; if an element is not present or would not be affected, it was not carried forward for analysis. Table 3 also contains other resources/concerns

that have been considered in this EA. As with the elements of the human environment, if these resources were determined to be potentially affected, they were carried forward for detailed analysis in this document.

Table 3. Summary evaluation of elements/resources of the human environment.

Resource	Determination*	Affected Environment (Rationale for Determination)
<p>* NP = Not present in the area that will be impacted by the proposed action. NI = Present, but not affected to a degree that would mean detailed analysis is required. PI = Present with potential for impact; analyzed in detail in the EA.</p>		
Air Quality	NI	The proposed action and the alternative would not measurably impact Air Quality standards. Moving livestock and traveling on unimproved roads during allotment activities could produce small amounts of fugitive dust in the short term, but this would cause negligible and localized impacts on air quality.
Areas of Critical Environmental Concern	NP	The project area is not located within or near an Area of Critical Environmental Concern.
Cultural Resources	NP	<p>Allotment case files, AMP files, range project files, Water Source Inventory files, and Cultural Resource files were reviewed to determine areas of livestock congregation and whether these areas have been previously inventoried for cultural resources. Because no historic properties were identified in areas of livestock congregation, no mitigation is recommended as a BLM responsibility or as a term or condition of the permit, to protect cultural values identified above. A Cultural Resource Compliance Documentation Record (Project No. AZ-410-09-004) was completed in 2009.</p> <p>Impacts to cultural resources from livestock grazing are usually associated with development projects such as fences, salt grounds, watering areas, and loafing areas. It is therefore imperative that each site specific project, prior to ground disturbance have a survey conducted to locate and evaluate sites on a case-by case basis. There is no range projects associated with the proposed action or alternatives. The proposed action and both alternatives would have no effect on surface features or historic properties as none were documented on the allotment during the Cultural Inventory.</p>
Environmental Justice	NP	No disproportionately high or adverse health or environmental effects would impact low income or minority populations as a result of the proposed action or the alternatives.
Farmlands (Prime or Unique)	NP	There are no prime or unique farmlands within or near the project area.
Floodplains	NP	The proposed action area is not within a floodplain as defined by the Executive Order 11988 (1977).
Invasive and Nonnative Species	NP	There are currently no known invasive species or noxious weeds within the project area. The potential for introduction and spread of noxious weeds by livestock and livestock operation equipment could be a concern but since there is no known invasive species or noxious weeds within the proposed action they chance of introduction or spread is minimal or eliminated. Other pathways for the introduction and spread of noxious weeds, such as wind, rain, wildlife, and recreationalist still remain.

Resource	Determination*	Affected Environment (Rationale for Determination)
Native American Religious Concerns	NP	During consultations with American Indian Tribes who claim cultural affiliation to southern Arizona, no Native American religious concerns have been identified in relation to actions proposed in this EA.
Threatened, or Endangered Plant Species	NP	No Threatened, or Endangered plant species occur in the project area.
Threatened, Endangered Terrestrial Species	NP	The Biological Opinion on the Gila District Livestock Grazing Program (22410-2006-F-0414) was reviewed to insure that administration of the allotment under any alternative is within the scope of the consultation. The U. S. Fish and Wildlife list for Graham County was reviewed (Table 4). There are no known occurrences of listed species on the allotment. There would be no effects to listed species from implementation of the Proposed Action or the alternatives.
Wastes (hazardous or solid)	NP	No known hazardous or solid waste issues occur in the project areas.
Water Quality and Quantity (drinking/ground)	NP	This critical element would not be affected by the proposed action or alternatives because there are no known water quality issue on the allotment.
Wetlands/Riparian Zones	NP	This critical element would not be affect by the proposed action or the alternatives as there are wetlands/riparian zones within the project area
Wild and Scenic Rivers	NP	There are no Wild and Scenic River segments classified as designated, eligible, or suitable within the project area.
Wilderness	NI	<p>A large portion of the Spenazuma Allotment is within the North Santa Teresa Wilderness Area. There is no management plan for the North Santa Teresa Wilderness Area. National wilderness goals include providing long term protection and preservation of wilderness characteristics, manage wilderness areas in a manner that would maintain the natural condition and wilderness values while allowing visitor use and enjoyment, employ the use of minimum tool and regulation principals, and manage acceptable non-conforming uses with emphasis on maintaining the wilderness character. The national wilderness goals are being met.</p> <p>Continuing of livestock grazing as planned in the proposed action or alternatives would not affect the wilderness.</p>
Range	PI	The Spenazuma Allotment is managed under a single CRMP. Current grazing is operated as year round on throughout the entire allotment with little to no scheduled rest periods. Permit renewal is required to allow continued livestock use on these allotments; this issue is therefore analyzed in detail later in this EA.
Wildlife (including sensitive species and migratory birds)	PI	A change in wildlife habitat, with regard to water distribution, would occur dependent on the alternative implemented. In addition spatial competition between wildlife and livestock would be altered dependent on the alternative. Wildlife habitat would remain shrub dominated with only minor changes over time under any of the alternatives. The area would continue to support the habitat and wildlife that currently exist. Potential impacts to Bureau sensitive species and migratory birds were considered and determined not to be impacted by implementation of any of the alternatives.

Resource	Determination*	Affected Environment (Rationale for Determination)
Soils	PI	Some soil disturbance in relation to grazing activities that occur on the allotment. This issue is therefore analyzed in detail later in this EA.
T&E Fish/Fisheries	NP	Neither the proposed action, nor either of the alternatives would adversely affect threatened, endangered, or sensitive fish species (TES) or their proposed or designated critical habitat due to no TES fish species or their habitat occurring within or adjacent to the allotment.
Visual Resources	NI	<p>Safford Resource Management Plan (RMP) has designated public lands within the Spnazuma Allotment which are inside the North Santa Teresa Wilderness Area as Visual Resource Management (VRM) Class I. The objective of this class is to preserve the existing character of the landscape. This class provides for natural ecological changes; it does not, however, preclude very limited management activity. The level of change to the characteristic landscape should be very low and must not attract attention.</p> <p>The remaining area of the allotment is designated as a Class IV. The objective of this class is to provide for management activities that require major modification of the existing character of the landscape. The level of change to the characteristic landscape can be high. These management activities may dominate the view and be the major focus of viewer attention. Every attempt should be made, however, to minimize the impact of these activities through careful location, minimal disturbance and repeating the basic elements.</p> <p>Continuing livestock grazing as planned in the proposed action or alternatives would not affect visual resources.</p>
Socioeconomic Values	NI	Economic impacts to the permittee could occur dependent on the alternative implemented. This impact would not be large enough to be discernible in the local communities. Implementation of the proposed action or either of the two alternatives would not impact socioeconomic to level that analysis is warranted.
Wilderness Characteristics	NP	The proposed action is within the wilderness characteristics unit 21. 6,590 acres of unit 21 were incorporated into the North Santa Teresa Wilderness. The remaining acres do not meet the 5,000 size requirements for wilderness characteristics. Therefore, the proposed action or alternatives would not impact wilderness characteristics.

3.1 Resources Brought Forward for Analysis

3.1.1 Wildlife

The Spnazuma Allotment is comprised of diverse geological forms, elevations, slopes, and vegetation types. Directly resulting in a diversity of wildlife species from large mammals such as black bear, mule deer, white tailed deer, javelina and desert bighorn sheep to golden eagles, Gambel's quail, Gila monsters and desert box turtles to name only a few. As diverse as the habitat is, it could be improved. Shrub encroachment has reached a point in some places on the allotment that it is altering the ability of some species to move through and utilizes areas.

Management emphasis in this area is on large game animals specifically mule deer, white tailed deer, javelina, and desert bighorn sheep.

Deer: Habitat degradation from excessive herbivore and drought can alter and /or eliminate cover and food needed by mule deer and other wildlife species. Perennial bunch grasses and low shrubs are required fawning habitat (*i.e.*, cover) for mule deer and offer concealment from predators. Adult animals also require cover for hiding and resting. Hiding or resting locations are selected to provide concealment, a view of the surrounding terrain, and easy access to escape routes.

Deer feed primarily on browse and forbs. Forbs are highly preferred and in spring and summer can comprise 20% to 40% of the annual diet; whereas browse can constitute between 40% to 70% of the diet in fall and winter. Mule deer are selective feeders and will choose the most succulent and nutritious shoots and grasses on which to feed. Diet largely depends on the ecoregion in which they live (Heffelfinger, *et al.*, 2006), in more productive habitats, such as woodland areas, a greater variety of food will be eaten than in desert areas.

Grazing at light to moderate levels has little impact on mule deer since browse and forbs constitute 90% of their diet with grass important only in early spring. Cattle consume primarily grass, with forbs and browse as secondary, but seasonally important components. Overgrazing results in livestock consuming more browse, which exacerbates the level and intensity of competition with mule deer. To reduce this impact livestock should not be allowed to browse more than 50% of the annual leaders growth (by weight), which equates to approximately 50% of the leaders browsed (Holechek and Galt, 2000).

Disappearance of springs, cienegas, and other natural waters in the southwest due to anthropogenic activities has negatively affected mule deer and other wildlife species (Heffelfinger, *et al.*, 2006).

Javelina: Like mule deer, javelina, inhabit a variety of different habitat types throughout Arizona and are quite adaptable. Javelina are opportunistic feeders and require a diverse plant community comprised of flowers, fruits, nuts, grasses, forbs, shrubs, vines, succulents, and trees for survival. Prickly pear cactus comprises a major portion of their diet. A diverse and intact plant community not only provides forage, but much needed shelter and cover. Sonoran desert scrub and desert grassland habitat are two of the most important biotic communities in Arizona for javelina and comprise approximately 67% of their range. Javelinas do not inhabit pure grasslands, but grasslands that have been invaded by shrubs and cacti. Riparian forests are also important and are used quite frequently by javelina as sources of water, food, and cover (Day, 1985).

Desert Bighorn Sheep: Over the last 30 years desert bighorn sheep have expanded out of the Aravaipa Canyon area into the Santa Teresa Mountain Range. They are now relatively common within the Spnazuma Allotment. The Aravaipa Canyon population of desert bighorn sheep would likely continue to expand with the Santa Teresa Mountains as a corridor to other mountain ranges. Desert bighorn have similar forage needs as mule deer, favoring forbs and shrubs.

Bighorns tend to do best when the vegetation is diverse but not high enough to obscure their vision. Bighorn in general can suffer from forage and spatial competition from both cattle and other wildlife such as mule deer. By nature bighorn segregate themselves from other large species by occupying open steep rocky slopes. Because of this, spatial and forage competition is most likely to occur during periods of excessive forage use and drought (Valdez and Krausman, 1999).

3.1.2 Soils

The Spenazuma Allotment is comprised of two MLRAs 41-3 Granitic Hills (12-16 inches/per year) and 41-3 Granitic Upland (8-12 inches/per year). For a complete description of the soils on the Spenazuma Allotment refer to “Gila-Duncan Area, Parts of Graham and Greenlee Counties”, Arizona soil survey (NRCS 1981). All of the soils found on this allotment are classified as arid and semiarid.

3.1.3 Range

Currently, the Spenazuma Allotment permittee is running cattle yearlong, spread among all three pastures. Cattle are pushed up into the higher country into the winter, but slowly make their way back down to the lower portion of the allotment after period of time. There is also an adjoining Forest allotment that allows 14 head for 6 months in the winter.

4.0 Environmental Consequences

4.1 Environmental Consequences of the Proposed Action

4.1.1 Wildlife

Deer: It is expected that under the proposed action livestock grazing will be light to moderate through all pastures and would not reach the level where forage completion between deer and livestock would occur. With pasture rotation deer can spatially separate themselves from livestock. Since all pastures will be in use livestock watering facilities will be available to deer.

Javalina: As species that evolved in the tropics javalina will make use of dense shrub areas as long as they have access to a variety of forage and a water source. Impact of the proposed action on javalina would be similar to that for deer.

Desert Bighorn Sheep: Bighorn have moved into the Black Rock Allotment along the highest elevations where rock outcropping provide escape cover. Bighorn forage around the edges of these rock exposures and will not typically move into or through dense shrub vegetation. There is little overlap of bighorn sheep and livestock on the allotment and therefore, there would be minimal impacts from the proposed action.

Flexibility in livestock grazing use including the implementation of the drought policy will in general benefit wildlife. Implementation of a grazing rotation will result in pastures without livestock present during portions of the year; this will reduce interactions between wildlife and

livestock. In general the quality of the wildlife habitat would become somewhat better over the long term with small incremental increases in herbaceous vegetation, but the potential is limited by the dominance of shrubs.

4.1.2 Range

Specifically, under the proposed action, the BLM would issue a new grazing permit for the Spnazuma Allotment for a period of ten years and in accordance with the Coordinated Resource Management Plan (CRMP), to improve resource conditions in the 1x9 pasture, where Standards 1 and 3 are not being met. A pipeline from an existing water development was installed to create additional waters in the FZ and Upper Pastures to improve livestock distribution. This action was covered in an earlier environmental assessment (AZ-410-2007-0067). The proposed action would allow the implementation of a grazing system in order to better progress towards meeting Upland Health Standards. The 1x9 and FZ pastures would get a full 18 month rest. Using the Upper Pasture and Kane Spring allotment during the winter would allow most dry cows to utilize the available forage and disperse through the rougher country. The livestock grazing management practices proposed under this alternative were designed to address historic and continued heavy grazing use in the lower portions of the 1x9 and FZ pastures. Livestock distribution would help maintain and/or improve ecological condition on the allotment in order to meet set Desired Future Conditions.

Areas where vegetation was historically heavily grazed under the proposed action would receive growing season rest, which would improve plant vigor and reproductive capabilities.

4.1.3 Soils

If adequate ground cover is achieved through a grazing rotation system there would be less bare ground and increased soil stability in areas that show slight signs of erosion. Soils on this allotment are also covered by small gravels, which are somewhat resistant to erosion.

4.2 Environmental Consequences of the No Action Alternative

These critical elements were only carried forward for detailed analyzing if different from the impacts of the alternatives.

4.2.1 Wildlife

Under the no action alternative, there would be no change in livestock use from what has been occurring in recent years. Current competition for space and forage between livestock and the large wildlife species would remain with no expectation of improvement. There would be no expected change in wildlife habitat. Current habitat conditions would continue with standards 1 and 3 not being met under this alternative.

4.2.2 Range

The no action alternative would maintain current management of all pastures where they are grazed year round. With current management the lower pastures receive grazing use every growing season with no rest for plants to increase vigor or health. Lower portions of 1X9 and FZ pasture would continue to receive heavy continuous use and Standards 1 and 3 would not be met.

4.2.3 Soils

Areas that historically and currently receive heavy grazing use have some signs of erosion. Continuation of year round grazing in all pastures could expedite the situation causing soil stability to be at risk. Increases in runoff can cause decreases in infiltration on areas that have higher than desired bare ground percentages.

4.3 Environmental Consequences of the No Grazing Alternative

4.3.1 Wildlife

Removal of livestock from the allotment would eliminate the possibility of space and forage competition with large species of wildlife. Removal of livestock would allow herbaceous vegetation to increase in the vegetative communities, but would continue to be limited by the dominance of shrubby vegetation. The permittees would no longer have maintenance responsibility for livestock waters and the waters would no longer be available to wildlife. To lessen the impact, the Bureau would have to determine which of the livestock waters are of importance to wildlife and either maintain them or construct alternative water sources.

4.3.2 Range

In order to prevent cattle from grazing on public land five miles of fence would have to be constructed to separate federal land from surrounding private, tribal, and forest service lands. Fences to exclude livestock would be maintained by the BLM. Watering facilities on the allotment that provide water for livestock and wildlife would be assessed to determine whether or not they would be maintained.

4.3.3 Soils

Under the no grazing alternative, soil processes would be improved. The small areas where annual plant species dominate are expected to remain static. Healthy, vigorous perennial understory plants would increase in the long term, but annual species would increase in the short term, until vigorous root systems of the perennial plants increase, reducing annual species establishment.

4.4 Cumulative Impacts

The Council on Environmental Quality (CEQ) regulations that implement NEPA defines a cumulative impact as: “The impact on the environment which results from the incremental impact of the action when added to other past, present, or reasonably foreseeable future actions.” Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time (40 CFR 1508.7).

Life of the proposed action and its alternative is ten years; this time frame is considered to be most appropriate for considering the incremental effect of actions in the foreseeable future. Many of the past and present actions discussed above are expected to persist through this time frame, though the relative intensity of these actions could vary.

Many activities without a Federal nexus occur and are expected to continue to occur in the project area and vicinity. The other uses and activities occurring on the lands within and adjacent to the project area that contribute to the cumulative impacts of the proposed projects include recreation, hunting, and mining. Resources with similar impacts are grouped for the purposes of the cumulative analysis.

Specific actions that are occurring, or are likely to occur in the reasonably foreseeable future are:

The following critical elements, ACEC’s, Floodplains, Invasive and Nonnative Species, Wastes, Cultural Resources, Native American Religious Concerns, Prime Farmland, VRM, Water Quality, Wetlands and Riparian Zones, Wild and Scenic Rivers, Wilderness Characteristics, and T&E Fish/Fisheries would have no cumulative impacts from the proposed action or alternatives as they are not found within or adjacent to the Spenazuma allotment or the visual class is not impacted by the proposed action or alternatives.

4.5 Past, Present and Foreseeable Future

Range: Livestock grazing in the region has evolved and changed considerably since it began in the late 1800’s, and is one factor that has created the current environment. At the turn of the century, large herds of livestock grazed on unreserved public domain in uncontrolled open range. Eventually, the range was stocked beyond its capacity, causing changes in plant, soil, and water relationships. Some speculate that the changes were permanent and irreversible, turning plant communities from grass and herbaceous species to brush and trees. Protective vegetative cover was reduced, and more runoff brought erosion, rills, and gullies.

In response to these problems, livestock grazing reform began in 1934 with the passage of the Taylor Grazing Act. Subsequent laws, regulations, and policy changes have resulted in adjustments in livestock numbers, season-of-use changes, and other management changes.

In order to support the management of these allotments, a variety of range projects have been implemented on this allotment. No new range projects are suggested with the implementation of the proposed action or within the foreseeable future on the BLM allotment, there is the potential for modification to existing range projects on the Forest Service allotment.

Mining: Historically, this area was part of the San Carlos Mineral Strip and was mined for gold and silver. There is still evidence of past mining activity. There are no active mines or applications for mining in the area.

Recreation/Hunting: Limited amount of access to this area is available because the road that leads to the Santa Teresa passes through the San Carlos Indian Reservation. The private property owners also have locked gates at their property boundary. Dispersed recreation that does occur within the assessment area includes, wildlife viewing, hunting, hiking, off-highway vehicle use and camping.

Wilderness: A large portion of the allotment is within the North Santa Teresa Wilderness. This provides the recreationist to have a natural outdoor experience. There is currently no wilderness plan for the North Santa Teresa's but grazing is an allowed use within the wilderness boundary. Range improvements are allowed to be maintained if they were present before the area became a wilderness.

4.6 Cumulative Impacts of the Proposed Action and the Alternatives

4.7 Proposed Action

Given the past experiences with livestock impacts on public land resources, as well as the cumulative impacts that could occur on the larger ecosystem from grazing on various public and private lands in the region, management of livestock grazing is an important factor in ensuring the protection of public land resources for wildlife and their habitat. Proper management of rangelands can provide wildlife and livestock with available forage while assuring range health standards are being met. There should be a gradual improvement in condition over an extended period of time in areas of concern under the proposed action. The incremental impact of livestock grazing within the allotment when added to the other land use activities in the drainage would not adversely affect resources under the proposed action.

Surface impacts from the proposed action when combined with cumulative impacts from past, present, and reasonably foreseeable future actions would not be significant.

4.8 No Action Alternative

Under the no action alternative, the range health concerns identified in the range health assessment would not be addressed and the objectives would not progress towards being met. Areas that have been grazed heavily would continue to receive continuous grazing pressure. Grazing on these lands yearlong could reduce forage and cover availability for wildlife. Although wildlife habitat needs are generally met within the watershed, this grazing management may influence suitability and availability of that habitat on a localized basis or during a specific time frame.

4.9 No Grazing Alternative

Current impacts resulting from grazing, recreation, and other activities on private and forest lands, would continue. Any reductions in authorized AUMs on BLM lands would increase grazing pressure on private land, which is adjacent to federal land and could cause impacts to federal lands managed by the Forest Service if they don't alter their permit. Cumulative effects under the no grazing alternative could potentially include gradual increases in perennial herbaceous plant diversity, cover, vigor, and production over the long term. Shrubby vegetation would remain dominant across the allotment. Annual species would increase in the short term and then decrease in the long term, as the health, diversity, vigor, and production of the perennial vegetation increases. Soil stability would improve along with increased rainfall infiltration, increased soil moisture, and decreased soil compaction.

5.0 Consultation and Coordination

5.1 Compliance and Monitoring

Dry weight ranking (DWR) studies will be used to measure attainment of the key area desired plant community (DPC) objectives. In addition, pace frequency studies will be used at each key area to detect changes of individual species which determines trend. Pace frequency and DWR will be completed on each key area every 3-6 years. Utilization data will be collected as need on the allotment to address to obtain data for site specific problems. DWR and pace frequency study methods are described in *Sampling Vegetation Attributes*, Interagency Technical Reference 1734-4 (1996).

5.2 Persons/Agencies Consulted

Safford Field Office:

Archaeologist, Dan McGrew
Wildlife Biologist, Tim Goodman
Geologist, Larry Thrasher
Realty Specialist, Roberta Lopez
Bill Wells, Hydrologist
Gwen Dominguez, Rangeland Management Specialist
Joe David, Assistant Field Manager and NEPA Specialist

Others:

Spnazuma Permittee
Natural Resource Conservation Service
US Forest Service- Safford Ranger District

6.0 Literature Cited

Day, G. I. 1985. Javelina. Arizona Game and Fish Department, Phoenix, AZ.

Heffelfinger, J.R, C. Brewer, C. H. Alcala-Galvan, B. Hale, D. L. Weybright, B. Wakeling, L.H. Carpenter, N. L. Dodd. 2006. Habitat guidelines for mule deer, southwest deserts ecoregion. Mule Deer Working Group. Western Association of Fish and Wildlife Agencies.

Holechek, J.L., Thomas, M.G., Galt, D., & Molinar, F. (2000). Conservative and moderate stocking effects on Chihuahuan Desert range forage. *Proceedings of the Western Section of the American Society of Animal Science*, 51:257–262. USDI. Bureau of Land Management.

Valdez, R.; Krausman, P.R. 1999. Description, distribution, and abundance of mountain sheep in North America. *In*: R. Valdez and P. R. Krausman, eds. Mountain sheep of North America. Tucson, AZ: University of Arizona Press: 1-21.

7.0 Appendix 1: Arizona Standards & Guides Evaluation

Contents

1.0 Introduction.....	25
2.0 General Description of Evaluation Area.....	26
3.0 Grazing Use	27
3.1 Grazing History.....	27
3.2 Current Management	28
3.3 Actual Use.....	28
3.4 Terms and Conditions of the Current Permit.....	28
4.0 Evaluation Area Profile.....	28
4.1 Land Status.....	28
4.2 Soils and Ecological Sites.....	29
4.3 Climate.....	32
4.4 Wildlife Resources/Special Status Species.....	32
4.5 Special Management Areas.....	36
4.6 Recreation Resources.....	36
4.7 Visual Resources.....	36
4.8 Cultural Resources	37
4.9 Noxious Weeds/Invasive Species	38
4.10 Inventory and Monitoring Data and Methodology	38
4.11 Key Areas/Key Species.....	39
4.12 Land Health Allotment Objectives	40
5.0 Management Evaluation	40
5.1 Upland Health Assessment	40
6.0 Conclusions.....	41
7.0 Recommendations.....	44
8.0 Consultation	45
9.0 Selected Management Action	45
10.0 References.....	47
11.0 Appendix A.....	47

Arizona Standards and Guidelines Evaluation Spenazuma Allotment #46310

1.0 Introduction

The Allotment Assessment was conducted in accordance with the direction set forth in the Washington Office Instruction Memorandum No. 98-91 and Arizona No. 99-012 for implementation of Standards for Rangeland Health and Guidelines for Grazing Administration. The purpose of the standards and guidelines is to improve the health of the public rangelands. The standards and guidelines are intended to help the Bureau, rangeland users, and others focus on a common understanding of acceptable resource conditions and work together to achieve that vision. The Arizona State Director approved the Decision Record for implementation of Arizona Standards for Rangeland Health and Guidelines for Grazing Administration Environmental Assessment in April 1997. This decision became effective upon approval of the Arizona standards and guidelines by the Secretary of Interior in April 1997. The Decision Record allowed for full implementation of Arizona Standards for Rangeland Health and Guidelines for Grazing Administration in all Arizona Bureau of Land Management (BLM) Land Use Plans.

Definition of Standards and Guidelines:

Standards of rangeland health are expressions of levels of physical and biological conditions, or degree of function required for healthy, sustainable rangelands and defines minimum resource conditions that must be achieved and maintained. Determination of rangeland health is based upon conformance with the standards. Application of the standards to the range site considers the potential of the site, without regard for the types or levels of use or management actions or decisions.

Guidelines, on the other hand, do consider type and level of grazing use. Guidelines for grazing management are types of methods and practices determined to be appropriate to ensure the standards can be met or that significant progress can be made toward meeting the standard. Guidelines are tools that help managers and permittees achieve standards. Guidelines are specific to livestock grazing. Guidelines are best management practices such as grazing systems that could be used to achieve rangeland health standards.

Although the process of developing standards and guidelines applies to grazing administration, present rangeland health is the result of the interaction of many factors in addition to grazing livestock. Other contributing factors may include, but are not limited to, past land uses, land use restrictions, recreation, wildlife, rights-of-way, wild horses and burros, mining, fire, weather, and insects and disease (Arizona Standards for Rangeland Health and Guidelines for Grazing Administration, 1997).

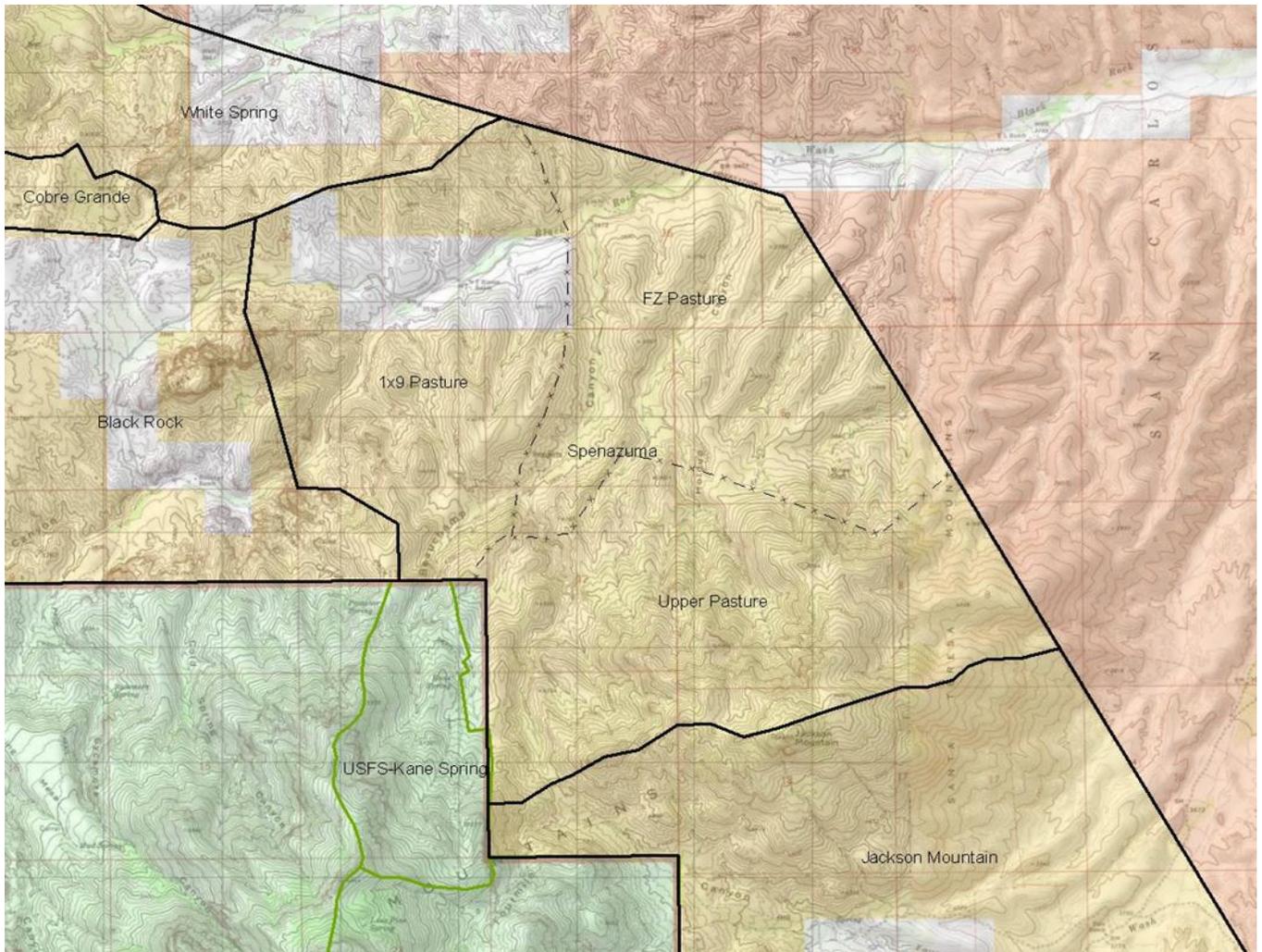
With the commitment of BLM to ecosystem and interdisciplinary resource management, the standards for rangeland health, as developed in this current process, will be incorporated into management goals and objectives. The standards and guidelines for rangeland health for grazing

administration, however, are not the only considerations in resolving resource issues (Arizona Standards for Rangeland Health and Guidelines for Grazing Administration, 1997).

2.0 General Description of Evaluation Area

The Spenazuma Allotment is located approximately 16 miles southwest of Fort Thomas. It is bordered on the south by the Coronado National Forest and the Jackson Mountain Allotment. The San Carlos Apache Indian Reservation borders the allotment on the north and east and the Black Rock Allotment is on the western border. The permittee holds the permit for the adjacent Kane Springs Allotment on the Coronado National Forest. The BLM and Forest Allotments are run in conjunction with one another. Approximately 3,400 acres of the Spenazuma Allotment is in the northern portion of the Santa Teresa Wilderness Area.

Elevation on the Spenazuma Allotment ranges from 3,472 feet in Black Rock Wash to 5,892 feet on Jackson Mountain. Steep, broken terrain forms the southern portion of the allotment near the Santa Teresa and Jackson Mountains. The rest of the allotment is dissected by moderately steep slopes that grade down into Black Rock Wash. Map 1 depicts the general location and land status of the Spenazuma Allotment.



Map 1: Spenzazuma Allotment



3.0 Grazing Use

3.1 Grazing History

The Spenzazuma Allotment was originally part of the T. Hinton Ranch in the 1900s, but was separated into two smaller allotments some years later. The portion that was split off became known as the Spenzazuma Allotment, but was comprised of the present day I x 9 pasture. From 1964 to 1973, 43 Cattle Year Long (CYL) head of cattle were run on the allotment. As of March 1, 1980, the allotment was reduced by decision to 27 CYL's. On March 23, 1982, the permittee of the Spenzazuma Allotment purchased the neighboring allotment to the west that was known as

the Hold-Up Allotment. The Hold-Up Allotment was licensed for 40 CYL's. In November 1985, state land was exchanged to the BLM, which added 3 head to the permit. These two smaller allotments make up what is now known collectively as the Spenazuma Allotment, with a total of 67 CYL's, or 70 head with 90% public land, for 756 AUMs.

3.2 Current Management

Currently, the Spenazuma Allotment permittee is running cattle yearlong, spread among all three pastures. Cattle are pushed up into the higher country into the winter, but slowly make their way back down to the lower portion of the allotment after period of time. There is also an adjoining Forest allotment that allows 14 head for 6 months in the winter.

3.3 Actual Use

Actual use data for livestock was determined through Actual Use Reports, Form 4130-5, or when unavailable, from past billing statements. Refer to Table 8 for actual use from the previous 10-years.

Table 8. Actual Use on the Spenazuma Allotment.

	Preference (AUMs)	2011	2010	2009	2008	2007	2006	2005	2004	2003	2002	2001
Spenazuma	756	756	660	660	756	251	756	756	756	728	756	756

Fluctuations in livestock numbers in 2007 were done by the permittee to manage herd health. The following years were lower numbers because the permittee was rebuilding the herd.

3.4 Terms and Conditions of the Current Permit

Allotment	Livestock number	Kind	Grazing Period		Type %PL	Use	AUMS
			Begin	End			
46310	70	Cattle	03/01	2/28	90	Active	756

4.0 Evaluation Area Profile

4.1 Land Status

The Spenazuma Allotment is identified as an Improve (I) category allotment. By definition, I allotments are where current livestock grazing management or level of use on public land is, or is expected to be, a significant causal factor in the non-achievement of land health standards, or where a change in mandatory terms and conditions in the grazing authorization is, or may be, necessary. Refer to Table 1 for land acreage in the Spenazuma Allotment.

Table 1. Land Management/Ownership Status and Acreage on the Spenazuma Allotment.

Type of Acreage	Acres	Sections
Public Land	5,677	8.9
Private Land	470	0.7
Total	6,147	9.6

4.2 Soils and Ecological Sites

Soils:

Soil descriptions and characteristics were taken directly from the soil survey. For a complete description of the soils on the Spenazuma Allotment, refer to “Gila-Duncan Area, Parts of Graham and Greenlee Counties,” Arizona soil survey (NRCS 1981).

Rock Outcrop-Lampshire Complex, 20 to 90 percent slopes: This map unit is on mountains. Elevation is 4,000 to 5,200 feet. This unit is 50 percent Rock outcrop and 30 percent Lampshire extremely cobbly sandy loam. Rock outcrop is throughout the unit, and the Lampshire soil is on the mountainsides. Rock outcrop consists of vertical, or nearly vertical, areas of exposed granite, gneiss, or schist. The Lampshire soil is very shallow and shallow and is well drained. Typically, 30 to 80 percent of the surface is covered with cobbles, gravel, and a few stones. Permeability of the Lampshire soil is moderate. Available water capacity is very low. Effective and observed rooting depth is 4 to 20 inches. Runoff is medium to rapid, and the hazard of water erosion is moderate. If the range vegetation on this unit is in good or excellent condition, the native grasses are mainly sideoats grama, hairy grama, black grama, cane bluestem, and plains lovegrass. The overstory is juniper and oak. This unit is used as rangeland and for wildlife habitat, recreation, and homesite development. Associated ecological sites with this unit are Granitic Hills 12-16” p.z.

Eloma- Alasco Complex 15 to 70 percent slopes: This map unit is on hillsides. Elevation is 3,000 to 5,000 feet. This unit is 45 percent Eloma very cobbly loam and 35 percent Alsea extremely cobbly sandy loam. The Eloma soil is mostly on the upper part of the hillsides, and the Alsea soil is on the lower part, adjacent to drainage ways. The components of this unit are so intricately intermingled that it was not practical to map them separately at the scale used. Included in this unit are small areas of soils that are similar to the Eloma and Alsea soils, but have thinner subsoil and are steeper. Also included are small areas of Santo Tomas very cobbly sandy loam near drainageways. Included areas make up about 20 percent of the total acreage. The percentage varies from one area to another.

The Eloma soil is deep and well drained. It formed in colluvium and alluvium, derived dominantly from granite and gneiss. Typically, 30 to 80 percent of the surface is covered with cobbles and some stones. Permeability of the Eloma soil is slow. Available water capacity is high. Water supplying capacity is 6 to 10 inches. Effective and observed rooting depth is 60 inches or more. Runoff is medium to rapid, and the hazard of water erosion is moderate.

The Alsea soil is deep and well drained. It formed in alluvium derived dominantly from granite and gneiss. Typically, 30 to 80 percent of the surface is covered with cobbles and a few stones. Permeability of the Alsea soil is moderately slow. Available water capacity is high. Water supplying capacity is 6 to 10 inches. Effective rooting depth is 60 inches or more. Observed rooting depth is 35 to 45 inches. Runoff is medium to rapid, and the hazard of water erosion is slight. This unit is used as rangeland and for wildlife habitat, recreation, and homesite development.

If the range vegetation on the Eloma soil is in good or excellent condition, the native grasses are mainly sideoats grama, black grama, plains lovegrass, and hairy grama. If the range vegetation on the Alsea soil is in good or excellent condition, the native grasses are mainly creosotebush, bush muhly, black grama, and threeawn. If the range is overgrazed, the proportion of preferred forage plants decreases; therefore, livestock grazing should be managed so that the desired balance of species is maintained in the plant community. Cattle usually avoid areas of this unit unless their movement is restricted by fences. Suitable range management practices are fencing, implementing planned grazing systems, and developing livestock watering facilities. Because stones and cobbles on the surface limit access for grazing, this unit responds rapidly to the use of grazing management systems. Control of runoff reduces erosion and increases the production of forage. Trails or walkways can be constructed to encourage livestock grazing in areas where access is limited.

Atascosa-Graham Complex 9 to 70 percent Slope: This map unit is on mountains. Elevation is 4,000 to 5,200 feet. This unit is 35 percent Rock outcrop, 30 percent Atascosa very gravelly loam, and 20 percent Graham very cobbly clay loam. Rock outcrop is on all parts of the landscape, the Atascosa soil is dominantly on mountainsides, and the Graham soil is dominantly on the tops of mountains and on the upper part of mountainsides. The components of this unit are so intricately intermingled that it was not practical to map them separately at the scale used. Included in this unit are small areas of Santo Tomas very cobbly loam along drainage ways, Limpia very cobbly silty clay loam on moderately sloping mountainsides, Peloncillo very cobbly loam on the upper part of fan terraces, and talus on the steeper parts of mountainsides, generally below areas of Rock outcrop. Included areas make up about 15 percent of the total acreage. The percentage varies from one area to another. Rock outcrop consists of areas of exposed bedrock. The dominant kinds of rock in this unit are volcanic tuff, rhyolite, andesite, and basalt. Slope is nearly vertical in places.

The Atascosa soil is very shallow and shallow and is well drained. It formed in colluvium derived dominantly from volcanic rock. Typically, 30 to 80 percent of the surface is covered with gravel and cobbles. Permeability of the Atascosa soil is moderate. Available water capacity is very low. Water supplying capacity is 8 to 10 inches. Effective and observed rooting depth is 4 to 20 inches. Runoff is medium, and the hazard of water erosion is slight.

The Graham soil is very shallow and shallow and is well drained. It formed in colluvium derived dominantly from volcanic rock. Typically, 20 to 80 percent of the surface is covered with cobbles and a few stones. Permeability of the Graham soil is slow. Available water capacity is low. Water supplying capacity is 8 to 10 inches. Effective and observed rooting depth is 8 to 20 inches. Runoff is medium, and the hazard of water erosion is moderate. Most areas of this unit are used as rangeland and for wildlife habitat and recreation. A few areas are used for homesite development. If the range vegetation on this unit is in good or excellent condition, the native

grasses are mainly sideoats grama, black grama, cane bluestem, and plains lovegrass. Cattle usually avoid areas of this unit unless their movement is restricted by fences. If cattle are restricted to this unit, they tend to graze the less sloping areas, leaving the steeper slopes essentially ungrazed. Trails or walkways can be constructed in places to encourage grazing in areas where access is limited. Suitable range management practices are fencing, implementing planned grazing systems, and developing livestock watering facilities.

Ecological Sites and Major Land Resource Areas:

Rangeland landscapes are divided into ecological sites for the purposes of inventory, evaluation, and management. An ecological site is a distinctive kind of land with specific physical characteristics that differs from other kinds of land in its ability to produce a distinctive kind and amount of vegetation. It is the product of all the environmental factors responsible for its development, and it has a set of key characteristics (soils, hydrology, and vegetation) that are included in the ecological site description (Inventory and Monitoring, Technical Reference 1734-7). The BLM uses rangeland health assessments to provide information on the functioning of ecological processes relative to the reference state for the ecological site or other functionally similar unit for that land area.

The Natural Resource Conservation Service (NRCS) characterizes land resource regions by particular patterns of soils, climate, water resources and land uses. These regions are then grouped into Major Land Resource Areas (MLRAs). The Spnazuma Allotment is comprised of two MLRAs: 41-3 Granitic Hills (12-16 inches/per year) and 41-3 Granitic Upland (8-12 inches/per year). All of the soils found on this allotment are classified as arid and semiarid.

The potential plant community on this site is dominated by warm season perennial grasses. Several species of low shrubs are well represented on the site, but the aspect is grassland dotted with shrubs and cacti. Larger species of shrubs are concentrated at the edges of rock outcrop areas and in canyon bottoms. Most of the grass and low shrub species are well dispersed throughout the plant community. In the absence of wildfire and/or with overgrazing, shrubs increase to dominate the plant community. Well-developed gravel and cobble covers protect the soil from erosion and protect forage species from heavy use. Natural fire was an important factor in development of the potential plant community. Natural fire frequencies were about once every ten years. Fires helped maintain a balance between grasses, forbs and shrubs. With continuous heavy grazing palatable forage species diminish in the plant community and can be replaced by shrubs and succulents. Areas of rock outcrop are little grazed and hold remnant perennial forage species to help reseed the slopes below once grazing is managed. The plant community described for the HCPC is at a midpoint in its fire free interval (5 to 7 years after fire). (NRCS Ecological Site Guide, Granitic Hills 41-3).

Cool season plants start growth in early spring and mature in early summer. Warm season plants take advantage of summer rains and are actively growing and nutritious July-September. Warm season grasses may remain green throughout the year.

4.3 Climate

Climate data was collected from the PRISM Climate Mapping Program. PRISM (Parameter-elevation Regressions on Independent Slopes Model) is an analytical tool that uses point data, a digital elevation model, and other spatial data sets to generate fine scale (4-km, 2.5 arc-minutes) grid-based estimates based estimates of monthly precipitation and temperature from 1895-present. The location from where the 4-km grid was set from is 32.95 N, 110.15 W.

Precipitation:

Precipitation in this common resource area ranges from 12-16 inches yearly in the eastern part with elevations from 3600-5000 feet, and 13-17 inches in the western part where elevations are 3300-4500 feet. Winter-Summer rainfall ratios are 40-60% in the west and 30-70% in the east. Summer rains fall July-September, and are convective, usually brief, intense thunderstorms. Cool season moisture tends to be frontal, and falls in widespread storms with long duration and low intensity. Snow rarely lasts more than one day. May and June are the driest months of the year. Humidity is generally very low.

The PRISM data point listed the average precipitation amount from January 1895 to March 2013 as 14.05 inches. From the same data set the 20 year average is 13.09.

Temperature:

Temperatures are mild. Freezing temperatures are common at night from December-April; however temperatures during the day are frequently above 50 F. Occasionally in December-February, brief 0 F temperatures may be experienced some nights. During June, July and August, some days may exceed 100 F. The data collected from the PRISM program provides monthly temperature averages, which was then averaged by seasons Winter 45°F, Spring 56°F, Summer 77°F and Fall as 62°F.

4.4 Wildlife Resources/Special Status Species

The Spnazuma Allotment has a diversity of geological forms, elevations, slopes, and vegetation, which directly results in a diversity of wildlife species. The allotments supports large mammals such as black bear, mule deer, white tailed deer, javelina, and desert bighorn sheep to golden eagles, Gambel's quail, Gila monsters and desert box turtles to name only a few. Shrub encroachment has reached a point in some places on the allotment that it is altering the ability of some species to move through and utilizes areas. Management emphasis in this area is on large game animals specifically mule deer, white tailed deer, javelina and desert bighorn sheep.

Deer

Habitat degradation from excessive herbivory and drought can alter and/or eliminate cover and food needed by mule deer and other wildlife species. Perennial bunch grasses and low shrubs are required fawning habitat (*i.e.*, cover) for mule deer and offer concealment from predators.

Adult animals also require cover for hiding and resting. Hiding or resting locations are selected to provide concealment, a view of the surrounding terrain, and easy access to escape routes.

Deer feed primarily on browse and forbs. Forbs are highly preferred and in spring and summer can comprise 20% to 40% of the annual diet; whereas browse can constitute between 40% to 70% of the diet in fall and winter. Mule deer are selective feeders and will choose the most succulent and nutritious shoots and grasses on which to feed. Diet largely depends on the ecoregion in which they live (Heffelfinger, *et al.*, 2006), in more productive habitats, such as woodland areas, a greater variety of food will be eaten than in desert areas.

Grazing at light to moderate levels has little impact on mule deer since browse and forbs constitute 90% of their diet with grass important only in early spring. Cattle consume primarily grass, with forbs and browse as secondary, but seasonally important components. Overgrazing results in livestock consuming more browse, which exacerbates the level and intensity of competition with mule deer. To reduce this impact livestock should not be allowed to browse more than 50% of the annual leaders growth (by weight), which equates to approximately 50% of the leaders browsed (Holechek and Galt, 2000).

White tail deer tend to be at higher elevations and work in and out of very dense shrubby vegetation. Mule deer occur at lower elevations and prefer to move in and out of shubby vegetation that is less dense than whitetail prefer. The Spnazuma Allotment provides very good habitat for both species of deer. Neither species of deer will use the interior of large patches of very dense shrubby vegetation that obscure their vision. Habitat for deer in general on the Spnazuma Allotment could be improved if the largest densest areas of shrub dominated vegetation are opened up or set back, creating more patchiness and edge effect.

Javelina

Like mule deer, javelina, inhabit a variety of different habitat types throughout Arizona and are quite adaptable. Javelina are opportunistic feeders and require a diverse plant community comprised of flowers, fruits, nuts, grasses, forbs, shrubs, vines, succulents, and trees for survival. Prickly pear cactus comprises a major portion of their diet. A diverse and intact plant community not only provides forage, but much needed shelter and cover. Sonoran desert scrub and desert grassland habitat are two of the most important biotic communities in Arizona for javelina and comprise approximately 67% of their range. Javelinas do not inhabit pure grasslands, but grasslands that have been invaded by shrubs and cacti. Riparian forests are also important and are used quite frequently by javelina as sources of water, food, and cover (Day 1985).

Javalina evolved in the thick dense tropical forests of central and south America, and have a preference for areas of dense vegetation. However, in southern Arizona they need to move in and out of the densest vegetation to access water and a diversity of food sources. Javalina would also benefit from opening up or setting back the largest, densest patches of shrub dominated vegetation on the allotment.

Desert Bighorn Sheep

Over the last 30 years desert bighorn sheep have expanded out of the Aravaipa Canyon area into the Santa Teresa Mountain Range. They are now relatively common within the Spnazuma

Allotment. The Aravaipa Canyon population of desert bighorn sheep will likely continue to expand with the Santa Teresa Mountains as a corridor to other mountain ranges. Desert bighorn have similar forage needs as mule deer, favoring forbs and shrubs. Bighorns tend to do best when the vegetation is diverse but not high enough to obscure their vision. Bighorn in general can suffer from forage and spatial competition from both cattle and other wildlife such as mule deer. By nature bighorn segregate themselves from other large species by occupying open steep rocky slopes. Because of this, spatial and forage competition is most likely to occur during periods of excessive forage use and drought (Valdez and Krausman, 1999).

The Spnazuma Allotment provides very good habitat for bighorn at the highest terrain elevations. These areas contain rock outcroppings and escarpments that bighorn favor for escape cover and are ringed with a diversity of vegetation for foraging. The physical nature of this habitat limits habitat overlap with livestock and other wildlife species. Vegetation manipulation in and around bighorn habitat would have minimal benefits to bighorn.

In general the quality of the wildlife habitat could be increased by setting back the shrub component of the vegetative community with fire, herbicide, and/or mechanical treatments. Treatments done in a manner that increases patchiness and edge effect would enhance benefits to the species emphasized above. The allotment water distribution is relatively good for wildlife. However, additions of year round water particularly at higher elevations maybe considered and might prove beneficial.

Federally Listed and Candidate Species

The Safford Field Office implements its grazing program consistent with Biological Opinion (BO) rendered on the Gila District Livestock Grazing Program for the Safford/Tucson Field Offices’ Livestock Grazing Program, Southeastern Arizona (22410-2006-F-0414). This BO was reviewed to insure that all mitigation measures stated in the BO are being followed.

In addition, a current review of Graham County listed and candidate species is provided below in Table 2.

Table 2. Threatened (T), Endangered (E), and Candidate (C) Species, Graham County, Arizona, February 5, 2013

<u>Common Name</u>	<u>Scientific Name</u>	<u>Listing Status</u>	Affected
American Peregrine falcon	<i>Falco peregrinus anatum</i>	D	Considered a BLM Sensitive Species. Known to occur on the allotment.
Apache trout	<i>Oncorhynchus apache</i>	T	No affect. Known locations and suitable habitat are greater than five miles away.
Arizona Cliff-rose	<i>Purshia (=Cowania) subintegra</i>	E	No affect. Known locations and suitable habitat are greater than five miles away.
Bald Eagle	<i>Haliaeetus leucocephalus</i>	D	Considered a BLM Sensitive Species. Known locations and suitable habitat are greater than five miles away.
Chiricahua leopard frog	<i>Rana chiricahuensis</i>	T	No affect. Known locations and suitable habitat are greater than five miles away.
Desert pupfish	<i>Cyprinodon macularius</i>	E	No affect. Known locations and suitable habitat are greater than five miles away.
Desert tortoise Sonoran	<i>Gopherus agassizii</i>	C	Considered a BLM Sensitive Species. Known locations

population			and suitable habitat are greater than five miles away.
Gila chub	<i>Gila intermedia</i>	E	No affect. Known locations and suitable habitat are greater than five miles away.
Gila topminnow	<i>Poeciliopsi occidentalis</i>	E	No affect. Known locations and suitable habitat are greater than five miles away.
Headwater chub	<i>Gila nigra</i>	C	Considered a BLM Sensitive Species. Known locations and suitable habitat are greater than five miles away.
Lesser long-nosed bat	<i>Leptonycteris curasoae yerbabuena</i>	E	No affect. There are no known roosts within 40 miles of the allotment.
Loach minnow	<i>Tiaroga cobitis</i>	E	No affect. Known locations and suitable habitat are greater than five miles away.
Ocelot	<i>Leopardus pardalis</i>	E	No affect. Suitable habitat exists on the allotment. The closest known location was one occurrence outside of Globe AZ, 45 miles away. There is no reasonable likelihood the species occurs on the Spenazuma allotment.
Mexican spotted owl	<i>Strix occidentalis lucida</i>	T	No affect. Even though there is designated critical habitat within five miles of the allotment they have not been documented on the allotment and the allotment does not contain suitable habitat.
Mount Graham red squirrel	<i>Tamiasciurus hudsonicus grahamensis</i>	E	No affect. Known locations and suitable habitat are greater than five miles away.
Northern Mexican gartersnake	<i>Thamnophis eques megalops</i>	C	Considered a BLM Sensitive Species. Known locations and suitable habitat are greater than five miles away.
Razorback sucker	<i>Xyrauchen texanus</i>	E	No affect. Known locations and suitable habitat are greater than five miles away.
Roundtail chub	<i>Gila robusta</i>	C	Considered a BLM Sensitive Species. Known locations and suitable habitat are greater than five miles away.
Southwestern willow flycatcher	<i>Empidonax traillii extimus</i>	E	No affect. Known locations and suitable habitat are greater than five miles away.
Spikedace	<i>Meda fulgida</i>	E	No affect. Known locations and suitable habitat are greater than five miles away.
Wet Canyon talussnail	<i>Sonorella macrophallus</i>	CA	Considered a BLM Sensitive Species. Known locations and suitable habitat are greater than five miles away.
Yellow-billed Cuckoo	<i>Coccyzus americanus</i>	C	Considered a BLM Sensitive Species. Known locations and suitable habitat are greater than five miles away.

E – Endangered T – Threatened C – Candidate CA – Conservation Agreement

Reference <http://arizonaes.fws.gov/>

Special Status Species

The Safford Field Office reviewed a list of known Special Status Species occurrences in or within five miles of the Spenazuma Allotment provided by the Arizona Game and Fish Department, Heritage Data Management System on May 1, 2009 (AGFD #M09-04213056) and checked July 2012. The following table (5) contains the species considered special status by the Bureau (IM # AZ-2009-004) that were on that list.

Table 3. Special Status Species Occurrences within five miles of the Spenazuma Allotment

American peregrine falcon	<i>Falco peregrines anatum</i>	BLM Sensitive Species
Golden eagle	<i>Aquila chrysaetos</i>	BLM Sensitive Species

The Safford Field Office is aware of the close occurrence of peregrine falcons to the Spnazuma Allotment and cooperates with ongoing monitoring of this de-listed species. For this allotment evaluation there are no known negative effects from grazing on this special status species.

Golden eagles are a widely disbursed species within Arizona, there are currently no known nests on the Spnazuma Allotment, although the cliff faces and rock outcrops provide suitable nesting habitat. For this allotment evaluation there are no known negative effects from grazing on this special status species.

4.5 Special Management Areas

A large portion of the Spnazuma Allotment is within the North Santa Teresa Wilderness Area. There is no management plan for the North Santa Teresa Wilderness Area. National wilderness goals include providing long term protection and preservation of wilderness characteristics, manage wilderness areas in a manner that will maintain the natural condition and wilderness values while allowing visitor use and enjoyment, employ the use of minimum tool and regulation principals, and manage acceptable non-conforming uses with emphasis on maintaining the wilderness character. The national wilderness goals are being met.

There are no other special management areas in or adjacent to the Spnazuma Allotment.

4.6 Recreation Resources

There are no developed recreation facilities in the allotment; however, dispersed recreation does occur. Dispersed recreation primarily involves small and big game hunting, target shooting, and off-highway vehicle (OHV) operation. Vehicle access to the allotment is limited. Main access to the allotment is through San Carlos Apache Indian Reservation and private land. The private land owner keeps the gate onto the private land locked at all times and on occasion reservation officials will close access. Roads, mainly two-track jeep trails, are rough, but in stable condition. Over-all there is very little sign of recreation use or subsequent impacts. There are no recreation related concerns at this time.

4.7 Visual Resources

The Safford Resource Management Plan (RMP) has designated public lands within the Spnazuma Allotment which are inside the North Santa Teresa Wilderness Area as Visual Resource Management (VRM) Class I. The objective of this class is to preserve the existing character of the landscape. This class provides for natural ecological changes; it does not, however, preclude very limited management activity. The level of change to the characteristic landscape should be very low and must not attract attention.

The remaining area of the allotment is in the (VRM) Class IV. The objective of this class is to provide for management activities that require major modification of the existing character of the landscape. The level of change to the characteristic landscape can be high. These management

activities may dominate the view and be the major focus of viewer attention. Every attempt should be made, however, to minimize the impact of these activities through careful location, minimal disturbance and repeating the basic elements.

VRM objectives are being met for both classes.

4.8 Cultural Resources

Issuance of the permit constitutes a Federal Undertaking under Section 106 of the National Historic Preservation Act (NHPA). The Area of Potential Effect (APE) has been determined to be the public lands within the grazing allotment.

In compliance with the BLM Cultural Resources Programmatic Agreement, the Arizona BLM-SHPO Protocol, the 1980 Programmatic Memorandum of Agreement between the BLM, Advisory Council on Historic Preservation, and the National Conference of State Historic Preservation Officers Regarding the Livestock Grazing and Range Improvement Program, and the BLM 8100 Manual series, the following actions have been taken to identify cultural resources located in the APE, evaluate the eligibility of cultural resources for listing in the National Register of Historic Places (NRHP), determine the effect of the undertaking on eligible cultural resources, and design mitigation measures or alternatives where appropriate.

The State Historic Preservation Officer (SHPO), the Advisory Council on Historic Preservation, and Indian tribes having historical ties to Arizona public lands were consulted during the preparations of the Upper Gila/San Simon Grazing Environmental Impact Statement (9/78) and the Safford Resource Management Plan (8/91). Indian tribes were consulted at the beginning of the permit renewal process. There were no areas of Native American concern, Traditional Cultural Properties (TCP), or Sacred Sites identified during consultations.

Allotment case files, AMP files, range project files, Water Source Inventory files, and Cultural Resource files were reviewed to determine areas of livestock congregation and whether these areas have been previously inventoried for cultural resources. The records indicate that there is one area of livestock congregation that required an intensive field inventory, which was completed on November 25, 2008. Because no historic properties were identified in areas of livestock congregation, no mitigation is recommended as a BLM responsibility or as a term or condition of the permit, to protect cultural values identified above.

As required by the Native American Graves Protection and Repatriation Act regulations at 43 CFR 10.4(g), the following should be added to the grazing lease/permit as a term and condition:

If in connection with allotment operations under this authorization, any human remains, funerary objects, sacred objects or objects of cultural patrimony as defined in the Native American Graves Protection and Repatriation Act (P.L. 101-601; 104 Stat. 3048; 25 U.S.C. 3001) are discovered, the permittee shall stop operations in the immediate area of the discovery, protect the remains and objects, and immediately notify the Authorized Officer of the discovery. The permittee shall continue to protect the immediate area of the discovery until notified by the Authorized Officer that operations may resume.

* Properties refer to archaeological sites, Traditional Cultural Properties, and Sacred Sites.

4.9 Noxious Weeds/Invasive Species

There are no known or documented occurrences of state listed noxious weeds on the Spenazuma allotment.

4.10 Inventory and Monitoring Data and Methodology

All data was collected in accordance with “Sampling Vegetation Attributes, Interagency Technical Reference, 1996.”

Dry Weight Rank (DWR):

Dry weight rank estimates plant composition on a dry weight production basis. This data collection was made using a 40cm x 40cm plot frame and 100 placements. The three perennial species within a vertical projection of quadrats placed repeatedly (100 times) comprising the most annual biomass production on a dry weight basis are ranked (1st, 2nd, and 3rd most biomass). Multiple ranks are given when less than 3 species are present.

Baseline DWR inventory was performed in 2005 at this site. DRW was monitored again in 2008 and most recently in 2012.

Ground Cover:

Ground cover is the amount of surface area comprised of bare ground, perennial plant bases, litter, gravel or rocks. Ground cover data, each soil protection category expressed as a percentage of total hits, reflect the amount of litter, vegetative root bases, gravel and rocks available to intercept raindrop impact before reaching the soil and of bare ground exposed to climatic elements. Cover data were collected with each quadrat placement. A single point from the quadrat was consistently the focal point for cover category classification

Ground cover data were collected at three key areas on the Spenazuma allotment between 1979, 1981, 2005, 2008 and 2012. Refer to Appendix 1 for ground cover data.

S-1: Ground cover data, which was gathered in 1979, 1981, 2005, and 2008, show a decrease in bare ground at the key area. The reduction in bare ground can be attributed to favorable rainfall in the past years and is represented in the monitoring data by the increase in litter and basal hits on vegetation. Data collected in 2012 shows the amount of bare ground to be static could be contributed to the prolonged drought.

S-2: Ground cover data which was gathered in 1979, 1981 and 2005, and 2008 show a decrease in bare ground at the key area and an increase in litter. Ground cover data collected in 2012 has shown static trend in bare ground and increase in litter for that year.

Utilization - Key Forage Plant Method:

Utilization is a measure of the percent of current year's growth that has been removed from a plant. The key forage plant method for measuring utilization is based on the percent removal by weight, not height, for each key forage species in an area. Most perennial grass species have the majority of the plant weight at the base of the plant. Often the top half (height) of a plant may only contain 10-20% of the actual weight of the plant. The actual height to weight relationship varies by species. A one-hundred point toe-pace transect was run; at each pace, the nearest key forage species to the tip of the observer's toe was located and the degree of utilization on that plant was recorded. Calculation for utilization was a weighted average of the mid-point for each use category (see data sheet). The average use was calculated as a weighted average across all key forage species.

Frequency/Trend:

Pace frequency is the number of times a plant species is present within a given number of uniformly sized sample quadrats (plot frames placed repeatedly across a stand of vegetation). Plant frequency is expressed as percent presence for each species encountered within total number of quadrat placements, therefore, frequency reflects the probability of encountering a particular plant species within a specifically sized area (quadrat size) at any location within the key area. The total number of frequency hits among all species will not equal the total number of quadrat placements and frequency is insensitive to the size or number of individual plants. Frequency is a very useful monitoring method but does not express species composition, only species presence. Frequency is an index that integrates species' density and spatial patterns.

Pace frequency data was not collected prior to 2005 on the Spenazuma Allotment. Pace frequency data was collected in 2005 for the first time and will serve as the baseline data. Data has been collected in 2008 and 2012.

4.11 Key Areas/Key Species

Key areas are indicator areas that reflect what is happening on a larger area as a result of on-the-ground management actions. A key area should be a representative sample of a large stratum, such as an ecological site, watershed area, pasture, wildlife habitat area, or herd management area. Key species are generally an important component of a plant community. Key species serve as indicators of change and may or may not be forage species.

The Spenazuma allotment has 4 key areas S-1, S-2, S-3 and S-5.

Key Species:

Transect S-1: Browse Species: Shrubby buckwheat (*Eriogonum wrightii*), Jojoba (*Simmondsia chinensis*), and mesquite (*Prosopis spp.*). Perennial Grass Species: Sideoats grama (*Bouteloua curtipendula*) Black grama (*Bouteloua eriopoda*), Three-awn (*Aristida spp.*) and Bush muhly (*Muhlenbergia porteri*).

Transect S-2, S-3 and S-5: Browse Species: Shrubby buckwheat (*Eriogonum wrightii*), Jojoba (*Simmondsia chinensis*) and False Mesquite (*Calliandra eriophylla*). Perennial Grass Species: Sideoats grama (*Bouteloua curtipendula*) Black grama (*Bouteloua eriopoda*), Three-awn (*Aristida spp.*), Slender grama (*Bouteloua repens*), Bush muhly (*Muhlenbergia porteri*), and Hairy grama (*Bouteloua hirsuta*).

4.12 Land Health Allotment Objectives

Standard 1: Upland Sites

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

Standard 2: Riparian- Wetland Sites

Maintain or improve riparian/wetland areas to facilitate proper functioning condition.

Standard 3: Desired Resource Condition

Maintain or improve productive and diverse upland and riparian-wetland plant communities of native species.

5.0 Management Evaluation

5.1 Upland Health Assessment

Upland health assessments were completed at two key areas on the Spenazuma Allotment on November 25, 2008. These key areas were used for the Upland Health Assessment, as they represent ecological sites over the majority of the allotment. This method involves observing a set of physical and biological attributes at a site to determine upland health. These observed attributes are placed in one of five categories depending on their degree of presence or absence on the site (*i.e.*, None to Slight, Slight to Moderate, Moderate, Moderate to Extreme, and Extreme). These attributes include items such as: plant pedestalling, flow patterns, soil and litter movement by wind or water, presence of rills or active gullies. A final upland health determination is made by summing all of the attributes. Refer to Table 9 for a summary of the assessments on the Spenazuma allotment. Methods for the upland health assessments are described in “Interpreting Indicators of Rangeland Health, Technical Reference 1734-6, 2000.”

Table 4. Summary of Upland Health Assessments at each Key Area.

Key Area	Departure for Ecological Site Description				
	Extreme	Moderate to Extreme	Moderate	Slight to Moderate	None to Slight
S-1				B	S,H
S-2					S,H,B

S- Soil/site stability H- Hydrologic function B- Biotic integrity

6.0 Conclusions

Based on the analyses and supporting documentation referenced herein, resource conditions on the Spenazuma are as follows:

Site 1 Key Area S-1 Granitic Upland Ecological Site:

- Standard 1. Upland sites progressing towards meeting standard

Objective: Upland soils exhibit infiltration, permeability, and erosion rates that are appropriate to soil type, climate and landform.

Rationale:

On November 25, 2008 a Rangeland Health Evaluation was completed on the allotment. The evaluation's preponderance of evidence indicated that there was a "Slight to Moderate" rating for departure from the Ecological Site Description and Ecological Reference Areas. The ecological site guide identifies the site as being well covered by small gravels and well drained; there is some evidence of erosion; but the Soil/Site Stability was within normal parameters. Hydrologic Function was operating at expected levels. There was a shift in the functional/structural groups due to an increase of shrub, sub-shrubs and a decrease of perennial grasses. Biotic integrity was intact; however, the site was ranked moderate on Biotic Integrity because of invasive species including whitethorn acacia (*Acacia constricta*), mesquite (*Prosopis velutina*), and prickly pear (*Opuntia spp.*). This area is close to water and historically gets moderate grazing use. Jojoba (*Simmondsia chinensis*) and false mesquite (*Calliandra eriophylla*) have been browsed in this area. The blunted stem ends and rounder form of the shrubs indicates continuous cumulative use on the shrubs over time. There is no indication or measurement that this use exceeded 50 percent use of current year's growth in any specific year. This appeared to be a localized issue as shrubs in the majority of the allotment did not show similar use characteristics. The shrubs appeared healthy and were still productive. Recent drought years and the existence of nearby water have likely concentrated use by both livestock and wildlife on shrubs at this site. The proportion of use between livestock and wildlife is not determinable. Implementation of the proposed grazing system will reduce livestock use and provide rest periods. Within a few years the shrubs will show less cumulative use.

- Standard 3 is progressing towards being achieved for the Granitic Upland Ecological Site.

Objective: Maintain or improve productive and diverse upland and riparian-wetland plant communities of native species.

DPC Site Objectives:

- Shrub Species Composition at 40-65%
- Perennial Grasses Species to 30-45% Composition

Discussion:

By assimilating all available information the Bureau can describe desired future condition objectives that are realistic. The desired resource conditions are site-specific and defined as the desired plant community (DPC) objectives. The Desired Plant Community objectives are specific to each ecological site. Current resource data was analyzed along with information from the National Resource Conservation Service (NRCS) Ecological Site Descriptions and reference sheets to estimate the potential or capability of the site to produce different kinds and amounts of vegetation. The key area DPC objectives are also based on the site potential for change as indicated by the ecological site guides. By attaining the objectives, it will assure rangeland health and attainment of Land Use Plan multiple use objectives.

The DPC objectives identify the vegetation attributes, such as composition, structure, and cover that are desired for multiple use values within the allotment. These include establishing vegetative characteristics necessary for soil protection, providing forage and habitat for livestock, wildlife, and threatened and endangered species, as well as special vegetative characteristics important to recreation, cultural, visual, wilderness, and other resources present on the allotment.

Data from the Granitic Upland (S-1) key area shows that the site is not meeting the objective for perennial grass composition range. The key area also is also not meeting the site objective for shrub composition it is above the desired range. Long term trend monitoring data shows this site to be static with little change in frequency of perennial species.

When all information is analyzed to determine which plant community is being represented at this site within the state and transition models the ecological dynamics place it in the “Shrub Increase” state

Shrub Increase

In the absence of fires for long periods of time shrubs like mesquite, mimosa, ocotillo and succulents like prickly pear and amole (*Chlorogalum spp.*) can increase to dominate the plant community. Mature shrubs are fire tolerant and sprout back vigorously after being top killed. As canopy levels approach 25% the site can no longer support much in the herbaceous layer; further limiting the effect and incidence of fire on the plant community. Climatic warming may also be driving the increase in wait-a-bit and velvetpod mimosas.

the Shrub Increased State, described in the State and transition models presented in the ecological site guides states, it is unknown what can be done to achieve HCPC on this site once it reaches the shrub increased state, which is caused by multiple factors. It does note, that proper grazing/no grazing with herbicide shrub control, with maintenance treatments control (fire, herbicide) and possible reseeding of native grasses could give the site a push to achieve HCPC. Grazing management will be altered to assist in meeting the DPC objectives that have been set. This area will be managed for a larger shrub component than described for HCPC.

Key Area S-2 Granitic Hills Ecological Site:

- Standard 1. Upland sites meeting standard

Objective: Upland soils exhibit infiltration, permeability, and erosion rates that are appropriate to soil type, climate and landform.

Rationale:

On November 25, 2008, a Rangeland Health Evaluation was completed on the allotment. The evaluation's preponderance of evidence indicated that there was a "None to Slight" rating for departure from the NRCS Ecological Reference Area. The site is a sandy loam to loamy textured soil with well-developed covers of gravels and cobbles and is not susceptible to erosion; therefore Soil/Site Stability was within normal parameters. Hydrologic Function was functioning at expected levels, due to prolonged drought conditions, herbaceous and persistent litter amounts were low. Slight pedestals were present due to slope of the site. Biotic integrity was intact, however, it was rated between "slight to moderate" and "none to slight" due to invasive plants, a shift in the functional/structural groups, and higher than expected plant mortality. The increase of whitethorn, prickly pear, juniper, and mesquite has led to the deviation from climax conditions. Junipers are not of one age class, tree size ranges from adults to young trees not over 4 feet in size.

- Standard 3 is progressing towards being achieved for the Granitic Upland Ecological Site.

Objective: Maintain or improve productive and diverse upland and riparian-wetland plant communities of native species.

Site Objectives:

- Perennial Grass Species Composition at 50-70%
- Native Shrub/Trees Species Composition at 20-40%

Discussion:

Data from the Granitic Hills site (S-2) key area shows that the site is in the DPC range for composition on perennial grass and shrub/tree species. Utilization levels in 2013 on key species close to the area of S-2 were light, on Side Oats Grama (31.6%) and *Aristida* spp. (28%), and Hairy grama (14 %). Utilization data collect on a similar ecological site in the F-Z pasture shows light use on Side oats (27.5%) and light use on Black grama (10%), *Aristida* spp. (10%), Hairy grama (10%) and Lehmann's lovegrass (13%) .Use levels are light at the key area this indicates that current livestock management is not the causal factor on the site that are not achieving the objectives. However, this based on one year of utilization data that was not collected at the most optimal time of year. Additional data needs to be collected in following years to determine use patterns across the allotment and over a longer time period.

Desired plant community objectives where set to be consistent with the Historic Climax Plant Community. The HCPC was determined to be the plant community that best meets multiple use, and upland health objectives.

7.0 Recommendations

A cooperative resource management plan (CRMP) has been developed and the Environmental Quality Incentive Program (EQIP) contract is in the final stages of implementation. The contract partners include the United States Department of Agriculture, Natural Resource Conservation Service (USDA NRCS), the permittee, and the Bureau of Land Management on this allotment. This plan entails a prescribed grazing program, the addition of several waters on public land, and pasture fence repair. Historically, as can be seen from monitoring data, the lower portions of the FZ Pasture and the 1X9 Pasture have been heavily grazed in permanent water locations, which have resulted in a shift in vegetation towards a more shrubby aspect. While still meeting or progressing towards meeting land health standards, the area on the northern end of the ranch could be improved. The addition of waters in the upper end of the FZ pasture will provide better livestock distribution, utilization levels and would allow the lower portions of this allotment to achieve standards. The addition of these waters will also allow the permittee to have a successful rotational grazing system. A monitoring site was established in the early summer of 2009 to establish baseline data to analyze the effects of these waters on vegetation. In addition, to improving livestock management, these waters would be available to wildlife year round. Large herds of Mule deer frequent this allotment in the dry months of April, May and June. These herds move off of the reservation when water sources dry up. Up to 30 head of deer in a herd have been noted on the allotment during these dry summer months. Mule deer, whitetail deer, javelina, and other wildlife species rely on the water that had to be hauled to troughs before the implementation of the CRMP.

Along with the addition of permanent waters in the FZ pasture and Upper pasture (EA-AZ-410-2007-0067) the CRMP will address grazing management and the repair of pasture fences to ensure that a rotational grazing plan can be implemented. Through management changes and additional range improvements to facilitate better distribution this will aide in achieving set desired plant communities objectives and to meet standards.

Utilization studies in the 80's and 90's mapped grazing use higher than 40 percent in the lower portions of this allotment where cattle are able to access the private property water sources. Current year round grazing on the northern or lower portion of this allotment has not allowed the area to recover. The implementation of rotational pasture management system and additional year-round waters will ensure that historic overuse areas begin to show an upward trend. This will allow better distribution over the whole allotment and rest for areas that receive the heaviest use.

8.0 Consultation

Permittee(s), interested public, state agencies, and other federal agencies were initiated by a letter on February 25, 2009 with a public meeting invitation on March 25, 2009. On August 3, 2009 the Standards and Guidelines evaluations were sent to the interested parties and comments were received from Western Watersheds Projects. Evaluations were sent out again for comments on June 12, 2012. Comments were received from Western Watersheds Project.

Section 7 Consultation occurred on the Gila District Livestock Grazing Program Biological Opinion (BO) for the Safford/Tucson Field Offices' Livestock Grazing Program, Southeastern Arizona (22410-2006-F-0414).

9.0 Selected Management Action

The recommended adjustments to permitted livestock use and management practices will allow for continued achievement and significant progress towards achievement of Land Health Standards. This includes adjustments to management practices.

The following recommendations consider the principal purpose of protecting land health objectives on the Spenazuma Allotment.

Allotment	Livestock number	Kind	Grazing Period		Type %PL	Use	AUMS
			Begin	End			
46310	70	Cattle	03/01	2/28	90	Active	756

Authorized Officer Concurrence:

- I concur with the conclusions and recommendations as written.
- I do not concur.
- I concur, but with the following modifications.

Scott C. Cooke
Field Manager

Date

10.0 References

- Carpenter, N. L. Dodd. 2006. Habitat guidelines for mule deer, southwest deserts ecoregion. Mule Deer Working Group. Western Association of Fish and Wildlife Agencies.
- Day, G. I. 1985. Javelina. Arizona Game and Fish Department, Phoenix, AZ.
- Heffelfinger, J.R, C. Brewer, C. H. Alcala-Galvan, B. Hale, D. L. Weybright, B. Wakeling, L.H.
- Holechek, J. L., and D. Gault. 2000. Grazing intensity guidelines. *Rangelands* 22:11-14.
- U.S Department of Agriculture Soil Conservation Service and U.S Department of the Interior Bureau of Land Management. 1981. *Soil Survey of Gila-Duncan Area, Arizona, Parts of Graham and Greenlee Counties*. Soil Conservation Service.
- NRCS. (n.d.). Retrieved April 12, 2013, from Ecological Site Description (ESD) System: <http://esis.sc.egov.usda.gov/>
- U.S. Department of the Interior, Bureau of Land Management (BLM). 1978. *Upper Gila- San Simon Grazing ES*. Bureau of Land Management, Safford Field Office.
- U.S. Department of the Interior, Bureau of Land Management (BLM). 1991. *Safford Resource Management Plan*. Bureau of Land Management, Safford Field Office.
- U.S. Department of the Interior, Bureau of Land Management (BLM). 1996. *Sampling Vegetation Attributes, Technical Reference 1734-4*. Written by: Coulloudon, B., K. Eselman, J. Gianola, N. Habich, L. Hughes, C. Johnson, M. Pellant, P. Podborny, A. Rasmussen, B. Robles, P. Shaver, J. Spehar, and J. Willoughby. Denver, CO. BLM/RS/ST-96/002+1730.
- U.S. Department of the Interior, Bureau of Land Management (BLM). 2001. *Ecological Site Inventory, Technical Reference 1734-7*. Written by: Habich, E.F. Denver, CO. BLM/ST/ST-01/003+1734.
- U.S. Department of the Interior, Bureau of Land Management (BLM). 2005. *Interpreting Indicators of Rangeland Health, Version 4, Technical Reference 1734-6*. Written by: Pellant, M., P. Shaver, D. A. Pyke, and J. E. Herrick. Denver, CO. BLM/ST/ST- 01/003+1734.
- Valdez, R., and P.R. Krausman. 1999. Mountain Sheep of North America. The University of Arizona Press. Tucson.

APPENDIX A

S-1

% Frequency			
Quadrat Size: 40x40 cm			
Species	Transect		
	07/06/05	01/09/09	03/16/12
Acacia constricta			2
Acacia constricta-canopy			20
Acacia greggii-canopy	1	25	2
Acacia greggii		5	1
Annual forb(s)	81	65	97
Annual grass(es)	84	20	20
Aristida	1	14	5
Bouteloua curtipendula		1	
Bouteloua eriopoda		1	1
Calliandra eriophylla	7	4	7
Calliandra eriophylla-canopy		1	1
Cercidium floridum-canopy	4	4	6
Cercidium floridum		2	1
Dichelostemma capitatum			3
Ephedra-canopy		3	1
Eriogonum wrightii-canopy		2	
Euphorbia		1	
Gutierrezia sarothrae-canopy	1	2	
Gutierrezia sarothrae		4	1
Hilaria belangeri	1	1	2
Lycium pallidum-canopy	1	2	2
Mimosa biuncifera	5		
Mimosa biuncifera-canopy	27	3	
Muhlenbergia porteri	3	8	5
Opuntia	2	3	2
Opuntia-canopy	8	4	6

% Ground Cover			
Quadrat Size:			
Species	Transect		
	07/06/05	01/09/09	03/16/12
Bare Ground	21	11	11
Gravel (1/4" - 3")	31	47	33
Litter	33	26	44
Live Basal Veg.	1	5	1
Rock > 3"	14	13	12

Opuntia fulgida-canopy			1
Prosopis	1	1	
Prosopis-canopy	12	14	12
Senna	1	9	2
Setaria macrostachya			1
Simmondsia chinensis	3	3	2
Simmondsia chinensis-canopy	6	7	7
Sphaeralcea		1	2
Tridens pulchellus	1	2	1

% Frequency		Quadrat Size: 40x40 cm		
Species	Transect			
	07/28/05	12/12/08	03/16/12	
Acacia constricta-canopy		2		
Acacia greggii	1	1	1	
Acacia greggii-canopy	1	2	2	
Agave		1		
Agave-canopy	2	2	1	
Annual forb(s)	88	16	93	
Annual grass(es)	40	25	79	
Aristida	13	32	7	
Bothriochloa barbinodis		2	2	
Bouteloua curtipendula	33	61	32	
Bouteloua eriopoda			2	
Bouteloua hirsuta		9	3	
Bouteloua radicata		3		
Calliandra eriophylla	18	10	4	
Calliandra eriophylla-canopy	5	7	1	
Dasyliion wheeleri-canopy	1			
Dichelostemma capitatum			14	
Echinocereus	1			
Eragrostis intermedia		4		
Eriogonum wrightii	1	2	1	
Eriogonum wrightii-canopy		2		
Evolvulus	1	23		
Ferocactus		1	1	
Gutierrezia sarothrae	1	2	2	
Gutierrezia sarothrae-canopy	5	4	1	
Hilaria belangeri	42	30	24	

% Ground Cover		Quadrat Size:		
Species	Transect			
	07/28/05	12/12/08	03/16/12	
Bare Ground	15	4	7	
Gravel (1/4" - 3")	21	17	15	
Litter	42	41	40	
Live Basal Veg.	3	13	6	
Rock > 3"	20	25	34	

Hoffmannseggia glauca	1		
Juniperus monosperma		1	2
Juniperus monosperma-canopy	12	15	22
Krameria-canopy		1	
Krameria	1		1
Leptochloa dubia		10	1
Mimosa biuncifera		1	
Mimosa biuncifera-canopy		1	
Muhlenbergia porteri		1	
Opuntia		3	2
Opuntia-canopy	3	1	3
Opuntia fulgida		1	
Opuntia fulgida-canopy	1		
Prosopis-canopy	10	5	5
Prosopis	1		
Setaria macrostachya		5	1
Simmondsia chinensis	1	1	
Simmondsia chinensis-canopy	2	2	1
Unknown 1		1	

% Frequency			
Quadrat Size: 40x40 cm			
Species	Transect		
	07/20/05	12/12/08	03/16/12
Acacia greggii-canopy	7	2	
Agave	3		4
Agave-canopy	5		
Annual forb(s)	90	4	19
Annual grass(es)	78	6	
Aristida	21	32	10
Bothriochloa barbinodis		5	
Bouteloua curtipendula	45	64	18
Bouteloua hirsuta	10	24	5
Bromus rubens			6
Calliandra eriophylla	32	3	8
Calliandra eriophylla-canopy	8	25	1
Dasyliiron wheeleri		1	
Dasyliiron wheeleri-canopy	1	5	
Dichelostemma capitatum			6
Echinocereus	7	2	
Eragrostis intermedia	2	5	2
Eriogonum wrightii	5	8	2
Eriogonum wrightii-canopy	5	6	
Evolvulus	14	3	
Ferocactus	1	1	
Gutierrezia sarothrae	25	16	6
Gutierrezia sarothrae-canopy	27	25	3
Heteropogon contortus		3	
Hilaria belangeri	4	2	1
Hoffmannseggia glauca			1

Leptochloa dubia		22	1
Lycium pallidum-canopy	1		
Lycurus phleoides	3		
Mimosa biuncifera		1	1
Mimosa biuncifera-canopy			1
Muhlenbergia emersleyi		3	
Opuntia	1		
Prosopis			1
Prosopis-canopy	8	3	1
Quercus turbinella		1	1
Quercus turbinella-canopy		4	
Simmondsia chinensis-canopy	1		

% Ground Cover			
Quadrat Size:			
Species	Transect		
	07/20/05	12/12/08	03/16/12
Bare Ground	14	4	3
Gravel (1/4" - 3")	11	12	1
Litter	40	44	14
Live Basal Veg.	7	12	5
Rock > 3"	30	29	5