

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

**Environmental Assessment
DOI-BLM-AZ-A010-2013-0010-EA**

**PROPOSED GRAZING PERMIT RENEWALS FOR
ROCK POCKETS ALLOTMENT**

MOHAVE COUNTY, ARIZONA

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Chapter 1

INTRODUCTION

1.1 BACKGROUND

In 2001, 2006 and 2013, the BLM conducted evaluations of rangeland conditions on the Rock Pockets Allotment (see map in Appendix 1) – a detailed discussion on rangeland health in this allotment can be found on pages 14-15 of this environmental assessment (EA). The Interdisciplinary Assessment Team, during the land health evaluation process, recommended that resource conditions on the Rock Pockets Allotment are meeting all applicable Standards for Rangeland Health. The BLM is now considering the renewal of an existing grazing permit on the allotment. Livestock grazing on public lands is managed according to grazing regulations found in the Code of Federal Regulations (CFR) at 43 CFR Part 4100. The BLM is responsible for determining the appropriate levels and management strategies for livestock grazing in this allotment.

This EA has been prepared to disclose and analyze the environmental consequences of the proposed grazing permit renewal, as well as alternative livestock management, for the Rock Pockets Allotment. This analysis provides information as required by the BLM implementing regulations for the National Environmental Policy Act (NEPA), the Taylor Grazing Act, and the Federal Land Policy Management Act (FLPMA) to determine whether to authorize grazing within this allotment, and whether changes to current management are necessary. This EA also serves as a tool to help the authorized officer make an informed decision that is in conformance with the Arizona Strip Field Office Resource Management Plan (RMP) (BLM 2008a). The action culminates an evaluation conducted on the allotment under the Arizona BLM Standards for Rangeland Health and Guidelines for Grazing Management. 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 land health evaluation as it relates to vegetation conditions and resource values in the allotment. This is done in an effort to balance demands placed on the resources by various authorized uses within the allotment.

The EA is a site-specific analysis of potential impacts that could result with the implementation of a proposed action or alternatives to the proposed action. The EA assists the BLM in project planning and ensuring compliance with the NEPA, and in making a determination as to whether any “significant” impacts could result from the analyzed actions. “Significance” is defined by NEPA and is found in regulations 40 CFR 1508.27. An EA provides evidence for determining whether to prepare an environmental impact statement (EIS) or a statement of “Finding of No Significant Impact” (FONSI). If the decision maker determines that this project has “significant” impacts following the analysis in the EA, then an EIS would be prepared for the project. If not, a decision record (DR) may be signed for the EA approving the selected alternative. A DR,

including a FONSI statement, documents the reasons why implementation of the selected alternative would not result in “significant” environmental impacts (effects) beyond those already addressed in the Arizona Strip Field Office RMP/Final EIS (BLM 2007a).

1.2 PURPOSE AND NEED

The BLM is proposing to fully process the three term grazing permits on the Rock Pockets Allotment in accordance with all applicable laws, regulations, and policies. Two of the grazing permits expired on February 28, 2014; the BLM renewed the permits with the same terms and conditions pursuant to Section 411 of Public Law 113-76, pending compliance with applicable laws and regulations. The third grazing permit expired on February 28, 2012, and the BLM also renewed that permit with the same terms and conditions pursuant to Section 415 of Public Law 112-74, 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 NEPA review; consultation with the United States Fish and Wildlife Service (USFWS) under Section 7 of the Endangered Species Act; and ensuring that the allotment is achieving or making significant progress toward achievement of land health standards and RMP objectives. The BLM now intends to consider whether to renew, renew with modifications, or not renew these grazing permits, in accordance with those applicable laws and regulations.

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 (Appendix 2) and the Arizona Strip Field Office RMP (BLM 2008a).

BLM Arizona adopted the Arizona Standards for Rangeland Health and Guidelines for Livestock Grazing Management in 1997 (Appendix 2); these Standards for Rangeland Health were incorporated into the Arizona Strip Field Office RMP. 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. The 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 Arizona Strip Field Office. The RMP identified public lands within the Rock Pockets 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 and FLPMA.

The land health assessment completed for the Rock Pockets Allotment identified Standards 1 and 3¹ as being achieved on the allotment, including achievement of desired plant community (DPC) objectives and desired resource conditions.

The Arizona Strip 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 EIS would be required. If the authorized officer determines that it is not necessary to prepare an EIS, the EA will be deemed sufficient and 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 Rock Pockets Allotment to ensure management objectives and Arizona Standards for Rangeland Health are achieved.

1.3 CONFORMANCE WITH LAND USE PLAN

The alternatives described in Chapter 2 of this EA are in conformance with the Arizona Strip Field Office RMP, approved January 29, 2008 (BLM 2008a). The alternatives are consistent with the following decisions contained within this plan.

The following decisions are from Table 2.11 in the RMP regarding management of livestock grazing:

- **DFC-GM-01:** Healthy, sustainable rangeland ecosystems will be maintained or improved to meet Arizona's Standards for Rangeland Health (1997), and produce a wide range of public values such as wildlife habitat, livestock forage, recreation opportunities, clean water, and functional watersheds.
- **DFC-GM-02:** Livestock use and associated management practices will be conducted in a manner consistent with other resource needs and objectives to ensure that the health of rangeland resources is preserved or improved so that they are productive for all rangeland values. Where needed, public rangeland ecosystems will be improved to meet objectives.
- **LA-GM-01:** All allotments will continue to be classified as available for grazing by livestock under the principle of multiple use and sustained yield, except where specifically noted.²
- **MA-GM-02:** Implementing the Arizona Standards for Rangeland Health will continue on all grazing allotments in accordance with established schedules and congressional requirements. The Arizona Standards for Rangeland Health and Guidelines for Grazing Management will apply to all livestock grazing activities. These guidelines address

¹ As described in Section 2.1.1 of this EA, Standard 2 does not apply in the Rock Pockets Allotment.

² No restrictions are associated with the Rock Pockets Allotment.

management practices at the grazing AMP-level and are intended to maintain desirable conditions or improve undesirable rangeland conditions within reasonable time frames.

- **MA-GM-03:** The interdisciplinary allotment evaluation process will continue to be used to provide specific guidance and actions for managing livestock grazing. Existing AMPs and other activity plans will be consistent with achieving the DFCs and standards for rangeland health. They will contain the site-specific management objectives, as well as actions, methods, tools, and appropriate monitoring protocols.
- **MA-GM-04:** Existing management practices and levels of use on grazing allotments will be reviewed and evaluated on a priority basis to determine if they meet or are making progress toward meeting the Arizona Standards for Rangeland Health. Appropriate and timely actions will be implemented to deal with those areas not meeting the standards.
- **MA-GM-05:** The allotment management categorization process will continue to be used to define the level of management needed to properly administer livestock grazing according to management needs, resource conflicts, potential for improvement, and BLM funding/staffing constraints. The allotment categories are Custodial, managed custodially to protect resource conditions and values; Maintain, managed to maintain current satisfactory resource conditions and are actively managed to ensure that the condition of resource values do not decline; and Improve, actively managed to improve unsatisfactory resource conditions.
- **MA-GM-07:** Allowable use on key forage species is 50% on allotments with rotational grazing systems, except in tortoise habitat. On allotments in desert tortoise habitat or being less intensively managed, then utilization is set at 45%³.
- **MA-GM-08:** Any hay or other feed used in administering the livestock operation will be certified weed-free.

The allotment analyzed in this EA is classified as available for grazing under the RMP, with no seasonal restrictions. The alternatives would meet these land use plan decisions. It has also been determined that the proposed action would not conflict with other decisions throughout the RMP.

1.4 RELATIONSHIPS TO STATUTES, REGULATIONS, OR OTHER PLANS

The authority to renew grazing permits is 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

³ The Rock Pockets Allotment is managed under a rotational grazing system, so maximum utilization is set at 50%.

livestock industry and communities that are dependent upon productive, healthy public rangelands” (43 CFR 4100.0-2)

The proposed action complies 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 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)). This requirement has been incorporated into the alternatives.

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 allotment. No take of any such species is anticipated.

The subject allotment is in Mohave County, Arizona. The alternatives are consistent with the *Mohave County General Plan* (adopted in 1994 and revised December 5, 2005). While livestock grazing is not specifically addressed in the Mohave County General Plan, this action does not conflict with decisions contained within the Plan.

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

- Taylor Grazing Act of 1934
- Federal Land Policy and Management Act (FLPMA) of 1976 (43 U.S. Code 1701 et seq.)
- Public Rangelands Improvement Act (PRIA) of 1978
- Endangered Species Act 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. Code 3001-3013; 104 Stat. 3048-3058)
- National Environmental Policy Act (NEPA) of 1969.

1.5 IDENTIFICATION OF ISSUES

Identification of issues for this assessment was accomplished by considering the resources that could be affected by implementation of one of the alternatives. These issues were identified by the Rangeland Resources Team, Interdisciplinary Assessment Team, and livestock permittees during the scoping meeting held on February 14, 2001 and field visit held on February 28, 2001 for the Rock Pockets Allotment (see Standards for Rangeland Health and Guidelines for Grazing Administration Implementation Project: Allotment Assessment for Rock Pockets)⁴ (BLM 2007b), as well as through the public review process for this grazing permit renewal EA. The issues identified through the process described above are:

- Livestock grazing – permit renewal is required in order to allow continued livestock use on this allotment.
- Vegetation – the potential exists for deterioration in ecological condition in the allotment if proper livestock grazing practices are not followed.
- Wildlife (including big game, sensitive species and migratory birds) – habitat for these species, as well as for their prey, may be impacted if proper livestock grazing practices are not followed.
- Soils – the potential exists for impacts to soil quality or health in the allotment if proper livestock grazing practices are not followed.

⁴ The Rock Pockets Allotment evaluation is available at the Bureau of Land Management's Arizona Strip Field Office, 345 E. Riverside Drive, St. George, Utah 84790.

Chapter 2

DESCRIPTION OF THE ALTERNATIVES

This EA focuses on the proposed action, reduced grazing, increased grazing, and no grazing alternatives. The BLM interdisciplinary team explored and evaluated several different alternatives to determine whether the underlying need for the proposed action, ensuring that the allotment is achieving land health standards, would be met.

2.1 MANAGEMENT COMMON TO ALL ALTERNATIVES

2.1.1 Arizona Standards for Rangeland Health

The allotment would be managed to achieve the following objectives, as described in the Arizona Standards for Rangeland Health (Appendix 2):

- 1) Upland soils exhibit infiltration, permeability, and erosion rates that are appropriate to soil type, climate, and landform (ecological site).
- 2) Riparian and wetland areas are in properly functioning condition.⁵
- 3) Productive and diverse upland and riparian-wetland plant communities of native species exist and are maintained.

2.1.2 Desired Plant Community

The allotment would be managed to achieve the DPC objectives included in the Standards for Rangeland Health and Guidelines for Grazing Administration Implementation Project: Allotment Assessment for Rock Pockets – Land Health Evaluation Update (see Appendix 4). The allotment evaluation update lists and evaluates achievement of the allotment’s DPC objectives. These objectives, expressed in species composition by weight (CBW), provide for the habitat needs (both forage and cover) of wildlife, protection for soils and hydrologic functions, and forage for livestock.

Many factors influence changes or differences in frequency of vegetation as shown in the ecological site guides developed by the Natural Resources Conservation Service (NRCS). It is important to note that the site guides are just that – they are “guides. Long-term monitoring of a site indicates what a particular area is capable of producing. The DPC objectives therefore reflect the potential of each site. The DPC objectives for Rock Pockets Allotment are:

⁵ This standard does not apply in the Rock Pockets Allotment. As described in Table 9 (page 22) of this EA, there are no wetland/riparian areas in the allotment.

Key Area #1, Yellowstone Pasture (Sandy Loam Upland 7-11” p.z.)

- Maintain the perennial grass CBW between 35-45%.
- Maintain the shrub/browse CBW between 10-30%.
- Maintain the forb CBW between 1-10%.

Key Area #2, Horse Knoll Pasture (Clay Loam Upland 7-11” p.z.)

- Maintain the perennial grass CBW between 5-25%.
- Maintain the shrub/browse CBW between 20-45%.
- Maintain the forb CBW between 1-5%.

Key Area #3, Rock Pockets Pasture (Gyp. Upland 7-11” p.z.)

- Maintain the perennial grass CBW between 20-10%.
- Maintain the shrub/browse CBW between 15-35%.
- Maintain the forb CBW between 1-10%.

2.2 ALTERNATIVE A – PROPOSED ACTION

The livestock grazing management practices proposed under this alternative (i.e., season of use; utilization levels; and ecological condition and desired plant community objectives) were designed to manage the overall rangeland resources present, provide for a diversity of wildlife and plant species, maintain functioning ecosystems, and maintain and/or improve ecological condition. Specifically, under this alternative the BLM would:

- Cancel the existing grazing permits and issue new grazing permits for the Rock Pockets Allotment for a period of ten years. There is no proposed change in number of livestock or season of use for the allotment. Livestock grazing would occur during the season of use, and with the number of Animal Unit Months (AUMs)⁶ limited to the current active preference (Table 1).

Table 1. Grazing Proposed Under Alternative A

Allotment Name	Livestock			Active AUMs	Suspended AUMs	Public Land (acres)	% Federal Range
	No.	Kind	Season of Use				
Rock Pockets ⁷	24	Cattle	12/1- 5/31	1,760	4	19,870	84%
	68	Cattle	10/1 – 9/30				
	2	Horses					
	92	Cattle	10/1 - 9/30				
2	Horses						

⁶ An AUM, or Animal Unit Month, is a unit of measurement indicating how much forage is eaten by a cow/calf pair in one month.

⁷ There are three permit holders on the Rock Pockets Allotment – each is allowed a different number of cattle during their allocated grazing period, but the livestock are grazed together as one herd.

- Allowable use on key forage species on the allotment (which implements a rotational grazing system) would be no more than 50% utilization of current year's production, removed through grazing or other loss. (Key species for Rock Pockets Allotment are listed in Section 3.3.2 of this EA.) The BLM would assess resource conditions through field inspections and determine, in consultation with the permittees, whether management changes (e.g., changes in livestock numbers, adjustment of move date, or other changes or use within the parameters identified under this alternative) may be implemented prior to reaching maximum utilization. Move dates (i.e., removal of livestock from a pasture) may be adjusted if monitoring indicates maximum utilization has been reached, or due to unusual climatic conditions, fire, flood, or other acts of nature. If maximum utilization is reached on key species/areas in the allotment before a scheduled move date, the use of salt, herding, or other management options may be used to distribute livestock away from an area where maximum utilization has been reached, or livestock may be removed from the pasture (after consultation with the permittees), as deemed necessary by the BLM.
- Manage the allotment to achieve the DPC objectives listed in Section 2.1.2 of this EA.

2.2.1 Grazing System

The Rock Pockets Allotment is used by three permit holders, two of whom are permitted for year round use (October 1 through September 30) and the third permitted for use from December 1 to May 31. One of the permit holders is permitted for a cow/calf operation, while the other two permit holders are permitted for cow/calf/horse operations. The grazing system designed for the Rock Pockets Allotment is a three pasture deferred rotational system (see Chapter 3 for a detailed description of the grazing system for this allotment). Active grazing use is 1,760 AUMs, with 4 suspended non-use AUMs (total AUMs is 1,764).

2.2.2 Terms and Conditions of Grazing Permit

- All permittees must submit the actual use report within 15 days after their billing year ends. Livestock may be moved 15 days before or after scheduled move dates.
- Use of nutritional livestock supplements is allowed, including protein, minerals and salt. However, any supplements used must be dispersed at a minimum of ¼ mile from any known water sources, and cultural or any other sensitive sites. Any hay or other feed used in administering the livestock operation must be certified weed-free.
- If any human remains, funerary objects, sacred objects or objects of cultural patrimony as defined in the Native American Graves Protection and Repatriation Act (Public Law 101-601; 104 Stat. 3048; 25 U.S. Code 3001) are discovered in connection with allotment operations under the grazing permit, the permittee would be required to protect the immediate area of the discovery and immediately notify the BLM authorized officer or her authorized representative.

2.2.3 Range Improvements

The land health evaluation for this allotment did not indicate the need for new range improvements. Thus, none are proposed under this alternative. Existing range improvements would be maintained as currently required. Any new range improvements proposed in the future to assist in grazing practices and promote rangeland health would be considered through a separate NEPA process.

2.2.4 Monitoring and Adaptive Management

The proposed action includes adaptive management, which provides a menu of management options that may be needed to adjust management decisions and actions to meet desired conditions as determined through monitoring. BLM resource specialists would periodically monitor the allotment over the 10-year term of the grazing permit to ensure that the fundamentals or conditions of rangeland health are being met, in accordance with 43 CFR 4180. If monitoring indicates that desired conditions are not being achieved, and current livestock grazing practices are causing non-attainment of resource objectives, livestock grazing management of the allotment would be modified in cooperation with the permittee(s). Adaptive management allows the BLM to adjust the timing, intensity, frequency and duration of grazing; the grazing management system; and livestock numbers temporarily or on a more long-term basis, as deemed necessary. An example of a situation that could call for adaptive management adjustments is drought conditions. If a permittee disagrees with the BLM’s assessment of the resource conditions or the necessary modifications, the BLM may nevertheless issue a Full Force and Effect Grazing Decision to protect resources.

2.3 ALTERNATIVE B – ISSUE NEW 10-YEAR GRAZING PERMITS with REDUCED GRAZING (Actual Use)

The livestock grazing management practices proposed under this alternative would be similar to those proposed for Alternative A. New grazing permits would be issued for the Rock Pockets Allotment for a period of ten years. However, Alternative B would reissue the ten-year term grazing permits based on the average actual use level of the allotment over recent years (2004 and 2006-2014), which is calculated at 1,388 AUMs. The difference between actual use average AUMs and the current active preference (which amounts to 372 AUMs) would be converted to suspended AUMs; when added to the current 4 suspended AUMs, this would result in a total of 376 suspended AUMs, or a 21% decrease in active preference (see Table 2).

Table 2. Grazing Proposed Under Alternative B

Allotment	Livestock			Active AUMs	Suspended AUMs	Public Land (acres)	% Federal Range
	No.	Kind	Season of Use				
Rock Pockets	17	Cattle	12/1-5/31	1,388	372	19,870	84%
	44	Cattle	10/1-9/30				
	2	Horses					
	59	Cattle	10/1-9/30				
2	Horses						

Proposed utilization levels, ecological condition and DPC objectives would be the same as those described for Alternative A in order to manage the overall rangeland resources present, provide for a diversity of wildlife and plant species, maintain functioning ecosystems, and maintain and/or improve ecological condition. Terms and conditions of the grazing permit would be the same as those for Alternative A. In addition, monitoring and adaptive management described for Alternative A would also be a part of this alternative (Alternative B).

Consistent with Alternative A, any existing range improvements would be maintained as currently required. No new range improvements are proposed under this alternative; any new range improvements proposed in the future to assist in grazing practices and promote rangeland health would be considered through a separate NEPA process.

2.4 ALTERNATIVE C – ISSUE NEW 10-YEAR GRAZING PERMITS with INCREASED GRAZING (Potential Stocking Level Analysis)

Livestock grazing management practices proposed under this alternative would also be similar to those proposed for Alternative A. New ten-year term grazing permits would be issued for the Rock Pockets Allotment. The livestock grazing use that would occur in this alternative would be the result of a potential stocking level analysis average; this potential stocking level is calculated using utilization at all three key areas on the allotment and actual use data collected on the allotment in 2004 and from 2006 to 2014. The potential stocking level analysis formula is taken from BLM Technical Reference 4400-7 (BLM 1985).

$$\text{Potential Stocking Level Formula: } \frac{\text{Actual Use}}{\text{Avg. Utilization}} = \frac{\text{Potential Actual Use}}{\text{Desired Avg. Utilization}}$$

As shown, this formula factors in actual use, the average utilization percentage, and the desired average utilization (which is 50% for Rock Pockets Allotment). From this data, a potential stocking level (permitted use) was calculated. As shown in Table 3, the potential carrying capacity calculated for Rock Pockets based on the above formula ranges from a low of 1,169 AUMs to a high of 2,963 AUMs. The average potential stocking level for the nine years shown is 2,083 AUMs.

Table 3. Potential Stocking Level Analysis – Rock Pockets Allotment

Grazing Year	Actual Use AUMs (% Permitted)	Utilization on all Key Species (Key Areas 1, 2, 3)	Potential Stocking Level
2004	755 (43%)	24%	1,321 AUMs
2006	1,086 (62%)	39%	1,169 AUMs
2007	1,393 (79%)	41%	1,427 AUMs
2008	1,444 (82%)	23%	2,637 AUMs

2009	1,482 (84%)	21%	2,963 AUMs
2010	1,513 (86%)	25%	2,542 AUMs
2011	1,399 (79%)	31%	1,895 AUMs
2012	1,573 (89%)	36%	1,834 AUMs
2013	1,585 (90%)	28%	2,377 AUMs
2014	1,651 (94%)	26%	2,667 AUMs
			Average: 2,083 AUMs

This analysis shows that the carrying capacity of the allotment is 2,083 AUMs. Under this alternative, the active preference of the allotment would be increased by 317 AUMs, from 1,760 to 2,077⁸, AUMs. Utilization levels, ecological condition, DPC objectives, and goals to manage resources to meet rangeland health standards would be unchanged, as described for Alternative A. Terms and conditions of the grazing permit would also be the same as those for Alternative A. In addition, monitoring and adaptive management described for Alternative A would also be a part of this alternative (Alternative C). Consistent with Alternative A, any existing range improvements would be maintained as currently required. No new range improvements are proposed under this alternative; any new range improvements proposed in the future to assist in grazing practices and promote rangeland health would be considered through a separate NEPA process.

Grazing use under this alternative would be as shown in Table 4.

Table 4. Grazing Proposed Under Alternative C

Allotment	Livestock			Active AUMs	Suspended AUMs	Public Land (acres)	% Federal Range
	No.	Kind	Season of Use				
Rock Pockets	27	Cattle	12/01-05/31	2,077	0	19,870	84%
	79	Cattle	10/01-09/30				
	2	Horses	10/01-09/30				
	110	Cattle	10/01-09/30				
	2	Horses					

⁸ The permitted preference would be rounded down to 2,077 AUMs (versus 2,083) in order to simplify the period of grazing use – to increase by 5 more AUMs would require one of the permitted livestock to only graze for a part of the total grazing period, which would be difficult to manage.

2.5 ALTERNATIVE D – NO GRAZING

Alternative D is to reissue a ten-year term grazing permits on the Rock Pockets Allotment with 0 authorized AUMs for active preference – all 1,764 AUMs would be suspended (i.e., livestock grazing would be deferred for the ten-year permit period). No new range improvement projects would be constructed and no modifications would be made to existing projects.

2.6 ALTERNATIVE(S) CONSIDERED BUT ELIMINATED FROM FURTHER ANALYSIS

2.6.1 No Action – Renewing Grazing Permit With Current Terms and Conditions

Under this alternative, new ten-year term grazing permits would be issued for the Rock Pockets Allotment with the same terms and conditions as the current permits (which were renewed under the provisions of Public Laws 112-74 and 113-76 pending full processing of new permit, as described on page 2 of this EA). No new range improvement projects would be constructed and no modifications would be made to existing projects. Livestock grazing on the allotment would continue the same as outlined under Alternative A (Proposed Action). Potential impacts to elements of the environment would therefore be the same as those described for Alternative A, so a separate analysis of the No Action alternative is not required (BLM 2008b).

Chapter 3

AFFECTED ENVIRONMENT

This chapter provides information to assist the reader in understanding the existing situation and current grazing management on the Rock Pockets Allotment. The affected environment is tiered to the Arizona Strip Proposed RMP/Final EIS (BLM 2007a). This EA also incorporates by reference the Standards for Rangeland Health and Guidelines for Grazing Administration Implementation Project: Allotment Assessment for Rock Pockets. This assessment describes the resources and issues applicable to the allotment.

The affected environment of this EA was considered and analyzed by an interdisciplinary team. Table 9 (found later in this chapter) addresses the elements and resources of concern considered in the development of this EA; this table indicates whether the element/resource is not present in the project area, present but not impacted to a degree that requires detailed analysis or present and potentially impacted. The resources identified below include the relevant physical and biological conditions that may be impacted with implementation of the proposed action and/or alternatives to the proposed action, and provides the baseline for comparison of impacts described in Chapter 4.

3.1 General Setting

The Arizona Strip is comprised of 2.8 million acres of BLM-administered land in the northwestern portion of Arizona. The Rock Pockets Allotment (see map in Appendix 1 of this EA) is located in Mohave County, Arizona on lands managed by the BLM's Arizona Strip Field Office. The Rock Pockets Allotment is located approximately ten miles south of the Utah/Arizona border. The Horse Knoll and Rock Pockets pastures lie together just above and east of the Hurricane Cliffs. The Antelope Trail traverses the west side of these pastures while the Navajo Trail crosses the south end of the allotment. The Yellowstone Pasture lies nine miles to the east in the Clayhole area. The entire allotment lies within the Cold Desert Grassland resource unit of the Colorado plateau Major Land Resource Area. The allotment lies outside of Grand Canyon-Parashant and Vermilion Cliffs national monuments.

3.1.1 Topography

The topography of the area is semiarid range with sloping, rolling, or flat terrain to steep canyon walls. The majority of the Yellowstone Pasture is flat to gently rolling desert grassland ranging in elevation from 4,925 to approximately 5,300 feet. The Rock Pockets portion of the allotment consists of low sagebrush covered hills in the south with more open flats consisting of desert shrubs and grasses to the north; elevation varies from a low of 4,650 feet to nearly 5,400 feet on the top of the Hurricane Cliffs.

3.1.2 Climate

Temperatures in the region average 30 degrees in winter and 80+ degrees in summer, with an average annual precipitation between 8 and 13 inches. The climate at the Rock Pockets Allotment has an average frost-free period of 160 days with temperatures ranging from a high of 100°F in summer to a low of 0°F in winter. Precipitation data on the allotment is taken from three rain gauges located in the vicinity of the allotment: the Antelope rain gauge (located approximately five miles north of the allotment); Temple Trail gauge (located approximately eight miles south of the allotment); and the Clayhole gauge (located just south of the Yellowstone pasture). A breakdown of average precipitation by season for each gauge is presented in Table 5.

Table 5. Precipitation Data for Rock Pockets Allotment

Rain Gauge	Fall Average		Winter Average		Spring Average		Summer Average		Annual Average
	Percent of total	Inches	Percent of total	Inches	Percent of total	Inches	Percent of total	Inches	Inches
Antelope	15	1.52	31	3.11	20	2.00	34	3.33	9.95
Temple Trail	15	1.48	26	2.63	18	1.84	41	4.13	10.08
Clayhole	16	1.44	26	2.32	19	1.74	39	3.50	8.99

Precipitation in Arizona typically occurs in a bimodal fashion, with a very dry May and June. Winter moisture is influenced by Pacific oceanic temperatures and airstreams; summer moisture is influenced by the North American monsoon. Summer moisture generally occurs from July through September. It should be recognized that summer rainstorms exhibit considerable variability in their location and intensity (Sprinkle et al. 2007).

Precipitation over the last 25 years has been at or above normal⁹ for 11 of those years at the Antelope and Clayhole gauges, and at or above normal for 15 of those years at the Temple Trail gauge; precipitation has been below normal for the other years. The highest precipitation received during that time period was in 2005 when annual precipitation was 170-178% of normal (depending on the rain gauge); the lowest was in 2002 when precipitation was 40-42% of normal (depending on the rain gauge). Annual precipitation over the past five years has generally been at or above normal at all three gauges, with the exception of Antelope (which was 85% in 2014) and Temple Trail (which was 87% of normal in 2010). However, it should be noted that departures from normal are not unusual – in fact, departures from normal are quite typical (Doswell 1997), and precipitation may very often be either well above or well below the seasonal average (National Drought Mitigation Center 2015).

⁹ “At or above normal” for this analysis is considered 95% of average annual precipitation or greater.

3.1.3 Land Health Evaluation

The BLM regularly conducts inventories and assessments of natural resource conditions on public lands. The need for natural resource inventories was established in 1976 by Congress in Section 201(a) of FLPMA and reaffirmed in 1978 in Section 4 of PRIA. These Acts mandate that Federal agencies develop and maintain inventories of range conditions and trends on public rangelands and update inventories on a regular basis.

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. Within each precipitation zone, ecological sites are classified based on the differences in site factors (soil, slope, aspect, parent material, topographic potential, etc.) that affect the potential to produce vegetation.

Ecological sites have developed a characteristic kind and amount of vegetation. The natural plant community on an ecological site is typified by an association of species that differs from that of other ecological sites in the kind and/or proportion of species or in annual production (BLM 2001). While the natural plant community of a particular ecological site is recognized by characteristic *patterns* of species associations and community structure, the *specific species* present from one location to another may exhibit natural variability - the natural plant community is not a precise assemblage of species for which the proportions are the same from place to place, or even in the same place from year to year. Variability is the rule rather than the exception. The distinctive plant communities associated with each ecological site (including the variability which frequently occurs) can be identified and described, and are called ecological site descriptions.

The BLM measures range condition, or ecological condition, by the degree to which the existing vegetation of a site is different from the Potential Natural Community (PNC) for the respective ecological site, as identified in the ecological site description. PNC is “the biotic community that would become established if all successful sequences were completed without interferences by humans under the present environmental conditions. It may include naturalized non-native species” (BLM 2005 and BLM 2001). This differs from “historic climax plant community” in that an historic climax plant community is “the plant community that existed before European immigration and settlement” (BLM 2001). The BLM uses “potential natural community” terminology rather than “historic climax plant community” because PNC recognizes past influences by man. Knowing the PNC of the area, and using the ecological site descriptions as a guide, DPC objectives can be developed. The DPC then becomes the objectives by which management actions would be measured (see page 9 of this EA for the DPC objectives for this allotment).

Ecological condition expresses the relative degree to which the kinds, proportions, and amounts of plants in a plant community resemble that of the potential natural plant community for the site. Ecological condition for most of the sites in this area change slowly. Ecological condition

is reported in the following four classes, or seral stages, which are the developmental stages of ecological succession:

- **Early Seral:** 0-25% of the expected potential natural community exists.
- **Mid Seral:** 26-50% of the expected potential natural community exists.
- **Late Seral:** 51-75% of the expected potential natural community exists.
- **Potential Natural Community or PNC:** 76-100% of the expected potential natural community exists.

In 2001 and 2006, a land health evaluation was conducted for this allotment, and an evaluation report was completed in 2007 (BLM 2007b). This evaluation was made in accordance with the Arizona Standards and Guidelines for the Fundamentals of Rangeland Health (Appendix 2) and standard BLM methods for estimating ecological condition and current trend. Attempting to monitor 100% of any given rangeland is not physically possible. Instead, representative study sites are selected based on their ability to predict range conditions over much larger areas (University of Arizona 2010). Evaluation sites, or key areas as defined in Technical Reference 1734-4 (BLM 1999b), were selected (location and amount) using professional judgment based upon terrain, past uses of the area, and location of waters. Specific locations of key areas are available in the project file. Existing trend studies, ecological condition data, actual use, and utilization studies for the allotment was analyzed. The trend identified in the rangeland health assessment survey assessed erosion status, vegetative cover, vigor, species diversity, location of the most palatable plants in relation to access to a grazing animal, and general age classes. The land health evaluation identified trend over a wider area within each ecological site or sites surveyed than the 3-foot x 3-foot and 5-foot x 5-foot areas the monitoring studies represent.

Additional monitoring (pace-frequency and utilization) data has been collected since the land health evaluation was completed, as shown below in Table 6.

Table 6. Recent Monitoring of Rock Pockets Allotment

<i>Utilization Monitoring – Years Monitored</i>		
Key Area #1	Key Area #2	Key Area #3
Not read	2007	2007
2008	2008	2008
2009	2009	2009
2010	2010	2010
2011	2011	2011
2012	2012	2012
2013	2013 (2 times)	2013 (2 times)
2014	2014	2014
<i>Trend Monitoring – Years Monitored</i>		
Key Area #1	Key Area #2	Key Area #3
2010 ¹⁰	2010 ¹⁰	2010 ¹⁰

¹⁰ Pace-frequency monitoring is conducted every 5 years; the allotment is scheduled to be monitored again in 2015.

Each of the key areas was read for Pace-Frequency, trend and dry weight rank (DWR). The percent of key species at Key Area #1 declined from 174%¹¹ in 1981 to 131% in 2010; most of this decline was recorded in 1990 when it decreased from 174% to 116% during a severe drought (1988-1990). In the early 1980s, when this key area was established, the site was receiving 12 to 14 inches of rain per year. As shown in Table 5, average annual precipitation for the Clayhole rain gauge (the nearest one to Key Area #1) is 9 inches, which is substantially less than that recorded in the early 1980s. Since 1990, the frequency of key species has steadily been increasing, and even increased by 13% from 2005 to 2010. The shift in annual precipitation (to a more “normal” amount, which is much less than that received when the key area was established) is thought to be the reason for the downward trend at Key Area #1.

The frequency at Key Area #2 increased from 80 in 1981 to 113 in 2010. Live vegetative cover increased from 3% to 6%. Based on frequency data, trend is upward at Key Area #2. Frequency at Key Area #3 increased from 54% to 88% composition of key species; percent live basal vegetative cover is 3%. Based on the frequency data, trend is upward at Key Area #3. Observations and data collected for Rock Pockets Allotment indicate that deferred rotation grazing has resulted in widely dispersed grazing with good rest and recovery periods. All three pastures have good water availability to provide good distribution throughout the allotment. Utilization at all key areas has been light (see Table 7).

Table 7. Utilization Percentages¹² of Key Species on the Rock Pockets Allotment

Key Area	Species	2005	2007	2008	2009	2010	2011	2012	2013	2014
1	Grasses	35%	28%	33%	33%	26%	34%	30%	20%	25%
	Shrubs	43%	30%	32%	22%	28%	35%	28%	26%	23%
	Average all species	38%	29%	32%	29%	27%	34%	31%	23%	25%
2	Grasses	41%	45%	23%	14%	14%	31%	36%	29%	29%
	Shrubs	39%	40%	17%	10%	13%	37%	40%	32%	30%
	Average all species	40%	43%	20%	13%	13%	34%	38%	30%	29%
3	Grasses	36%	not read	23%	19%	33%	29%	38%	31%	26%
	Shrubs	47%		20%	17%	36%	38%	41%	34%	25%
	Average all species	42%		22%	18%	35%	34%	40%	33%	26%

The majority of the public lands within the Rock Pockets Allotment are in mid to late seral, or good ecological condition. Table 8 lists key areas, ecological sites of all key areas, and current

¹¹ When referring to frequency monitoring results, the total number represents a combined percentage of many key species, relative to the number of quadrats (200), so can therefore exceed 100%.

¹² Utilization is defined as the proportion or degree *of current year's forage production* that is consumed or destroyed by animals (including insects).

ecological status. Also listed is the current trend of the vegetation based on pace-frequency studies.

Table 8. Vegetation Characteristics within the Rock Pockets Allotment

Pasture	Key Area	Ecological Site	Ecological Status	Trend
Yellowstone	1	Sandy Loam Upland 7-11" p.z.	Late Seral	Down
Horse Knoll	2	Clay Loam Upland 7-11" p.z.	Mid Seral	Upward
Rock Pockets North	3	Gyp Upland 7-11" p.z.	Late Seral	Upward

Based on analyses of the allotment monitoring data and supporting documentation contained in the evaluation report (BLM 2007b) and the 2015 update (Appendix 4), including achievement of DPC objectives, resource conditions on the allotment meet all applicable standards for rangeland health.

3.2 Elements/Resources of the Human Environment

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 statute, regulation, or executive order, and must be considered in all EAs (BLM 2008b), have been considered by BLM resource specialists to determine whether they would be potentially affected by the proposed action or alternatives. These elements are identified in Table 9, along with the rationale for 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 9 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 9. Elements/Resources of the Human Environment

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

Resource	Determination	Rationale for Determination
Air Quality	NI	The Rock Pockets Allotment is included in an area that is unclassified for all pollutants and has been designated as Prevention of Significant Deterioration Class II. Air quality in the area is generally good. Exceptions include short-term pollution (particulate matter) resulting from vehicular traffic on unpaved roads. Fugitive dust is also generated by winds blowing across the area, coming from roads and other disturbed areas. Although livestock congregating at waters can create fugitive dust, this dust creation is very localized and temporary. Thus, none of the alternatives would cause Class II standards to be exceeded. The alternatives would therefore not measurably impact air quality.
Areas of Critical Environmental Concern	NP	There are no Areas of Critical Environmental Concern within this grazing allotment.
Environmental Justice	NI	The alternatives would have no disproportionately high or adverse human health or other environmental effects on minority or low income segments of the population. Also, continued livestock grazing would have no effect on low income and minority populations.
Farmlands (Prime or Unique)	NP	There are no prime or unique farmlands within the allotment.
Floodplains	NI	No actions are proposed that result in permanent fills or diversions, or placement of permanent facilities, in floodplains or special flood hazard areas. Continued properly managed livestock grazing use would not affect the function of the floodplains within the allotment.
Native American Religious Concerns	NP	During consultations with the American Indian Tribes that claim cultural affiliation to northern Arizona, no Native American religious concerns have been identified in relation to livestock grazing within this allotment.
Threatened, Endangered or Candidate Plant Species	NP	No Threatened, Endangered, or Candidate plant species occur in the allotment.
Threatened, Endangered or Candidate Animal Species	NI	<p>The California condor is the only known federally listed animal species that may occur within this allotment – condors may occasionally fly over or feed in this allotment at any time of year. California condors are federally listed as endangered and a population of these condors was reintroduced on the Arizona Strip in 1996. This population is designated as experimental non-essential under Section 10(j) of the Endangered Species Act.</p> <p>Condors are strictly scavengers and prefer to eat large, dead animals such as mule deer, elk, pronghorn, bighorn sheep, cattle, and horses. Condors range widely, easily covering over 100 miles in a day, and their current range includes the entire Arizona Strip. Although condors may either fly over or feed within the allotment, they have not been observed doing so. There is no evidence that rangeland health on this allotment is limiting or</p>

Resource	Determination	Rationale for Determination
		restricting condor population growth. Thus, no effect to this species is expected from any of the alternatives.
Cultural Resources	NI	<p>Livestock grazing has continued as an historic use of the public land in this allotment. The BLM would manage the allotment to ensure that livestock grazing would continue to be in compliance with Section 106 of the National Historic Preservation Act (36 CFR 800.3). Cultural resources project files (AZ-BLM-010-2015-21) contain documentation of compliance with Section 106 of the National Historic Preservation Act.</p> <p>New range improvement actions, including fences, water facilities, and vegetation treatments, are subject to a Class III inventory and consultation with the Arizona State Historic Preservation Office. Previous Class II or III intensive inventories have occurred within this allotment – there are twelve previous inventories completed in the Rock Pockets Allotment, and sites have been recorded. No known impacts to significant resources resulting from grazing have been identified. In addition, the BLM followed the Cultural Resource Compliance on Grazing Permit/Lease Renewals guidance contained within BLM Arizona’s “Guidelines for Protecting Cultural Resources” handbook (Arizona H-8120, Appendix 12) in reviewing potential impacts to cultural resources on the Rock Pockets Allotment. The BLM used existing data, including site records and data from the sites in the allotment, to consider the potential for impacts to cultural resources across the allotment. This data was extrapolated from the existing site records and from on-the-ground observations provided by archaeologists, qualified archaeological volunteers, range specialists, and permittees. Since no impacts to significant and vulnerable cultural resources have been documented, no additional cultural resources inventory was recommended by the Arizona Strip Field Office archaeologist.</p> <p>In the event that significant archaeological resources (standing walled historic or prehistoric structures, rock art, or other sites potentially eligible to the National Register of Historic Places) are found to be adversely impacted by cattle, preventative and mitigation measures will be implemented including but not limited to fencing, recordation, data collection, and monitoring as is standard operating procedure under the National Historic Preservation Act. The renewal of grazing permits, in the absence of any construction of new range improvements, therefore does not constitute a potential adverse effect to cultural resources.</p>
Invasive, Non-native Species	NI	<p>Some Scotch Thistle has occurred along the main road and drainage on the south end of the allotment in the past. However, it has been removed and frequent inspections and monitoring will continue which will reveal any need to retreat and control as necessary.</p> <p>Cheatgrass is present in some areas across the allotment. Cheatgrass is not on the Arizona Noxious Weed list. However it can be a very invasive non-native grass species. Research by Douglas et al. (1990) and Hunter (1991) shows that cheatgrass readily invades areas that have not been</p>

Resource	Determination	Rationale for Determination
		<p>disturbed and do not have livestock influence. Young and Evans (1978) speculated that removal of livestock would actually accelerate conversion to cheatgrass because of increased fuel accumulations and more frequent wildfires.</p> <p>Proper range practices can help prevent the spread of undesirable plant species (Sheley 1995). Sprinkle et al (2007) found that grazing exclusion does not make vegetation more resistant to invasion by exotic annuals. Reasons for this may include: 1) grazing may result in a more diverse age classification of plants due to seed dispersal and seed implementation by grazing herbivores, and 2) grazing removes senescent plant material, and if not extreme, helps open up the plant basal area to increase photosynthesis and rainfall harvesting (Holechek 1981). Loeser et al. (2007) reported that moderate grazing was superior to both grazing exclusion and high-impact grazing in maintaining plant diversity and in reducing exotic plant recruitment in a semiarid Arizona grassland. It is also important to note that removal of grazing by domestic livestock does not automatically lead to disappearance of cheatgrass (Young and Clements 2007). Proper grazing use which maintains stable plant communities (as is the case in the Rock Pockets Allotment – the majority of the public lands within the allotment are in late seral, which is a very stable condition, and the allotment meets all applicable standards for rangeland health) should minimize or have no effect on the spread of invasive non-native species. The renewal of the grazing permits and continued livestock grazing are therefore not anticipated to increase the rate at which invasive species are spread throughout the area.</p>
Wastes (hazardous or solid)	NP	No known hazardous or solid waste issues occur in the allotment.
Water Quality (drinking / ground)	NI	Site visits to the allotment (during rangeland health evaluations and subsequent monitoring) did not indicate that current livestock use is altering water quality – no surface water within this allotment is used for domestic drinking water. Thus, no effect to water quality is expected from the alternatives.
Wetlands / Riparian Zones	NP	No wetland/riparian areas occur in the allotment.
Wild and Scenic Rivers	NP	There are no river segments within the allotment that are designated, eligible, or suitable as wild, scenic, or recreational under the Wild and Scenic Rivers Act.
Wilderness	NP	There is no designated wilderness within the Rock Pockets Allotment.
Livestock Grazing	PI	Permit renewal is required to allow continued livestock use on the allotment; this issue is therefore analyzed in detail later in this EA.
Woodland / Forestry	NI	Continued livestock use would not affect the availability of, or access to, these resources.
Vegetation	PI	Grazing has a direct impact on vegetation resulting from the practice of grazing in which livestock eat and trample plants within the allotment. This issue is therefore analyzed in detail later in this EA.

Resource	Determination	Rationale for Determination
BLM or State Sensitive Plant Species	NP	Stickleaf (<i>Mentzelia memorabilis</i>) occurs in the neighboring allotment (Antelope Allotment), on a gypsum outcrop to the north of the fenceline on State lands. This plant has never been found on Rock Pockets. The GIS layer is inaccurate and needs to be updated, this appears to be the result of a GIS mapping error.
Wildlife (including sensitive species and migratory birds)	PI	Multiple sensitive animal species, including migratory birds, may occur within the Rock Pockets Allotment. Mule deer and pronghorn are big game species that are known to occur throughout the allotment. Interactions with livestock and competition for forage could occur; this issue is therefore analyzed in detail later in this EA.
Soil Resources	PI	Some soil disturbance occurs around water sites where livestock gather and trail. In addition, small bottom land areas of the allotment have soils that are sensitive to compaction. This issue is therefore analyzed in detail in this EA.
Recreation	NI	The area within this allotment is within the Arizona Strip Extensive Recreation Management Area and receives custodial management for dispersed, unstructured recreation opportunities that focus only on visitor health and safety, user conflict, and resource protection issues while maintaining the area's naturalness/remoteness. The Rock Pockets Allotment is considered to have recreation values for its geology, scenic viewsheds, and remoteness. Visitors to the allotment engage in a variety of recreation activities including sightseeing, horseback riding, hiking, camping, hunting, rock collecting, photography, bird watching, and nature study. The alternatives are not expected to impact the availability of recreational opportunities within this allotment.
Visual Resources	NI	The Rock Pockets Allotment is designated as Visual Resource Management (VRM) Class III (with the exception of one small area – less than one acre – around a sand and gravel pit, which is VRM Class IV). The objective for Class III is to partially retain the existing character of the landscape. The level of change to the characteristic landscape should be moderate. Management activities may attract attention but should not dominate the view of the casual observer. Changes should repeat the basic elements found in the predominant natural features of the characteristic landscape. The objective for Class IV 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 in these areas can be high. Continuing livestock grazing as proposed would not affect visual resources because no new range improvements are proposed, so the existing character of the landscape would not change.
Geology / Mineral Resources / Energy Production	NI	Continuing livestock grazing would not alter geological features or mineral resources. Mineral exploration activities (uranium and oil and gas) are occurring across the Arizona Strip, but grazing of livestock would not alter or impair the opportunities to explore for these resources.
Paleontology	NP	No paleontological resources are known to occur in the allotment.
Lands / Access	NI	Access to public lands would not be altered or impaired by implementation of the alternatives. No other lands issues have been

Resource	Determination	Rationale for Determination
		identified in connection with the alternatives.
Fuels / Fire Management	NI	No hazardous fuel reduction or fuels management projects are proposed for the area. Continued livestock use would not affect fire management, other than the continued reduction of some light fuels through livestock grazing.
Socio-economic Values	NI	The economic base of the Arizona Strip is mainly ranching with a few gypsum/selenite and uranium mines. Nearby communities are supported by tourism (including outdoor recreation), construction, mining activities, and light industry. The social aspect involves remote, unpopulated settings with moderate to high opportunities for solitude. Issuance of the permit under the proposed action would allow the permittee to continue his grazing operation with some degree of predictability during the 10-year period of the term permit and would allow a historical and traditional use of the land to be maintained. The proposed action and alternatives would have no overall effect on the economy of the county since other industries and tourism/recreational uses are contributing increasing amounts to the economy of the region and cattle ranching is no longer a significant contributor.
Wild Horses and Burros	NP	There are no wild horses or burros, or herd management areas, within the allotment.
Wilderness characteristics	NP	There are no areas managed to maintain the wilderness characteristics of naturalness, opportunities for solitude, and opportunities for primitive and unconfined recreation within this allotment.

3.3 RESOURCES BROUGHT FORWARD FOR ANALYSIS

3.3.1 Livestock grazing

A grazing permit is issued for livestock forage produced annually on the public lands and is allotted on an AUM basis. (An AUM is a unit of measurement indicating how much forage is eaten by a cow/calf pair in one month.) The BLM does not control adjacent private lands owned by the permit holders. The livestock operator assumes grazing management responsibility with the intent to maintain or improve existing resources. Livestock are to be grazed on public lands only during the established season of use. If private land is used during different periods, it is the permittee's responsibility to keep livestock off the public land during non-grazing periods. The BLM retains the right to manage the public lands for multiple uses and to make periodic inspections to ensure that inappropriate grazing does not occur. If inappropriate grazing should occur, then the BLM would work with affected permittee to identify and prescribe actions to be taken that would return the allotment to compliance.

The allotment is categorized as a "maintain" (M) allotment. The *Arizona Strip Field Office RMP* (BLM 2008a) defines maintain allotments as those in which:

- a) Present range condition is satisfactory;

- b) The allotment has high or moderate resource potential and is producing near its potential (or trend is moving in that direction);
- c) No serious resource-use conflicts/controversy exists;
- d) Opportunities may exist for positive economic return from public investments; and
- e) Present management is satisfactory.

Land ownership in the Rock Pockets Allotment consists primarily of Federal land with some State and private land also included (Table 10). Active grazing use on the allotment is 1,760 AUMs, with 4 suspended non-use AUMs.

Table 10. Land Ownership

Ownership	Rock Pockets Allotment		
	Rock Pockets Pasture	Yellowstone Pasture	Total
Federal	13,470 acres	6,400 acres	19,870 acres
State	1,840 acres	730 acres	2,570 acres
Private	0 acres	40 acres	40 acres
Total	15,310 acres	7,170 acres	22,480 acres

The grazing system on the Rock Pockets Allotment is a three pasture deferred rotation grazing system. As shown in Table 11, in Year 1 Horse Knoll Pasture is used from October 1 – January 31 (4 months), Rock Pockets Pasture is then used from February 1 – May 31 (4 months), and ending out the year in Yellowstone Pasture from June 1 – September 30 (4 months). Year 2 grazing begins in Rock Pockets Pasture for 4 months, then Yellowstone Pasture for 4 months, and ending the year in Horse Knoll Pasture. Year 3 grazing begins in Yellowstone Pasture for 4 months, then Horse Knoll Pasture for 4 months, ending the grazing year in Rock Pockets. This system allows each pasture to be rested during the spring and/or summer growing seasons twice every three years, and allows for additional reduced grazing each summer (June through September) when livestock numbers are voluntarily reduced by 50 to 70 head (depending on the year) when these 50-70 head are moved to private lands.

Table 11: Rock Pockets Grazing System

Years	Pastures		
	Horse Knoll	Rock Pockets	Yellowstone
1	10/01 – 1/31	02/01 – 05/31	06/01 – 09/30*
2	06/01 – 09/30*	10/01 – 01/31	02/01 – 05/31
3	02/01 – 05/31	06/01 - 09/30*	10/01 – 01/31
4	Repeat Year 1	Repeat Year 1	Repeat Year 1

* When the livestock are moved from the spring pasture to the summer pasture, a portion of the herd (approximately 60 head, although the number varies from year to year) are moved to private lands, resulting in a reduced herd grazing on BLM lands during the summer.

Actual use within the Rock Pockets Allotment has varied between 43 percent and 94 percent between 2004 and 2014. Non-use reflects seasonally dry periods, drought years or other factors.

3.3.1.1 Range Improvements

The Rock Pockets Allotment contains a number of structural range improvements, as shown on the map in Appendix 1. These range improvements consist of fences, pipelines, windmills, water troughs, reservoirs, wells, and water storage tanks.

3.3.2 Vegetation

According to the NRCS, the dominant ecological sites on the Rock Pockets Allotment are sandy loam upland (7-11” p.z.), clay loam upland (7-11” p.z.), and gyp upland (7-11” p.z.). Small inclusions of other ecological sites occur within the allotment. There are two principal vegetative types within the allotment – grassland and desert shrub. The grassland type consists of plant species such as galleta, sand dropseed, squirreltail, and Indian ricegrass. The desert shrub vegetative type consists of fourwing saltbush, winterfat, Mormon tea, sagebrush, and annual species such as globemallow, Indian wheat and six weeks fescue.

Management of the allotment is based on a selection of key species. These species are selected for their similarity to other grasses and browse species that occur in the allotment. The definition of key species is: 1) forage species of sufficient abundance and palatability to justify its use as an indicator to the *degree of use* of associated species; and 2) those species which must, because of their importance, be considered in the management program (Jacoby 1974). Key species for this allotment are:

- Browse species – Mormon tea, fourwing saltbush, and winterfat
- Warm season grasses – sand dropseed, black grama, and galleta
- Cool season grasses – Indian ricegrass and squirreltail.

Table 12 (below) displays the phenological development stages of the key species for the allotment.

Table 12. Phenological Development of Key Species for the Rock Pockets Allotment

Key Species	Development Stages (dates vary based upon yearly fluctuations in specific climatic conditions and elevation)			
	Begin Growth	Flowering	Seed Ripe	Seed Dissemination
Fourwing saltbush	4/01	6/01 – 6/15	10/15 – 11/01	11/15 – 12/01
Winterfat	3/01	6/01 – 6/15	9/15	11/15 – 12/01
Mormon tea	4/15	5/15	7/15	10/01
Indian ricegrass	3/15	5/15 – 6/15	7/01 – 7/15	8/01 – 8/15

Squirreltail	3/01	5/15 – 6/01	6/15 – 7/01	7/15 – 8/01
Sand dropseed	4/15	5/20	7/15	8/30
Black grama	5/01	8/01	9/15	10/15
Galleta	4/01	6/01 – 7/15	7/15 – 9/01	8/15 – 10/15

3.3.3 Wildlife, Including Big Game, Migratory Birds, and Sensitive Species

3.3.3.1 Big Game

The Rock Pockets Allotment is located in AGFD’s Game Management Unit (GMU) 13A. Mule deer and pronghorn can be found throughout this allotment. Population survey data, counts, and estimates of total mule deer and pronghorn populations within GMU 13A are included as Appendix 3 of this EA.

Mule deer (*Odocoileus hemionus*)

Mule deer occur in a wide variety of habitat types; although vegetative communities vary throughout the range of mule deer, habitat is nearly always characterized by areas of thick brush or trees interspersed with small openings. The thick brush and trees are used for escape cover whereas the small openings provide forage and feeding areas. Game Management Unit (GMU) 13A (where the Rock Pockets Allotment is located) contains extensive Great Basin short grass prairie, extensive pinyon-juniper woodlands, grassland pinyon-juniper association, and a ponderosa pine ecotype in the Mt. Logan and Mt. Trumbull areas (south of this allotment). Mule deer inhabit most of the unit; total numbers of mule deer in the habitat area generally range from 125 to 175 with the majority of animals occupying summer range to the north in Utah and south towards Mt. Trumbull. As described in Section 3.3.2, the two principal vegetative types within the allotment are grassland and desert shrub. The grassland type consists of plant species such as galleta, sand dropseed, squirreltail, and Indian ricegrass. The desert shrub vegetative type consists of fourwing saltbush, winterfat, Mormon tea, sagebrush, and annual species such as globemallow, Indian wheat and six weeks fescue. Deer eat a wide variety of plants including browse, forbs and grasses. Deer are especially reliant on shrubs for forage during critical winter months. Fawn production is closely tied to the abundance of succulent, green forage during the spring and summer months.

AGFD has categorized habitat characteristics for big game species within the state. Habitat categories are based on several factors such as topography, forage and cover, availability of water, and limiting factors such as prohibitive fencing. The Rock Pockets Allotment is categorized by AGFD as 49% yearlong habitat for mule deer. While no population estimates are available specifically for this allotment, AGFD considers the mule deer population in GMU 13A to be stable but low.

Pronghorn (*Antilocapra americana*)

Pronghorn typically occupy grassland/desert scrub habitats; pronghorn habitat in Unit 13A consists primarily of Great Basin grasslands with areas of sagebrush, juniper and shrub encroachment (AGFD 2009). In areas dominated by shrubs, sufficient forbs preferred by pronghorn are often lacking. This is most likely related to available precipitation. In years with adequate rainfall, sufficient forbs are produced for pronghorn. During winter months when forbs are not available, pronghorn rely on browse species for forage, such as fourwing saltbush. Some dietary overlap may occur with livestock during winter months, although the level of this overlap is not known. Habitat for pronghorn on this allotment is considered to be a mix of high quality with problems¹³ (2% of the allotment); moderate quality (50%); low quality (26%); and poor quality (22%). Pronghorn distribution is widespread in Unit 13A and varies seasonally depending on weather and range conditions. Transplants of pronghorn to this GMU occurred in the 1960s through the 1980s with animals originating from Arizona, Montana, and Colorado. Generally, pronghorn are found in Antelope Valley, Clayhole Valley, and areas south of Colorado City including the Yellowstone Pasture of the Rock Pockets Allotment. Since reintroduction, pronghorn populations have been cyclic in this unit, with herd numbers increasing and decreasing in a direct relationship to precipitation – during periods of drought, poor fawn survival results in low recruitment, while during normal to above normal precipitation years, fawn survival and recruitment increase. Although no population estimates are available specifically for this allotment, the pronghorn population trend/status as of 2014 is decreasing.

A variety of factors are considered management concerns related to the pronghorn population in this unit, with three factors identified by AGFD as being the primary reasons (AGFD 2015). First, water is a limited resource in the area, with few year-round waters available for use. Pronghorn rely heavily on livestock waters; recent dry summers have shown that these waters are dry for most of the summer months, especially during fawning periods. Second, many miles of fence do not meet game standards and restrict pronghorn movement and survival (AGFD 2009), although the BLM is working cooperatively with AGFD to remedy this. Third, coyote predation on fawns has been identified as a probable limiting factor to pronghorn recruitment, especially during drought periods when fawning cover is limited or absent.

3.3.3.2 Migratory Birds

Executive Order 13186 requires the BLM and other federal agencies to work with the USFWS to provide protection for migratory birds. These species are protected by law and it is important to maintain habitat for these species so migratory patterns are not disrupted. All migratory birds are protected under the 1918 Migratory Bird Treaty Act (16 USC 703), which prohibits the taking of any migratory birds, their parts, nests, or eggs unless specifically permitted by regulation. Additional protection is provided by the Neotropical Migratory Bird Conservation Act of 2000 (16 USC Chapter 80). Birds found within the allotment are typical of desert scrub, sagebrush,

¹³ “High quality with problems” is defined as habitat that is rated as high for terrain and vegetation attributes but factors such as roads, fences, and lack of water may limit pronghorn density.

and rocky outcrop habitats such as burrowing owl, prairie falcon, Say’s phoebe, ash-throated flycatcher, western kingbird, loggerhead shrike, horned lark, rock wren, crissal thrasher, sage thrasher, northern mockingbird, black-throated sparrow, western meadowlark, and Scott’s oriole.

3.3.3.3 Sensitive Species

Sensitive species are usually rare within at least a portion of their range. Many are protected under certain State and/or Federal laws. Species designated as sensitive by the BLM must be native species found on BLM-administered lands for which the BLM has the capability to significantly affect the conservation status of the species through management, and either:

1. There is information that a species has recently undergone, is undergoing, or is predicted to undergo a downward trend such that the viability of the species or a distinct population segment of the species is at risk across all or a significant portion of the species range; or
2. The species depends on ecological refugia or specialized or unique habitats on BLM-administered lands, and there is evidence that such areas are threatened with alteration such that the continued viability of the species in that area would be at risk."

All federally-designated candidate species, proposed species, and delisted species in the 5 years following delisting are included as BLM sensitive species. Based on occurrence records and monitoring data, the sensitive species that may occur within the Rock Pockets Allotment and that may be affected by actions proposed in one of the alternatives presented in Chapter 2 are displayed in Table 13.

Table 13. Sensitive Species Associated with the Rock Pockets Allotment

Species	Potential for Occurrence
American peregrine falcon (<i>Falco peregrinus</i>)	potential
Ferruginous hawk (<i>Buteo regalis</i>)	potential
Western burrowing owl (<i>Athene cunicularia hypugea</i>)	verified
Golden eagle (<i>Aquila chrysaetos</i>)	potential

Five additional sensitive species may also occur within the allotment. However, it has been determined by BLM resource specialists that these species would not be affected by actions proposed in this EA. These species are therefore not addressed further in this document. Table 14 lists the sensitive species that will not be discussed in further detail, along with the rationale for their exclusion from further analysis.

Table 14 . Sensitive Species Excluded from Further Analysis

Species	Rationale for Excluding from Further Analysis
Allen’s big-eared bat <i>Idionycteris phyllotis</i>	Roost sites such as caves and abandoned mineshafts are inaccessible to livestock and impacts from grazing would not alter prey species (insects) populations or distribution. No measurable impacts (changes from the existing condition) would be expected.
Townsend’s big-eared bat <i>Corynorhinus townsendii</i>	Roost sites such as caves and abandoned mineshafts are inaccessible to livestock and impacts from grazing would not alter prey species (insects) populations or distribution. No measurable impacts (changes from the existing condition) would be expected.
California leaf-nosed bat <i>Macrotus californicus</i>	Roost sites such as boulder piles, caves, and abandoned mineshafts are inaccessible to livestock and impacts from grazing would not alter prey species (insects) populations or distribution. This species is primarily found in Sonoran desert scrub south of the Mogollon Plateau and is unlikely to occur in the project area. No measurable impacts (changes from the existing condition) would be expected.
Greater western mastiff bat <i>Eumops perotis californicus</i>	Roost sites such as rock crevices are inaccessible to livestock and impacts from grazing would not alter prey species (insects) populations or distribution. No measurable impacts (changes from the existing condition) would be expected.
Spotted bat <i>Euderma maculatum</i>	Roost sites such as crevices in cliff faces are inaccessible to livestock and impacts from grazing would not alter prey species (insects) populations or distribution. No measurable impacts (changes from the existing condition) would be expected.

Peregrine falcon (*Falco peregrinus anatum*)

Habitat and Range Requirements. Peregrine falcons utilize areas that range in elevation from 400 to 9,000 feet and breed wherever sufficient prey is available near cliffs. Preferred habitat for peregrine falcons consists of steep, sheer cliffs that overlook woodlands, riparian areas, and other habitats that support a high density of prey species. Nest sites are usually associated with water. In Arizona, peregrine falcons now occur in areas that had previously been considered marginal habitat, suggesting that populations in optimal habitats are approaching saturation (AGFD 2002).

Nesting sites, also called eyries, usually consist of a shallow depression scraped into a ledge on the side of a cliff. Peregrine falcons are aerial predators that usually kill their prey in the air. Birds comprise the most common prey item, but bats are also taken (AGFD 2002).

Project Area Evaluation. Potential nesting habitat is found along the steep cliff faces adjoining the west side of the allotment along the Hurricane Cliffs. Peregrine falcons may also occur in the allotment during foraging flights.

Ferruginous hawk (*Buteo regalis*)

Habitat and Range Requirements. Ferruginous hawks are large hawks that inhabit the grasslands, deserts, and open areas of western North America – they are the largest North American hawk and are often mistaken for eagles due to their size. Ferruginous means “rusty color” and refers to the bird’s colored wings and legs. During the breeding season, they prefer grasslands, sagebrush, and other arid shrub country. Nesting often occurs in isolated trees or utility poles surrounded by open areas (Olendorff 1993). Mammals generally comprise 80 to 90 percent of the prey items or biomass in the diet with birds being the next most common mass component.

Project Area Evaluation. Suitable habitat for the ferruginous hawk is present on the allotment. Although nesting habitat is available, no nest sites are known to occur within the allotment.

Burrowing owl (*Athene cunicularia hypogea*)

Habitat and Range Requirements. Burrowing owls occupy a wide variety of open habitats including grasslands, deserts, or open shrublands. Burrowing owls do not dig their own burrows and must rely on existing burrows dug by prairie dogs, ground squirrels, badgers, skunks, coyotes, and foxes but will also use manmade and other natural openings. Nest-site fidelity is high and burrows are often reused for several years if not destroyed (Haug et al. 1993). Moderate grazing can have a beneficial impact on burrowing owl habitat by keeping grasses and forbs low (MacCracken et al. 1985) but the control of burrowing rodent colonies in grazed areas is believed to be a significant factor in the burrowing owl’s decline (Desmond and Savidge 1996). Burrowing owls are infrequently encountered on the Arizona Strip likely due to the lack of prairie dog or other large rodent colonies.

Project Area Evaluation. Successful nesting attempts have occurred within the allotment. Four active burrows have been documented along the Navajo Trail Road in the Horse Knoll Pasture of the allotment. Suitable habitat also occurs in the Yellowstone Pasture.

Golden eagle (*Aquila chrysaetos*)

Habitat and Range Requirements. Typically found in open country, prairies, arctic and alpine tundra, open wooded country and barren areas, especially in hilly or mountainous regions. Black-tailed jackrabbits and rock squirrels are the main prey species taken (Eakle and Grubb 1986). Carrion also provides an important food source, especially during the winter months. Nesting occurs on rock ledges, cliffs, or in large trees. Several alternate nests may be used by one pair and the same nests may be used in consecutive years or the pair may shift to an alternate nest site in different years. In Arizona they occur in mountainous areas and vacate desert areas after breeding. Nests were observed at elevations between 4,000 and 10,000 feet. Nests are commonly found on cliff ledges; however, ponderosa pine, junipers, and rock outcrops are also used as nest sites.

Project Area Evaluation. Potential nest sites occur along the Hurricane Cliffs west of the allotment and on Yellowstone Mesa to the east. Golden eagles have been observed in areas adjacent to the Rock Pockets Allotment and likely utilize the entirety of the allotment for hunting and scavenging. The presence of water developments may attract small mammals, such as black-tailed jackrabbits, which are prey species for golden eagle.

3.3.4 Soils

Soil map units are from the Soil Survey of Mohave County Area 625, Arizona (NRCS, 1993). The Rock Pockets Allotment consists of non-contiguous pastures. The western portion of the Rock Pockets Allotment (Horse Knoll and Rock Pockets Pastures) consists of alluvial fans and low ridges with outcrops of Moenkopi mudstones and gypsiferous shales on the east side, but is dominated by ridges of Kaibab limestone on its west side. The eastern portion of the Rock Pockets (Yellowstone Pasture), in Clayhole Valley, also consists of alluvial fans and low ridges with outcrops of Moenkopi mudstones and gypsiferous shales. Sandy soils derived from remnants of Shinarump conglomerate are on the east side. Detailed descriptions of the soil map units present on the allotment can be found in the project file at the Arizona Strip Field Office.

Soil Map Units , SSA 625,(SCS,1991)

- 8 Brinkerhoff-Grieta complex, 0 to 5 percent slopes, (fan terraces), sandstone; Sandy Loam Upland (calcareous), 7" to 11" ppt
- 14 Grieta loam, 1 to 5 percent slopes, (fan terraces), sandstone; Loamy Upland, 7" to 11" ppt
- 15 Gypsiorthids-Gypsiorthids, shallow complex, 1 to 50 percent slopes, (fan terraces, hills), gypsiferous shales; Gypsiorthids=Gypsum Upland, 7" to 11" ppt; Gypsiorthids shallow=Gypsum Hills, 7" to 11" ppt
- 20 Jocity silty clay loam, 1 to 4 percent slopes, (stream terraces), mixed alluvium; Silty Upland, 7" to 11" ppt
- 24 Kinan-Pennell complex, 1 to 20 percent slopes, (fan terraces, hills), limestone; Kinan=Loamy Upland, 7" to 11" ppt; Pennell=Shallow Loamy, 7" to 11" ppt
- 29 Manikan silty clay loam, 1 to 4 percent slopes, (stream terraces), sandstone, shale; Clayey Upland, 10" to 14" ppt
- 30 Mellenthin-Anasazi complex, 1 to 15 percent slopes, (hills), limestone; Mellenthin= Shallow Loamy, 10" to 14" ppt; Anasazi=Loamy Upland, 10" to 14" ppt
- 33 Mellenthin very gravelly loam, 1 to 25 percent slopes, (hills), limestone; Shallow Loamy, 10" to 14" ppt
- 41 Moab-Mellenthin complex, 1 to 20 percent slopes, (fan terraces, hills), limestone; Moab= Loamy Upland, 10" to 14" ppt; Mellenthin=Shallow Loamy, 10" to 14" ppt
- 47 Torriorthents, 3 to 50 percent slopes, (scarps, hills), gyp-shales and mudstones; Gypsum Hills, 7" to 11" ppt
- 54 Saido-Brinkerhoff complex, 1 to 5 percent slopes, (fan terraces), gyp-shale,

mudstone, sandstone; Saido=Gypsum Upland, 7" to 11" ppt; Brinkerhoff+Loamy Upland, 7" to 11" ppt

- 63 Torriorthents-RO complex, 30 to 70 percent slopes, (hills, scarps), Moenkopi colluvium; Breaks, 10" to 14" ppt
- 64 Torriorthents-RO complex, dry, 30 to 70 percent slopes, (hills, scarps), Moenkopi colluvium; Breaks, 7" to 11" ppt

Soil Condition Assessment

The vast majority of the soils in this allotment are in fair to good condition and the natural vegetation is not detrimentally affected except for a few small areas. The largest of them, about 30 acres of the Manikan stream terrace soil in the west pasture along the main road, is vegetated mostly by annuals such as mustard, globemallow, annual grasses and more forbs in wet years. Moderate near surface compaction has reduced the infiltration rates, root space, available water holding capacity, and aeration and has increased runoff and droughtiness. Achieving the potential plant community of the ecological site guide, under these soil conditions, may not be possible.

Chapter 4

ENVIRONMENTAL CONSEQUENCES

The potential consequences or effects of each alternative are discussed in this chapter. Only impacts that may result from implementing the alternatives are described in this EA. If an ecological component is not discussed, it is because BLM resource specialists have considered effects to the component and found the alternatives would have minimal or no effects (see Table 9). The intent of this analysis is to provide the scientific and analytical basis for the environmental consequences. General effects from projects similar to the proposed action are also described in the Arizona Strip Proposed RMP/Final EIS (BLM 2007a).

4.1 LIVESTOCK GRAZING

4.1.1 Impacts of Alternative A – Proposed Action

The proposed action would affect the livestock grazing permittees on the Rock Pockets Allotment by renewing the term grazing permits. The proposed action would maintain the current level of livestock grazing authorized for the permittees for an additional ten years, which would result in a continued viable ranching operations for the livestock operators, and provide some degree of stability for the permittees' livestock operations. Permit renewal would also meet the purpose and need for action identified in Chapter 1 of this EA – 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 and the Arizona Strip Field Office RMP (BLM 2008a), and to respond to applications to fully process and renew permits to graze livestock on public land.

4.1.2 Impacts of Alternative B – Issue New 10-Year Grazing Permits with Reduced Grazing (Actual Use)

This alternative would also affect the livestock grazing permittees on the Rock Pockets Allotment. Although new term grazing permits would be issued, this alternative would reduce AUMs authorized for the permittees, which would affect the permittees' livestock operations by not allowing as many livestock to graze on the allotment. The reduced AUMs would not provide as much stability and compatibility. This would thereby force the permittees to shrink their herds or pursue other options for the unpermitted livestock, such as leasing private pasture or obtaining substitute federal grazing permits on a different allotment. This could be challenging because federal permits do not become available very often and are in high demand.

4.1.3 Impacts of Alternative C – Issue New 10-Year Grazing Permits with Increased Grazing (Potential Stocking Level Analysis)

Under this alternative, new ten-year term grazing permits would be issued with increased grazing preference (an increase of 18% over current permitted use, or 317 AUMs). Similar to Alternative A, this alternative would result in continued viable ranching operations for the livestock operators, and provide some degree of stability for the permittees' livestock operations – increased preference would allow the permittees to increase the size of their herds. Permit renewal would meet the purpose and need for action identified in Chapter 1 of this EA – 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 and the Arizona Strip Field Office RMP (BLM 2008a), and to respond to applications to fully process and renew permits to graze livestock on public land.

4.1.4 Impacts of Alternative D – No Grazing

This alternative would drastically affect the livestock grazing permittees on the Rock Pockets Allotment by not authorizing any active preference under the new term grazing permits. The action would cancel the current level of livestock grazing numbers and seasons of use authorized. This would not provide current or future use, stability and compatibility for the permittees' livestock operations because they would not be authorized to use the allotment. This would force them to seek alternate arrangements for their herds, such as leasing private pasture or obtaining substitute federal grazing permits on a different allotment (which, as described in Section 4.1.2 could be challenging). It would most likely be devastating to them, possibly putting them out of business. This alternative would not meet the purpose and need for action identified in Chapter 1 of this EA – 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 and the Arizona Strip Field Office RMP (BLM 2008a), and to respond to applications to fully process and renew permits to graze livestock on public land. (See Section 3.3.2 for a discussion on the current vegetative condition on the allotment, including the Arizona Standards for Rangeland Health and Guidelines for Livestock Grazing Management.)

4.2 VEGETATION

4.2.1 Impacts of Alternative A – Proposed Action

Plants live in ecosystems full of herbivores that range from small insects to large grazing animals. Losing leaves or stems to herbivores is a common event in the life of a rangeland plant. For rangeland plants to remain healthy and productive, enough vegetation must remain after grazing so that plants can photosynthesize and manufacture energy to produce more leaves, stems, and seeds.

Plants also need to produce and store energy as starches and sugars in roots and crowns to successfully start the next season of growth. Only when too much of the plant is removed does the plant suffer in a way that yields lasting detrimental effects. Substantial damage to rangeland plants generally only occurs under repeated and heavy grazing.

The impact of grazing on plant growth depends greatly on when the grazing occurs during the growing season and at what stage of the plant’s life cycle. Plants are generally less damaged by grazing early in the season when time, soil moisture, and nutrients needed for regrowth are abundant. Plants are most likely to be damaged by grazing when the plant is beginning to produce flowers and seeds. At this time, the plant has high energy demands to produce seeds, complete growth for the season, and store energy to get through the dormant season. Plus, this generally occurs at the peak of summer when the environment is hot and dry and not favorable for regrowth. Once the plant produces seeds and turns brown (i.e., begins to senesce and becomes dormant), it is no longer sensitive to grazing. At this time, the leaves are not photosynthesizing and are no longer being used by the plant (University of Idaho 2011).

Livestock can directly affect vegetation by reducing plant vigor, decreasing or eliminating desirable forage species, increasing soil instability and erosion, reducing water quantity and quality, and causing loss of, or injury to, individual plants from trampling, particularly near water developments. Long-term changes in vegetation may result if livestock use consistently exceeds established allocations, or drought or other environmental factors reduce range carrying capacity. Improper grazing practices (such as excessive utilization which removes vegetative cover) may lead to soil compaction, reduced infiltration rates, increased runoff and erosion, and declines in watershed condition. Grazing impacts on vegetation are mitigated by timing of use, adjustment of stocking rates, limiting utilization rates, and conformance with the Arizona Standards for Rangeland Health and Guidelines for Grazing Management. The current grazing system on this allotment has been developed to minimize adverse effects to vegetation by allowing each pasture to be rested during the spring and/or summer growing seasons twice very three years, and allows for additional reduced grazing when summer grazing would occur (June through September) because livestock numbers are reduced by 50 to 70 head.

Table 15. Vegetation Effects from Rock Pockets Allotment Grazing System

Years	Pastures		
	Horse Knoll	Rock Pockets	Yellowstone
1	<i>Dormant season only grazing</i> - allows cool and warm season plants to grow (to replenish root reserves) and set seed; provides seed trampling and seedling establishment.	<i>Late winter/spring grazing</i> – forage production utilized by livestock. Season of use allows warm season plants to grow and set seed.	<i>Summer grazing (with reduced numbers)</i> – allows cool season plants to grow (for increased vigor), then forage production utilized by livestock after a full year’s rest.
2	<i>Summer grazing (with reduced numbers)</i> – allows cool season plants to grow (for increased vigor), then forage production utilized by livestock after a full year’s rest.	<i>Dormant season only grazing</i> - allows cool and warm season plants to grow (to replenish root reserves) and set seed; provides seed trampling and seedling establishment.	<i>Late winter/spring grazing</i> – forage production utilized by livestock. Season of use allows warm season plants to grow and set seed.

3	<i>Late winter/spring grazing</i> – forage production utilized by livestock. Season of use allows warm season plants to grow and set seed.	<i>Summer grazing (with reduced numbers)</i> – allows cool season plants to grow (for increased vigor), then forage production utilized by livestock after a full year’s rest.	<i>Dormant season only grazing</i> - allows cool and warm season plants to grow (to replenish root reserves) and set seed; provides seed trampling and seedling establishment.
4	Repeat Year 1	Repeat Year 1	Repeat Year 1

As shown in Tables 11 and 15, use of the allotment would be rotated among the various pastures each year so that each pasture is grazed during a different season over the 3-year rotation cycle: dormant season, late winter/spring, and summer (with reduced numbers). Grazing vegetation during the non-growing (or dormant) season allows plants to fix carbon, reproduce and set seed as the growing season progresses into the summer. Dormant season grazing would have neutral to negligible effects on plant communities because plants would be able to fix a significant amount of carbon prior to biomass removal and would be able to set seed. Perennial grasses would have increased capability to produce seed because grazing would occur after they have produced much of their above-ground biomass. Overall plant vigor would be maintained by dormant season grazing (which occurs one in three years of the grazing rotation) because plants would be grazed only after senescence (the plant growth phase from full maturity to death or dormancy). After the grasses go dormant they are affected little by grazing. Late winter/spring grazing defers use during the growing season for warm season plants, while summer grazing defers use during the growing season for cool season plants. While grazing would occur during plant growth for two of the three years in this rotation, it would not occur in the same season more frequently than once every three years. In addition, utilization in each pasture has been light in recent years (see Table 7), which leaves ample foliage on palatable plants to produce and store carbohydrates. This grazing system allows plants to rest and replenish root reserves before they are grazed again, which would maintain plant vigor and therefore vegetative condition.

Range plants evolved to withstand grazing and can withstand a heavy grazing event if done in the right season and if plants are given enough time to recover after grazing. Thus, plants can withstand removal of a part of their current year’s growth and still achieve normal growth the following year. Most rangeland grasses and forbs can have 40-50% of their leaves and stems removed every year and still remain healthy and productive. In general, light use is considered less than 40%, moderate 40-65%, and heavy greater than 65% of biomass removed. The season during which the grazing occurs, and periodic rest from grazing, are very important. Properly managed livestock grazing is designed to cause minimal impacts to rangeland resources. The deferred rotation grazing system developed for this allotment provides for the physiological needs of the key species – the scheduled graze and rest periods benefit key species and other vegetation by increasing plant vigor, aiding in seed dissemination, and providing periodic rest during critical growing periods.

When considering effects of grazing on shrub species, one must look at the amount of usage of current year’s growth – these include the leaves and young stems that are important for photosynthesis. The current year’s growth of shrubs is the most digestible part of the plant and is the portion generally removed by browsing animals such as deer and goats. The buds are especially

important to protect from grazing because they will be the source of new stems and leaves for continued growth after grazing. In winter, shrubs survive by using energy compounds (i.e., starches and sugars) stored in the stems. Thus, although the shrub is dormant, it is important to watch browsing of these stems. An indicator of “overgrazing” of shrubs is moderate or heavy hedging (i.e., growth of lateral stems just below a grazed point) and a lack of new or juvenile plants (University of Idaho 2011). Table 7 shows recent utilization on shrubs, based on current year’s growth by weight, during the grazing season. As shown, utilization has been well below the allowed 50% at all three key areas.

As described in Chapter 3 of this EA, current monitoring indicates that trend at Key Area #1 is down, while trend at Key Area #2 and Key Area #3 are up. All three key areas contain a good mix of shrubs and grasses. BLM resource specialists evaluated monitoring data to determine causal factor(s) for the downward trend at Key Area #1, including whether current management practices are contributing. The base year or first time trend was read was 1981, which was a phenomenal year for plant growth due to the precipitation patterns in that year and immediately prior. (As described on page 18, the site received 12-14 inches of precipitation per year during that time period, while long-term precipitation data indicates that average precipitation for that area is 9 inches.) The current grazing rotation schedule, which allows growing season rest is working, as shown by: 1) trend has increased over the last 25 years; 2) the ecological site condition being late seral (or good); and 3) utilization levels remaining light. All these key indicators show that livestock grazing is not affecting trend at Key Area #1.

Allotment monitoring data also indicates that resource conditions on the allotment currently meet all applicable standards for rangeland health. One factor in making this determination was the assessment that DPC objectives for vegetation components at the key areas (as outlined on page 9 of this EA) are being met on the Rock Pockets Allotment. Since this same management regime has been in place for many years, it is expected that livestock grazing proposed under this alternative would minimally affect vegetation, and ecological condition would be maintained (the key areas are in mid to late seral stage, which is a very stable condition). Monitoring of the allotment would continue – if future monitoring indicates any areas within the allotment are not in compliance with the Fundamentals of Rangeland Health, changes to the grazing use would be made (as described in Section 2.2.5 of this EA). However, current monitoring data does not indicate that any changes to grazing management are necessary.

4.2.2 Impacts of Alternative B – Issue New 10-Year Grazing Permits with Reduced Grazing (Actual Use)

Under this alternative, grazing would be authorized for the Rock Pockets Allotment with the same grazing system as that described for Alternative A (see Table 11). Since the seasons of use for each of the three pastures would be the same as for Alternative A, impacts to vegetation would be similar to those described for Alternative A (see Table 15). However, fewer livestock would be authorized under this alternative (1,388 vs. 1,760, or a 21% decrease), so grazing intensity under this alternative would be less (i.e., lighter utilization). Thus, additional foliage

would remain on palatable plants (both grasses and shrubs) within the allotment, which would maximize their herbage producing ability (Holecheck et al. 1999).

As stated in Section 4.2.1, allotment monitoring data indicates that resource conditions on the allotment currently meet all applicable standards for rangeland health. Livestock grazing as proposed under this alternative would minimally affect vegetation, and overall plant vigor would be maintained. Monitoring of the allotment would continue – if future monitoring indicates any areas within the allotment are not in compliance with the Fundamentals of Rangeland Health, and livestock grazing is a causal factor, changes to the grazing use would be made (as described in Section 2.2.5 of this EA).

4.2.3 Impacts of Alternative C – Issue New 10-Year Grazing Permits with Increased Grazing (Potential Stocking Level Analysis)

Under this alternative, grazing would be authorized for the Rock Pockets Allotment, with the same grazing system as that described for Alternative A (see Table 11). Since the seasons of use for each of the three pastures would be the same as for Alternative A, impacts to vegetation would be similar to those described for Alternative A (see Table 15). However, more livestock would be authorized under this alternative (2,077 vs. 1,760, or an 18% increase), so grazing intensity under this alternative would be greater, although maximum utilization would not exceed 50%. Thus, while utilization would still be in the “moderate” category, less total foliage would remain on palatable plants (both grasses and shrubs) within the allotment. This alternative has the potential to have the greatest impacts on vegetation. However, as described in Section 4.2.1 above, most rangeland grasses and forbs can have 40-50% of their leaves and stems removed every year and still remain healthy and productive.

As stated in Section 4.2.1, allotment monitoring data indicates that resource conditions on the allotment currently meet all applicable standards for rangeland health. Livestock grazing as proposed under this alternative is not anticipated to significantly affect vegetation (due to not exceeding 50% utilization, and also due to rotating season of use in each pasture over a 3-year rotation cycle to provide periodic rest for vegetation); it is therefore expected that overall plant vigor would be maintained. Monitoring of the allotment would continue – if future monitoring indicates any areas within the allotment are not in compliance with the Fundamentals of Rangeland Health, and livestock grazing is a causal factor, changes to the grazing use would be made (as described in Section 2.2.5 of this EA).

4.2.4 Impacts of Alternative D – No Grazing

Under this alternative, no livestock grazing would occur so plants would only be minimally grazed by wildlife. Vegetation would therefore have the most rest and recovery as compared to the other alternatives. Although the allotment is already meeting all applicable standards for rangeland health, plant communities would still benefit from rest. Because no livestock grazing would occur, plants would remain ungrazed or minimally grazed (by wildlife) each year. All

plant species would benefit from no grazing. This alternative would therefore result in the least grazing on vegetation, meaning the plants would have the maximum amount of energy compounds in their stems for survival and reproduction.

4.3 Wildlife, Including Big Game, Migratory Birds, and Sensitive Species

Herbaceous vegetation provides forage and concealment cover for wildlife species, particularly during the spring breeding period when calving, fawning, nesting, and rearing of young occurs. Livestock grazing reduces the height and amount of herbaceous vegetation. The presence of livestock and the movement of livestock between areas of use could result in the direct disturbance or displacement of some wildlife from preferred habitats, nesting/birthing sites, or water sources. Both the disturbance and displacement of wildlife and the reduction of herbaceous forage and cover could limit the productivity and reproductive success of some species. However, the livestock grazing proposed in Alternatives A, B, and C would rotate season of use among the various pastures so that each pasture is grazed during a different season over the 3-year rotation cycle, which would help maintain vegetative condition, and therefore wildlife habitat components (see “Vegetation” section above).

4.3.1 Impacts of Alternative A – Proposed Action

Big Game

Mule deer

As described in Chapter 3, mule deer are present year-round in this allotment, although densities are most likely low. The presence of livestock and the trailing of livestock between use areas could displace some wildlife from preferred habitats and/or water sources. However, this displacement would only be temporary.

As described previously, allotment monitoring data indicates that resource conditions on the allotment currently meet all applicable standards for rangeland health, including meeting the DPC objectives for vegetation components at the key areas (as outlined on page 9 of this EA). Since the same management regime has been in place for many years, it is expected that livestock grazing proposed under this alternative would minimally affect habitat for mule deer, and ecological condition of that habitat would be maintained (see Section 4.2.1 above). Since utilization on vegetation has been light in recent years (see Table 7), and composition of grasses and palatable shrubs is high (see Table 16), competition for forage between livestock and deer should be minimal. Monitoring of the allotment would continue – if future monitoring indicates any areas within the allotment are not in compliance with the Fundamentals of Rangeland Health, changes to the grazing use would be made (as described in Section 2.2.5 of this EA). However, current monitoring data does not indicate that any changes to grazing management are

necessary. The proposed action would therefore not affect meeting habitat (i.e., forage) objectives for mule deer.

Pronghorn

Cattle, sheep, and horses are the primary domestic livestock species sharing rangelands with pronghorn, and about 99% of pronghorn roam rangelands with livestock at some time during the year (Yoakum and O’Gara 1990). Although those animals have coexisted with pronghorn for centuries, there can be specific situations that are cause for concern. The abundance of forbs and grasses during late gestation and early lactation is a major factor in pronghorn fawn survival. Reduced availability of that forage component due to consumption by livestock can result in reduced carrying capacity for pronghorn. On rangelands in good ecological condition, however, competition for forage is not generally a significant factor. In areas dominated by grasses, cattle can have a positive effect on pronghorn by removing the grasses and increasing the availability of forbs and shrubs preferred by pronghorn. Several researchers have observed competition between sheep and pronghorn for forbs and shrubs (Yoakum and O’Gara 1990). The presence of domestic livestock on pronghorn fawning areas has been shown to displace does to less suitable habitat during this critical time (McNay and O’Gara 1982).

As described in Chapter 3, pronghorn distribution is widespread in Unit 13A. The Rock Pockets allotment consists of a mix of moderate, low, and poor quality habitat for this species, with relatively low densities of pronghorn occurring within the allotment. While the presence of livestock and the trailing of livestock between use areas could displace does during fawning, pronghorn densities in this area are low so few does would be potentially affected; in addition, this potential for displacement would occur no more than once every three years due to the rotational grazing system in place.

All three key areas in the allotment are within pronghorn habitat. The Arizona Strip Field Office RMP includes a forage objective of at least 20% grasses and forbs, and 20% palatable shrub species in pronghorn habitat, where consistent with site potential. The key areas within the Rock Pockets Allotment currently have the forage compositions listed in Table 16. As shown in the table, the RMP forage objectives for pronghorn habitat are met at all key areas.

Table 16. Forage Compositions in Pronghorn Habitat

Key Area	Grass	Forbs	Grass/Forb Objective Met (Y/N)	Palatable Shrubs	Objective Met (Y/N)
	Composition				
Key Area #1	49%	9%	Y	33%	Y
Key Area #2	18%	4%	Y	58%	Y
Key Area #3	37%	5%	Y	37%	Y

Allotment monitoring data indicates that resource conditions on the allotment currently meet all applicable standards for rangeland health, including meeting the DPC objectives for vegetation components at the key areas (as outlined on page 9 of this EA). Table 16 also demonstrates that RMP forage objectives for pronghorn are currently being met at all three key areas. Competition for forage between livestock and pronghorn should therefore be minimal. Since the same management regime has been in place for many years, it is expected that livestock grazing proposed under this alternative would minimally affect vegetation (i.e., habitat for pronghorn), and ecological condition of that habitat would be maintained. Monitoring of the allotment would continue – if future monitoring indicates any areas within the allotment are not in compliance with the Fundamentals of Rangeland Health, changes to the grazing use would be made (as described in Section 2.2.5 of this EA). However, current monitoring data does not indicate that any changes to grazing management are necessary. The proposed action would therefore not affect meeting habitat (i.e., forage) objectives for pronghorn.

Migratory Birds

Properly managed livestock grazing is designed to cause minimal impacts to rangeland resources, including wildlife habitat. As described previously, allotment monitoring data indicates that resource conditions on the allotment currently meet all applicable standards for rangeland health. One factor in making this determination was the assessment that DPC objectives for vegetation components at the key areas (as outlined on page 9 of this EA) are being met on the Rock Pockets Allotment. Managing this allotment to achieve DPC objectives and implementation of the proposed utilization levels would result in maintaining the ecological condition of the allotment (see “Vegetation” discussion above). In addition, rotating the season of use for each of the three pastures would provide periodic rest for vegetation to help maintain plant vigor. Implementation of the proposed action is therefore unlikely to impact any species of migratory bird known or suspected to occur on the allotment. No take of any migratory bird species is anticipated.

Sensitive Species

Peregrine falcon, golden eagle

Nesting sites for peregrine falcons or golden eagles would not be impacted by livestock within the allotment because these sites are located on ledges in cliff faces that are inaccessible to livestock. Prey species for peregrine falcons, such as mourning doves and band-tailed pigeons, generally do well in human altered environments including grazed areas. Habitat for golden eagle prey species, such as black-tailed jackrabbits, could be adversely impacted if overutilization occurs. However, the effects of moderate grazing can be negligible to slightly beneficial for many prey species (Olendorff 1993). Vegetation in the allotments is sufficient to provide food and shelter requirements for populations of prey species for the peregrine falcon. Habitat for prey for these species would be minimally affected because grazing under this alternative rotates season of use for each of the three pastures to provide periodic rest for the plant communities (see “Vegetation” discussion above). Managing the allotment to achieve DPC objectives and implementation of the proposed utilization level would result in maintaining or improving the ecological condition of the

allotment. Disturbance to nest sites from livestock management operations is unlikely given the remote and inaccessible locations these species choose for nesting. Implementation of the proposed action is not likely to impact peregrine falcon or golden eagle habitat or nesting success.

Ferruginous hawk

Nesting sites and habitat for ferruginous hawk prey species have the potential to be impacted by livestock grazing within the allotment. Isolated nest trees used by this species could be impacted through rubbing of the trunk or by damaging the root system from congregations of cattle seeking shade. Habitat for prey species, such as black-tailed jackrabbits, could be adversely impacted if overutilization occurs. However, the effects of moderate grazing can be negligible to slightly beneficial for many prey species (Olendorff 1993). Vegetation in the allotment is sufficient to provide food and shelter requirements for populations of prey species for the ferruginous hawk. Managing the allotment to achieve DPC objectives and implementation of the proposed utilization level would result in maintaining or improving the ecological condition of the allotment. Ferruginous hawks are sensitive to disturbance near the nest site. However, no nesting has been documented in this allotment so impacts to nesting are unlikely and would not lead to a trend toward listing.

Burrowing owl

Nesting burrows for burrowing owls could potentially be impacted by livestock within the allotment through trampling. However, burrowing owls prefer open country with sparse vegetation and can do well in moderately to heavily grazed areas. Occupied burrows in the allotment frequently have cows nearby during monitoring visits (Langston, personal obs.). Prey species are numerous in the allotment and include small mammals, insects, reptiles, and amphibians. Vegetation in the allotment is sufficient to provide food and shelter requirements for populations of prey species for the burrowing owl. Managing the allotment to achieve DPC objectives and implementation of the proposed utilization level would result in maintaining or improving the ecological condition of the allotment. Disturbance to nest sites from livestock management operations may occur but this species is known to tolerate moderate levels of disturbance. Implementation of the proposed action is not likely to impact burrowing owl habitat or nesting success in the allotment.

4.3.2 Impacts of Alternative B – Issue New 10-Year Grazing Permits with Reduced Grazing (Actual Use)

Big Game

Mule deer

Under this alternative, grazing would be authorized with the same grazing system as that described for Alternative A (see Table 11). The presence of livestock and the trailing of

livestock between use areas could displace some wildlife from preferred habitats and/or water sources. However, this displacement would only be temporary.

Since the seasons of use for each of the three pastures would be the same as for Alternative A, impacts to vegetation (i.e., habitat) would be similar to those described for Alternative A (see Table 15). However, fewer livestock would be authorized under this alternative (1,388 vs. 1,760, or a 21% decrease) so grazing intensity under this alternative would be less. Thus, additional foliage would remain on palatable plants (both grasses and shrubs) within the allotment.

As stated in Section 4.2.1, allotment monitoring data indicates that resource conditions on the allotment currently meet all applicable standards for rangeland health. Livestock grazing as proposed under this alternative would minimally affect vegetation – overall plant vigor would be maintained and composition of grasses and palatable shrubs would remain high, resulting in minimal competition for forage between livestock and deer. Monitoring of the allotment would continue – if future monitoring indicates any areas within the allotment are not in compliance with the Fundamentals of Rangeland Health, and livestock grazing is a causal factor, changes to the grazing use would be made (as described in Section 2.2.5 of this EA). Implementation of this alternative is not likely to impact mule deer within the allotment.

Pronghorn

Under this alternative, grazing would be authorized with the same grazing system as that described for Alternative A (see Table 11). While the presence of livestock and the trailing of livestock between use areas could displace does during fawning, pronghorn densities in this area are low so few does would be potentially affected; in addition, this potential for displacement would occur no more than once every three years due to the rotational grazing system in place. Since the seasons of use for each of the three pastures would be the same as for Alternative A, impacts to vegetation (i.e., habitat) would be similar to those described for Alternative A (see Table 15). However, fewer livestock would be authorized under this alternative (1,388 vs. 1,760, or a 21% decrease) so grazing intensity under this alternative would be less. Thus, additional foliage would remain on palatable plants (both grasses and shrubs) within the allotment.

As stated in Section 4.2.1, allotment monitoring data indicates that resource conditions on the allotment currently meet all applicable standards for rangeland health. Livestock grazing as proposed under this alternative would minimally affect vegetation. Decreased livestock grazing would result in overall plant vigor being maintained; composition of grasses and palatable shrubs would remain high and continue to meet RMP forage objectives for pronghorn habitat. This alternative would therefore result in minimal competition for forage between livestock and pronghorn. Monitoring of the allotment would continue – if future monitoring indicates any areas within the allotment are not in compliance with the Fundamentals of Rangeland Health, and livestock grazing is a causal factor, changes to the grazing use would be made (as described in Section 2.2.5 of this EA). Implementation of this alternative is not likely to impact pronghorn within the allotment.

Migratory Birds

Impacts under this alternative would be similar to those described for Alternative A except that fewer (21% less) livestock would be authorized to graze on the allotment. Decreased grazing would result in overall plant vigor being maintained and additional foliage would remain on vegetation to provide necessary forage and shelter habitat components for migratory birds. Allotment monitoring data indicates that resource conditions on the allotment currently meet all applicable standards for rangeland health. One factor in making this determination was the assessment that DPC objectives for vegetation components at the key areas (as outlined on page 9 of this EA) are being met on the Rock Pockets Allotment. Managing this allotment to achieve DPC objectives and implementation of the proposed rotational grazing system would help ensure that habitat components for migratory birds are maintained. Implementation of this alternative is therefore unlikely to impact any species of migratory bird known or suspected to occur on the allotment, and no take of any migratory bird species is anticipated.

Sensitive Species

Peregrine falcon, ferruginous hawk, burrowing owl, golden eagle

Impacts under this alternative would be similar to those described for Alternative A except that fewer (21% less) livestock would be authorized to graze on the allotment. Vegetation in the allotment is currently sufficient to provide food and shelter requirements for populations of prey species (small mammals, birds, and rabbits) for these birds, although plants would likely benefit from decreased grazing pressure. Allotment monitoring data indicates that resource conditions on the allotment currently meet all applicable standards for rangeland health. Managing the allotment to achieve DPC objectives and implementation of the proposed rotational grazing system would result in maintaining the ecological condition of the allotment (see “Vegetation” discussion above). Nesting sites and habitat for peregrine falcons and golden eagles would not be impacted by livestock within the allotment because these species select sites that are inaccessible to livestock. Minor disturbance at ferruginous hawk and burrowing owl nest sites, as described under Alternative A, could potentially occur but with reduced potential due to reduced grazing. Therefore, implementation of this alternative is not likely to impact BLM sensitive species within the allotment, and would not lead to a trend toward listing.

4.3.3 Impacts of Alternative C – Issue New 10-Year Grazing Permits with Increased Grazing (Potential Stocking Level Analysis)

Mule deer

Under this alternative, grazing would be authorized for the Rock Pockets Allotment, with the same grazing system as that described for Alternative A (see Table 11). The presence of livestock and the trailing of livestock between use areas could displace some wildlife from

preferred habitats and/or water sources. However, this displacement would only be temporary. Since the seasons of use for each of the three pastures would be the same as for Alternative A, impacts to vegetation communities (i.e., habitat for mule deer) would be similar to those described for Alternative A. However, more livestock would be authorized under this alternative (2,077 vs. 1,760, or an 18% increase), so grazing intensity under this alternative would be greater, although maximum utilization would not exceed 50%. Thus, while utilization would still be in the “moderate” category, less total foliage would remain on palatable plants (both grasses and shrubs) within the allotment. Although most rangeland grasses and forbs can have 40-50% of their leaves and stems removed every year and still remain healthy and productive, this alternative has the greatest potential to result in competition for forage between livestock and mule deer.

As stated in Section 4.2.1, allotment monitoring data indicates that resource conditions on the allotment currently meet all applicable standards for rangeland health. Livestock grazing as proposed under this alternative is not anticipated to significantly affect vegetation (due to not exceeding 50% utilization, and also due to rotating season of use in each pasture over a 3-year rotation cycle to provide periodic rest for vegetation); it is therefore expected that overall plant vigor would be maintained. Monitoring of the allotment would continue – if future monitoring indicates any areas within the allotment are not in compliance with the Fundamentals of Rangeland Health, and livestock grazing is a causal factor, changes to the grazing use would be made (as described in Section 2.2.5 of this EA).

Pronghorn

Under this alternative, grazing would be authorized for the Rock Pockets Allotment, with the same grazing system as that described for Alternative A (see Table 11). While the presence of livestock and the trailing of livestock between use areas could displace does during fawning, pronghorn densities in this area are low so few does would be potentially affected; in addition, this potential for displacement would occur no more than once every three years due to the rotational grazing system in place. Since the seasons of use for each of the three pastures would be the same as for Alternative A, impacts to vegetation communities (i.e., habitat for pronghorn) would be similar to those described for Alternative A. However, more livestock would be authorized under this alternative (2,077 vs. 1,760, or an 18% increase), so grazing intensity under this alternative would be greater, although maximum utilization would not exceed 50%. Thus, while utilization would still be in the “moderate” category, less total foliage would remain on palatable plants (both grasses and shrubs) within the allotment. Although most rangeland grasses and forbs can have 40-50% of their leaves and stems removed every year and still remain healthy and productive, this alternative has the greatest potential to result in competition for forage between livestock and pronghorn.

As stated in Section 4.2.1, allotment monitoring data indicates that resource conditions on the allotment currently meet all applicable standards for rangeland health. Livestock grazing as proposed under this alternative is not anticipated to significantly affect vegetation (due to not exceeding 50% utilization, and also due to rotating season of use in each pasture over a 3-year

rotation cycle to provide periodic rest for vegetation); it is therefore expected that overall plant vigor and composition of forage plants (as presented in Table 16) would be maintained. Monitoring of the allotment would continue – if future monitoring indicates any areas within the allotment are not in compliance with the Fundamentals of Rangeland Health, and livestock grazing is a causal factor, changes to the grazing use would be made (as described in Section 2.2.5 of this EA).

Migratory Birds

Impacts under this alternative would be similar to those described for Alternative A except that additional (18% more) livestock would be authorized to graze on the allotment so grazing intensity would be greater, although maximum utilization would not exceed 50%. Thus, while utilization would still be in the “moderate” category, less total foliage would remain on vegetation to provide necessary forage and shelter habitat components for migratory birds. Although most rangeland grasses and forbs can have 40-50% of their leaves and stems removed every year and still remain healthy and productive, this alternative has the greatest potential to impact migratory birds. Allotment monitoring data indicates that resource conditions on the allotment currently meet all applicable standards for rangeland health. One factor in making this determination was the assessment that DPC objectives for vegetation components at the key areas (as outlined on page 9 of this EA) are being met on the Rock Pockets Allotment. Managing this allotment to achieve DPC objectives and implementation of the proposed rotational grazing system would help ensure that habitat components for migratory birds are maintained. Implementation of this alternative is therefore unlikely to impact any species of migratory bird known or suspected to occur on the allotment, and no take of any migratory bird species is anticipated.

Sensitive Species

Peregrine falcon, ferruginous hawk, burrowing owl, golden eagle

Impacts under this alternative would be similar to those described for Alternative A except that additional (18% more) livestock would be authorized to graze on the allotment so grazing intensity would be greater, although maximum utilization would not exceed 50%. Thus, while utilization would still be in the “moderate” category, less total foliage would remain on vegetation to provide food and shelter requirements for populations of prey species (small mammals, birds, and rabbits) for these birds. Although most rangeland grasses and forbs can have 40-50% of their leaves and stems removed every year and still remain healthy and productive, this alternative has the greatest potential to impact sensitive species.

Allotment monitoring data indicates that resource conditions on the allotment currently meet all applicable standards for rangeland health. Livestock grazing as proposed under this alternative is not anticipated to significantly affect vegetation (due to not exceeding 50% utilization, and also due to rotating season of use in each pasture over a 3-year rotation cycle to provide periodic rest for vegetation); it is therefore expected that overall plant vigor, and thus food and shelter requirements for populations of prey species, would be maintained. Implementation of this

alternative would not significantly impact any sensitive species known or suspected to occur on the allotment, and would not lead to a trend toward listing.

4.3.4 Impacts of Alternative D – No Grazing

Big Game

Mule deer

Under this alternative, no livestock grazing would occur so plants would only be minimally grazed (by wildlife). Vegetation would therefore have the most rest and recovery as compared to the other alternatives – although the allotment is already meeting all applicable standards for rangeland health, plant communities would still benefit from rest. Since this alternative would result in the least grazing on vegetation, plants would have the maximum amount of energy compounds in their stems for survival and reproduction, and plant communities would continue to provide sufficient forage for mule deer. In addition, since no livestock would be present on the allotment, no potential for displacement of mule deer from preferred habitats and/or water sources would occur.

Pronghorn

Under this alternative, no livestock grazing would occur so plants would only be minimally grazed (by wildlife). Vegetation would therefore have the most rest and recovery as compared to the other alternatives – although the allotment is already meeting all applicable standards for rangeland health, plant communities would still benefit from rest. Since this alternative would result in the least grazing on vegetation, plants would have the maximum amount of energy compounds in their stems for survival and reproduction; plant communities would continue to provide sufficient forage for pronghorn, and RMP forage objectives for pronghorn would continue to be met at all three key areas. In addition, since no livestock would be present on the allotment, no potential for displacement of does during fawning would occur.

Migratory Birds

Under this alternative, vegetation would have the most rest and recovery as compared to the other alternatives. Although the allotment is meeting all applicable standards for rangeland health, plant communities would still benefit from rest. Because no livestock grazing would occur, plants would remain ungrazed or minimally grazed (by wildlife) each year. Grasses would continue to fix a significant amount of carbon, produce seed, and set seed; shrubs would have the maximum amount of energy compounds in their stems for survival over the winter dormant season. Vegetation in the allotment would therefore continue to provide sufficient food and shelter requirements for migratory birds. In addition, nesting sites for migratory birds would not be impacted by livestock within the allotment. No take of any migratory bird species would be anticipated from implementation of this alternative.

Sensitive Species

Peregrine falcon, ferruginous hawk, burrowing owl

Under this alternative, vegetation would have the most rest and recovery as compared to the other alternatives. Although the allotment is meeting all applicable standards for rangeland health, plant communities (which provide habitat components for prey species) would still benefit from rest. Because no livestock grazing would occur, plants would remain ungrazed or minimally grazed (by wildlife) each year. Grasses would continue to fix a significant amount of carbon, produce seed, and set seed; shrubs would have the maximum amount of energy compounds in their stems for survival over the winter dormant season. Vegetation in the allotment would continue to be sufficient to provide food and shelter requirements for populations of prey species (small mammals, birds, and rabbits) for these birds.

4.4 Soils

4.4.1 Impacts of Alternative A – Proposed Action

Under this alternative, livestock grazing would continue with the current level of active preference and with the same rotational grazing system. Impacts to soils from livestock grazing occur from trampling and vegetation removal, resulting in compaction and erosion. As described in Section 3.3.4 of this EA, the vast majority of the soils in this allotment are in fair to good condition and the natural vegetation is not detrimentally affected except for a few small areas. The largest of these, about 30 acres of the Manikan stream terrace soil in the west pasture along the main road, is vegetated mostly by annuals. Moderate near surface compaction has reduced the infiltration rates, root space, available water holding capacity, and aeration and has increased runoff and droughtiness. Livestock grazing as proposed under this alternative would minimally affect vegetation, and overall plant vigor would be maintained, which would minimize impacts to soils across the allotment. However, achieving the potential plant community of the ecological site guide in the Manikan stream terrace soil areas without some sort of mechanical treatment (plowing and seeding), may not be possible. Thus, the current level of impacts to soils in these areas would be maintained and no changes in soil conditions are anticipated.

4.4.2 Impacts of Alternative B – Issue New 10-Year Grazing Permit with Reduced Grazing (Actual Use)

The protective canopy formed by vegetation reduces the impact of rain drops on the soil surface, thereby decreasing the breakdown of soil aggregates. It also slows the velocity of runoff from rainfall and snowmelt, reducing soil loss due to sheet and rill erosion (NRCS 2015). Under this alternative, livestock grazing would occur on the allotment with the same rotational grazing system as is currently authorized, but the number of active AUMs would be reduced by approximately 21%. Grazing intensity proposed under this alternative would be less than that under Alternative A, resulting in additional foliage remaining on vegetation. Some of the areas

of concentrated use might show an increase in vegetative cover through time, which would benefit soils in the allotment. However, achieving the potential plant community of the ecological site guide in the Manikan stream terrace soil areas without some sort of mechanical treatment (plowing and seeding), may not be possible, even with reduced grazing. The soil in these areas is compacted – the pore spaces (which consist of air or water) have been greatly reduced, resulting in a dense soil with few large spaces, poor internal drainage and limited aeration. This makes it very difficult for vegetation to establish and grow in these areas unless pore spaces are re-established by methods such as plowing, which loosens the soil.

As stated in Sections 3.3.4 and 4.4.1, the vast majority of the soils in this allotment are in fair to good condition and the natural vegetation is not detrimentally affected except for a few small areas such as the aforementioned Manikan stream terrace soil areas. It is therefore anticipated that the current level of impacts to soils in these areas would generally be maintained and no substantial changes in soil conditions are anticipated with implementation of this alternative.

4.4.3 Impacts of Alternative C – Issue New 10-Year Grazing Permits with Increased Grazing (Potential Stocking Level Analysis)

Under this alternative, livestock grazing would occur on the allotment with the same rotational grazing system as is currently authorized, but the number of active AUMs would be increased by approximately 18%. Grazing intensity would be greatest under this alternative, resulting in the most removal of foliage from vegetation and the least amount of protective canopy for soils formed by the vegetation (although it is important to note that the maximum utilization level of 50% would still not be exceeded). While the vast majority of the soils in this allotment are in fair to good condition, the areas of concentrated livestock use would likely not show an increase in vegetative cover through time due to the increase in grazing animals (i.e., cattle). In addition, increased grazing would preclude achieving the potential plant community of the ecological site guide in the Manikan stream terrace soil areas even if plowed and seeded. These areas would remain vegetated mostly by annuals; continue to have moderate near surface compaction, reduced infiltration rates, root space, available water holding capacity, and aeration; and continue to have increased runoff and droughtiness. This alternative would therefore have the greatest adverse impacts to soils of all the alternatives.

4.4.4 Impacts of Alternative D – No Grazing

Impacts under this alternative would be similar to those described for Alternative B except that no livestock grazing would occur. Vegetation, which provides a protective canopy for soils, would have the most rest and recovery as compared to the other alternatives. In addition, removing all livestock from the allotment would result in surface compaction being minimized which would increase infiltration rates, root space, available water holding capacity, and aeration. Thus, over time shallow compacted layers would slowly break up, via freeze-thaw and wetting-drying cycles, root action, soil organisms, and animals. Vegetative soil cover and

organic crusts, including cryptogams, should increase. The small areas of concentrated use would slowly heal as vegetation increases. However, even with no grazing, it may not be possible for the Manikan stream terrace soil areas to achieve the potential plant community of the ecological site guide without a plowing and seeding treatment (as explained above). This alternative would have the greatest beneficial impacts to soils of all the alternatives.

4.5 Cumulative Impacts

“Cumulative impacts” are those impacts resulting from the incremental impact of an action when added to other past, present, or reasonably foreseeable actions regardless of what agency or person undertakes such other actions. This EA attempts to qualify and quantify the impacts to the environment that would result from the incremental impact of the proposed action or alternatives when added to other past, present, and reasonably foreseeable future actions. These impacts can result from individually minor but collectively important actions taking place over a period of time.

There are a wide variety of uses and activities occurring on the lands within and adjacent to the Rock Pockets Allotment, including livestock grazing, vehicle touring, mining, etc. Specific actions that are occurring, or are likely to occur in the reasonably foreseeable future are:

- *Livestock grazing* – The Rock Pockets Allotment and the adjacent BLM-administered land are active grazing allotments. Each of these allotments is managed under a grazing system that is documented and described in an AMP. Livestock grazing has occurred in the area for 150+ years.
- *Mining and Mineral Resources* – Public lands within and adjacent to the Rock Pockets Allotment are open to mineral development (see below for a discussion on the Northern Arizona Proposed Withdrawal). The primary economic mineral resource in the area consists of locatable mineral deposits, including breccia pipe deposits (i.e., vertical collapse features formed from the collapse of karst solution caverns in the underlying Redwall limestone). Other potential mineral resources in the area are salable minerals (consisting primarily of sand, stone and gravel but also clay). The potential for gravel is high. Several existing mineral material pits occur in the area.
- *Northern Arizona Mineral Withdrawal* – On January 9, 2012, the Secretary of the Interior issued a decision to withdraw approximately 1 million acres of Federal locatable minerals in northern Arizona from the location of new mining claims under the Mining Law of 1872 [30 USC 22–54] (Mining Law), subject to valid existing rights. The affected lands are located near Grand Canyon National Park in northern Arizona, and consist of lands managed by the BLM and the U.S. Forest Service. The decision to withdraw these lands was made in order to protect the Grand Canyon watershed from adverse effects of locatable mineral exploration and development. The withdrawal does not affect use, management, or disposition of the lands other than under the Mining Law. The Yellowstone Pasture of the Rock Pockets Allotment is within the withdrawal area, while the other two pastures of the allotment are outside the withdrawal area.

- *Recreation* – Recreation activities occurring throughout the area involve a broad spectrum of pursuits ranging from dispersed and casual recreation to organized, BLM-permitted group uses. Typical recreation in the area consists primarily of activities such as vehicle touring, wildlife viewing, camping, and hunting. The Arizona Strip is known for its large-scale undeveloped areas and remoteness, which provides an array of recreational opportunities for users who wish to experience primitive and undeveloped recreation, as well as those seeking more organized or packaged recreation experiences.

4.5.1 Livestock Grazing

Livestock grazing in the region has evolved and changed considerably since it began in the 1860s, 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. 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. Past, present, and reasonably foreseeable actions within the analysis area would continue to influence range resources, watershed conditions and trends. The impact of vegetation treatments, voluntary livestock reductions during dry periods, and implementation of a grazing system have improved range conditions. The net result has been greater species diversity, improved plant vigor, and increased ground cover from grasses and forbs.

The effects on livestock grazing in the Rock Pockets Allotment have been analyzed under the “Direct and Indirect Effects” section of this chapter. In addition to livestock grazing, there are a wide variety of uses and activities occurring on the lands within and adjacent to the Rock Pockets Allotment, as described above. Since livestock grazing occurs throughout the area and on adjacent private lands, it is reasonable to assume that impacts similar to those identified earlier in this chapter would occur elsewhere in the area. Another action not mentioned above that may affect livestock grazing is listing a species as threatened or endangered under the Endangered Species Act, including designating critical habitat. Making areas unavailable for livestock grazing, placing restrictions on season of use, reducing access, or applying other restrictions meant to protect special status species may impact livestock grazing operations through the loss of forage, increased difficulty of access, increased costs of operation, and reduced livestock numbers (BLM 2007a). While several species have recently been added to the endangered and threatened species list and had critical habitat designated (including Fickeisen

plains cactus, Gierisch mallow, and yellow-billed cuckoo), none of these species are known to occur within the Rock Pockets Allotment. It is therefore anticipated that none of the alternatives would result in cumulative impacts to livestock grazing when added to other past, present, and reasonably foreseeable activities in the area.

4.5.2 Vegetation

Vegetation on the Arizona Strip has gone through significant changes since the 1870s due to historic land use practices and the introduction of non-native species. Livestock grazing would continue across the area on BLM-administered lands. The land health evaluation and permit renewal processes would help ensure grazing practices are conducted in a manner to maintain or improve the ecological health of the area. Rangeland management practices would act to prevent and control the spread of invasive plant species, maintain diverse and natural plant communities, improve wildlife habitat, reduce erosion, and improve water quality. The objectives developed to manage for healthy rangelands have a goal of keeping the entire ecosystem healthy and productive in order to ensure that it yields both usable products and intrinsic values.

Continuing gypsum and uranium mining in the region, as well as use of mineral material sites in the area, would cumulatively affect vegetation through the loss of vegetation, higher rates of erosion and sedimentation in drainages/waterways, increased deposition of dust on vegetation adjacent to roadways (i.e., haul routes), and introduction and spread of invasive plants. Reclamation activities would counter some of the reduction in vegetative cover, and preventative measures to inhibit the spread of invasive species could curtail infestation by species such as Scotch thistle.

The effects of livestock grazing on vegetation in the Rock Pockets Allotment have been analyzed under the “Direct and Indirect Effects” section of this chapter. Past, present, and reasonably foreseeable actions within the analysis area would continue to affect this resource, as described above. However, continuing to monitor plant communities and to implement the Arizona Standards for Rangeland Health should help ensure the long-term health of rangeland resources, including vegetation. Given the fact that the allotment currently meets all applicable standards for rangeland health (which takes into account all uses of public rangelands, not just livestock grazing), and none of the alternatives are anticipated to change that determination, it is anticipated that the alternatives would not result in cumulative impacts to vegetation resources when added to other past, present, and reasonably foreseeable activities in the area.

4.5.3 Wildlife, Including Big Game, Migratory Birds, and Sensitive Species

Wildlife may be affected by other activities occurring within and adjacent to the allotment, including mineral development and various dispersed recreational activities. Mineral development has led to reduction of habitat quality and physical disturbance in a variety of habitats. Mining-related activities in the area include ongoing operations at the Arizona 1 and Pinenut uranium mines, both of which are located on the Kanab Plateau several miles to the

southeast of the Rock Pockets Allotment, and the potential for several additional future mines. Impacts to wildlife species from uranium mining activities were fully analyzed in the Northern Arizona Proposed Withdrawal EIS. This analysis stated that “Given the relatively small area of surface impact, none of the alternatives [including the proposed withdrawal] would result in significant cumulative impacts to migratory birds [and wildlife resources] when added to other past, present, and reasonably foreseeable activities in the proposed withdrawal area” (BLM 2011). However, the Secretarial decision to implement the Northern Arizona Mineral Withdrawal in 2012 acknowledged that there were several unknowns and uncertainties related to the effects of uranium mining in the Grand Canyon region. A key factor in the decision to withdraw lands from future uranium mining for 20 years was the limited amount of scientific data available to assess potential impacts, specifically in the terms of groundwater flow paths, radionuclide migration, and biological toxicity pathways. A number of scientific studies to reduce these unknowns and uncertainties were identified by an interagency team consisting of the BLM, U.S. Forest Service, NPS, USFWS, and the U.S. Geological Survey (USGS); several studies have already been initiated. One such study is to conduct habitat and species surveys (including for sensitive species) in and adjacent to active mine sites (Arizona 1 and Pinenut, which are more than 15 miles to the southeast of Rock Pockets Allotment) to determine the degree that biota occur near and are attracted to mining activities. Results from this study will help identify species for radiation and chemical characterization and will therefore help determine those uncertainties in the ecological risk analysis. USGS personnel began field work (i.e., mist netting and collecting blood samples) for this study in late June 2015.

Recreational pursuits, particularly off-highway vehicle (OHV) use, have caused disturbance to most all species and their habitats. With the increase in local populations has come a dramatic increase in the level of OHV use, resulting in increased disturbance, injury, and mortality to wildlife, particularly ground dwelling species with low mobility. Transportation corridors exist through the habitat of virtually all species found within the planning area. Impacts vary by species and by the location, level of use, and speed of travel over the road.

The effects of livestock grazing on wildlife in the Rock Pockets Allotment have been analyzed under the “Direct and Indirect Effects” section of this chapter. In addition to livestock grazing, there are a wide variety of uses and activities occurring on the lands within and adjacent to the Rock Pockets Allotment, as described above. This additive impact may affect wildlife habitat or corridors and the greater ecosystems by altering vegetation associations. These systems and the health of the region as a whole are important for the survival of many native species. Consultation with AGFD in regard to renewal of livestock grazing permits did not identify any issues directly related to livestock grazing beyond those already discussed above. Given the fact that the allotment currently meets all applicable standards for rangeland health (which takes into account all uses of public rangelands, not just livestock grazing), and none of the alternatives are anticipated to change that determination, it is anticipated that the alternatives would not result in cumulative impacts to wildlife when added to other past, present, and reasonably foreseeable activities in the area.

4.5.4 Soils

Soils in the area formed under conditions that had no vehicles or large numbers of large animals to impact them. Population growth, grazing, and developments over the past 150 years have resulted in soil disturbance on hundreds of thousands of acres at and near homesteads, communities, roads, and waters across the Arizona Strip. Continued population growth and the resulting growth in vehicle and OHV use and visitation in the region would continue to add to the acreage of soil disturbance. Continued AMP implementation, watershed plans, and the land health evaluation process would continue to examine livestock grazing areas for impacts and would apply remedies to decrease compaction and erosion. Continued and/or additional mining would increase disturbance to soils, although reclamation would stabilize the replaced soils. Droughts would reduce overall vegetative cover making soils more susceptible to erosion, especially where there is surface disturbance. Wildfire would continue to make soils more susceptible to erosion. The Rock Pockets Allotment land health evaluation recommended plowing and drill seeding the very small areas of bottom lands (the Manikan soil areas) that are devoid of perennial vegetation site to reduce compaction and re-establish vegetation. This would benefit soil resources by increasing porosity, increasing water and air infiltration, and decreasing resistance to root penetration, which would make them more productive.

The effects of livestock grazing on soils in the Rock Pockets Allotment have been analyzed under the “Direct and Indirect Effects” section of this chapter. In addition to livestock grazing, there are a wide variety of uses and activities occurring on the lands within and adjacent to the Rock Pockets Allotment, as described above. However, continuing to monitor soils and to implement the Arizona Standards for Rangeland Health should help ensure that soils exhibit infiltration, permeability, and erosion rates that are appropriate to soil type, climate, and ecological site. Given the fact that the allotment currently meets all applicable standards for rangeland health (which takes into account all uses of public rangelands, not just livestock grazing), including Standard #1 which addresses soil condition, and none of the alternatives are anticipated to change that determination, it is anticipated that the alternatives would not result in cumulative impacts to soils when added to other past, present, and reasonably foreseeable activities in the area.

4.6 Monitoring

Dry weight ranking (DWR) studies would be used to measure attainment of the key area DPC objectives. In addition, pace frequency studies would be used at each key area to detect changes of individual species which determines a trend or change in vegetation composition. Pace frequency and DWR would be completed on each key area. DWR and pace frequency study methodologies are described in *Sampling Vegetation Attributes*, Interagency Technical Reference 1734-4 (BLM 1999b).

Livestock use on forage plants is determined by conducting grazing utilization studies using the Grazed-Class Method as described in the *Utilization Studies and Residual Measurements* Interagency Technical Reference 1734-3 (BLM 1999a). Utilization studies would be completed

by the BLM when livestock are removed from the pasture. Study data would be compiled each year. Other information to be collected and compiled includes precipitation and actual use. All monitoring data would be used to evaluate current management of the allotment and assist the BLM in making management decisions that help achieve vegetation objectives.

The monitoring addressed above and in Chapter 2 is sufficient to identify changes in vegetation as a result of livestock grazing activities. In addition to those methods described, there are efforts in place to inventory for noxious weed establishment.

Chapter 5

CONSULTATION AND COORDINATION

5.1 Summary of Public Participation

Public involvement for the Rock Pockets Allotment permit renewal process began with scoping meetings for the allotment land health evaluation on February 14, 2001. The evaluation was conducted by an interdisciplinary assessment team of BLM resource specialists assisted by the Rangeland Resources Team appointed by the Arizona Resource Advisory Council. Draft evaluations were sent out for public review and comment to individuals, groups, and agencies. Comments were incorporated into the final Rock Pockets land health evaluation report.

An EA for the renewal of the grazing permit for the Rock Pockets Allotment was completed in October 2008. A Proposed Decision was issued on October 3, 2008, which was protested by Western Watersheds Project on October 10, 2008. No Final Decision was issued; due to the length of time since the original EA was prepared, the BLM decided to conduct a new analysis and develop a new EA. This EA reflects the re-analysis of the proposed grazing permit renewal. The EA was posted on the BLM web page for review to those persons and groups listed on the Arizona Strip interested publics mailing list; a notice of public comment period letter was also sent out to those individuals to direct them to the web page address. No comments were received in response to this public comment period.

5.2 List of Preparers and Contributors

The following table lists persons who contributed to preparation of this EA.

Table 12. List of BLM Preparers/Reviewers

Name	Title	Responsible for the Following Program(s)
Gloria Benson	Tribal Liaison	Native American Religious Concerns
Whit Bunting	Lead Rangeland Management Specialist	Invasive, Non-Native Species, Range
Lorraine Christian	Arizona Strip Field Manager	Project Oversight
Rody Cox	Geologist	Geology, Minerals
Laurie Ford	Team Lead, Lands & Geological Sciences	Lands & Realty
Shawn Langston	Wildlife Biologist	Special Status Animals, Wildlife
Jace Lambeth	Rangeland Management Specialist	Special Status Plants
Diana Hawks	Team Lead, Cultural Resources/Wilderness/ Recreation	Wilderness, Recreation, Visual Resources
John Herron	Archaeologist	Cultural Resources
Kevin Schoppmann	Vegetation/Grazing Administration	Rangeland Management Specialist
John Sims	Supervisory Law Enforcement	Law Enforcement
Robert Smith	Soil Scientist	Soils, Water, Air

Richard Spotts	Environmental Coordinator	NEPA Compliance
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Table 13. List of Persons, Agencies and Organizations Consulted

Name	Agency/Organization	Consulted for the Following Program(s)
Steve Rosenstock	Arizona Game and Fish Department	Wildlife and Vegetation
Daniel Bullets	Kaibab Paiute Tribe	Cultural Resources, Native American Religious Concerns
Peter Bungart	Hualapai Tribe	Cultural Resources, Native American Religious Concerns
Dawn Hubbs	Hualapai Tribe	Cultural Resources, Native American Religious Concerns

Chapter 6

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Acronyms and Abbreviations

AGFD	Arizona Game and Fish Department
AMP	Allotment Management Plan
AUM	Animal Unit Month
BLM	Bureau of Land Management
CFR	Code of Federal Regulations
CBW	Composition by Weight
DFC	Desired Future Condition
DPC	Desired Plant Community
DR	Decision Record
DWR	Dry Weight Rank
EA	Environmental Assessment
EIS	Environmental Impact Statement
FLPMA	Federal Land Policy and Management Act
FONSI	Finding of No Significant Impact
GMU	Game Management Unit
IBLA	Interior Board of Land Appeals
LHE	Land Health Evaluation
NEPA	National Environmental Policy Act
NOFD	Notice of Final Decision
NOPD	Notice of Proposed Decision
NRCS	Natural Resources Conservation Service
OHV	Off-Highway Vehicle
PL	Public Law
PNC	Potential Natural Community
PRIA	Public Rangelands Improvement Act
p.z.	Precipitation Zone
RMP	Resource Management Plan
S&G	Standards and Guidelines
SWIFL	Southwestern Willow Flycatcher
UBWR	Utah Board of Water Resources
USC	United States Code
USFWS	U.S. Fish and Wildlife Service
VRM	Visual Resource Management

Chapter 7

APPENDICES

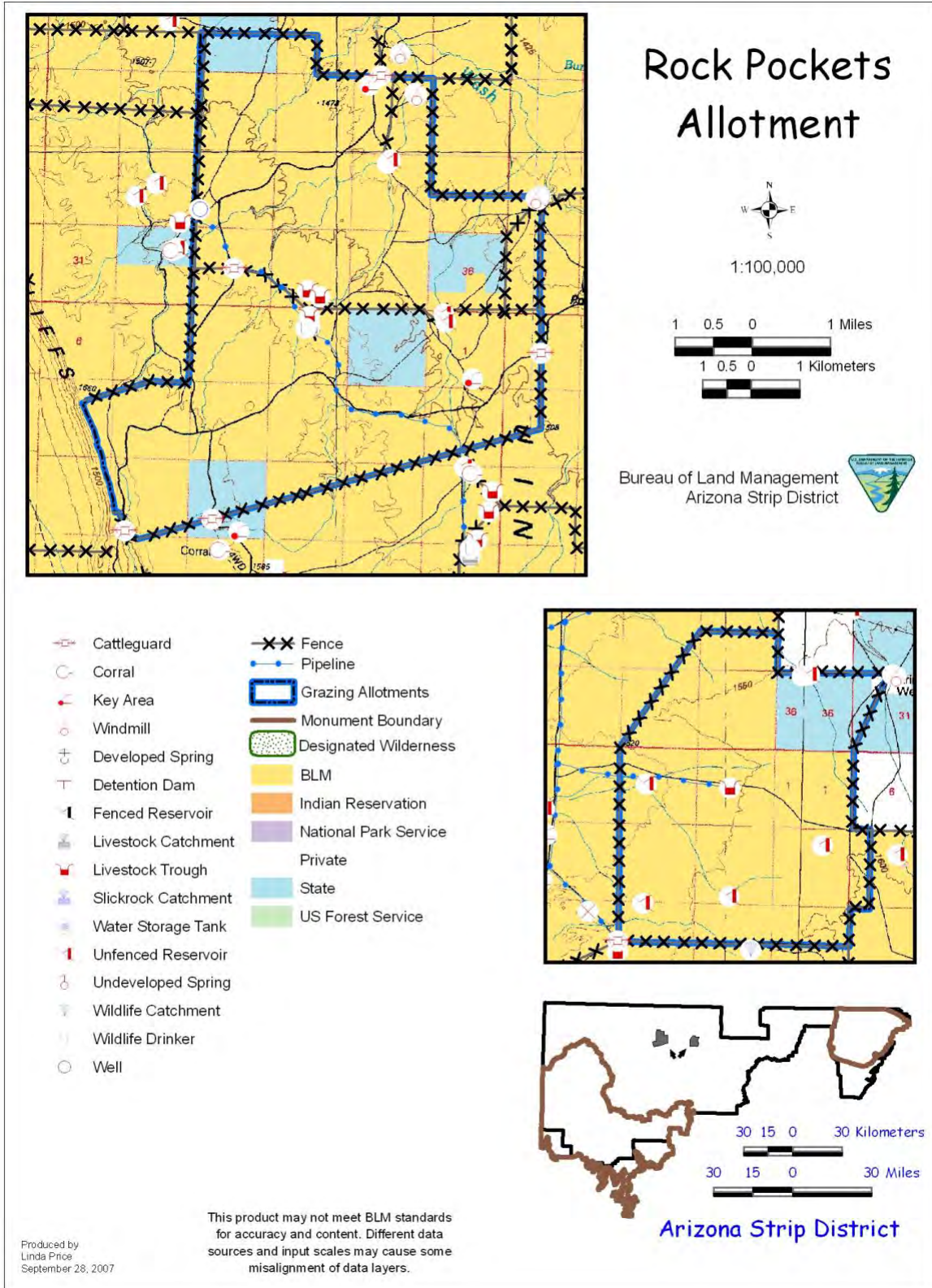
Appendix 1 – Allotment Map

Appendix 2 – Arizona Standards for Rangeland Health and Guidelines for Grazing Administration

Appendix 3 – Wildlife Data

Appendix 4 – Rock Pockets Land Health Evaluation Update

Appendix 1



Appendix 2

ARIZONA STANDARDS FOR RANGELAND HEALTH AND GUIDELINES FOR GRAZING ADMINISTRATION

INTRODUCTION

The Department of the Interior's final rule for Grazing Administration, issued on February 22, 1995, and effective August 21, 1995, requires that Bureau of Land Management (BLM) State Directors develop State or regional standards and guidelines for grazing administration in consultation with BLM Resource Advisory Councils (RAC), other agencies and the public. The final rule provides that fallback standards and guidelines be implemented, if State standards and guidelines are not developed by February 12, 1997. Arizona Standards and Guidelines and the final rule apply to grazing administration on public lands as indicated by the following quotation from the Federal Register, Volume 60, Number 35, page 9955.

"The fundamentals of rangeland health, guiding principles for standards and the fallback standards address ecological components that are affected by all uses of public rangelands, not just livestock grazing. However, the scope of this final rule, and therefore the fundamentals of rangeland health of §4180.1, and the standards and guidelines to be made effective under §4180.2, are limited to grazing administration."

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

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

The following quotations from the Federal Register, Vol. 60, No. 35, page 9956, February 22, 1995, describe the purpose of standards and guidelines and their implementation:

"The guiding principles for standards and guidelines require that State or regional standards and guidelines address the basic components of healthy rangelands. The Department believes that by implementing grazing-related actions that are consistent with the fundamentals of §4180.1 and the guiding principles of §4180.2, the long-term health of public rangelands can be ensured.

"Standards and guidelines will be implemented through terms and conditions of grazing permits, leases, and other authorizations, grazing-related portions of activity plans (including Allotment Management Plans), and through range improvement-related activities.

"The Department anticipates that in most cases the standards and guidelines themselves will not be terms and conditions of various authorizations but that the terms and conditions will reflect the standards and guidelines.

"The Department intends that assessments and corrective actions will be undertaken in priority order as determined by BLM.

"The Department will use a variety of data including monitoring records, assessments, and knowledge of the locale to assist in making the "significant progress" determination. It is anticipated that in many cases it will take numerous grazing seasons to determine direction and magnitude of trend. However, actions will be taken to establish significant progress toward conformance as soon as sufficient data are available to make informed changes in grazing practices."

FUNDAMENTALS AND DEFINITION OF RANGELAND HEALTH

The Grazing Administration Regulations, at §4180.1 (43 Code of Federal Regulation [CFR] 4180.1), Federal Register Vol. 60, No. 35, pg. 9970, direct that the authorized officer ensures that the following conditions of rangeland health exist:

(a) Watersheds are in, or are making significant progress toward, properly functioning physical condition, including their upland, riparian-wetland, and aquatic components; soil and plant conditions support infiltration, soil moisture storage, and the release of water that are in balance with climate and landform and maintain or improve water quality, water quantity, and timing and duration of flow.

(b) Ecological processes, including the hydrologic cycle, nutrient cycle, and energy flow, are maintained, or there is significant progress toward their attainment, in order to support healthy biotic populations and communities.

(c) Water quality complies with State water quality standards and achieves, or is making significant progress toward achieving, established BLM management objectives such as meeting wildlife needs.

(d) Habitats are, or are making significant progress toward being, restored or maintained for Federal threatened and endangered species, Federal Proposed, Category 1 and 2 Federal candidate and other special status species.

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

Standards describe conditions necessary to encourage proper functioning of ecological processes on specific ecological sites. An ecological site is the logical and practical ecosystem unit upon which to base an interpretation of rangeland health. Ecological site is defined as:

". . . a kind of land with specific physical characteristics which differs from other kinds of land in its ability to produce distinctive kinds and amounts of vegetation and in its response to management" (Journal of Range

Management, 48:279, 1995). Ecological sites result from the interaction of climate, soils, and landform (slope, topographic position). The importance of this concept is that the "health" of different kinds of rangeland must be judged by standards specific to the potential of the ecological site. Acceptable erosion rates, water quality, productivity of plants and animals, and other features are different on each ecological site.

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

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

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

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

STANDARD AND GUIDELINE DEFINITIONS

Standards are goals for the desired condition of the biological and physical components and characteristics of rangelands. Standards:

- (1) are measurable and attainable; and
- (2) comply with various Federal and State statutes, policies, and directives applicable to BLM Rangelands.

Guidelines are management approaches, methods, and practices that are intended to achieve a standard. Guidelines:

- (1) typically identify and prescribe methods of influencing or controlling specific public land uses;
- (2) are developed and applied consistent with the desired condition and within site capability; and
- (3) may be adjusted over time.

IMPLEMENTING STANDARDS AND GUIDELINES

The authorized officer will review existing permitted livestock use, allotment management plans, or other activity plans which identify terms and conditions for management on public land. Existing management practices, and levels of use on grazing allotments will be reviewed and evaluated on a priority basis to

determine if they meet, or are making significant progress toward meeting, the standards and are in conformance with the guidelines. The review will be interdisciplinary and conducted under existing rules which provide for cooperation, coordination, and consultation with affected individuals, federal, state, and local agencies, tribal governments, private landowners, and interested publics.

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

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

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

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

ARIZONA STANDARDS AND GUIDELINES

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

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

Standard 1: Upland Sites

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

Criteria for meeting Standard 1:

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

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

Signs of accelerated erosion are minimal or diminishing for the ecological site as determined by monitoring over an established period of time.

As indicated by such factors as:

Ground Cover

litter

live vegetation, amount and type (e.g., grass, shrubs, trees, etc.)

rock

Signs of erosion

flow pattern

gullies

rills

plant pedestaling

Exceptions and exemptions (where applicable):

none

Guidelines:

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

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

Standard 2: Riparian-Wetland Sites

Riparian-wetland areas are in properly functioning condition.

Criteria for meeting Standard 2:

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

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

The checklist for riparian areas is in Technical Reference 1737-9 "Process for Assessing Proper Functioning Condition." The checklist for wetlands is in Technical Reference 1737-11 "Process for Assessing Proper Functioning Condition for Lentic Riparian-Wetland Areas."

As indicated by such factors as:

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

Exceptions and exemptions (where applicable):

Dirt tanks, wells, and other water facilities constructed or placed at a location for the purpose of providing water for livestock and/or wildlife and which have not been determined through local planning efforts to provide for riparian or wetland habitat are exempt.

Water impoundments permitted for construction, mining, or other similar activities are exempt.

Guidelines:

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

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

2-3. The development of springs and seeps or other projects affecting water and associated resources shall be designed to protect ecological functions and processes.

Standard 3: Desired Resource Conditions

Productive and diverse upland and riparian-wetland plant communities of native species exist and are maintained.

Criteria for meeting Standard 3:

Upland and riparian-wetland plant communities meet desired plant community objectives. Plant community objectives are determined with consideration for all multiple uses. Objectives also address native species, and the requirements of the Taylor Grazing Act, Federal Land Policy and Management Act, Endangered Species Act, Clean Water Act, and appropriate laws, regulations, and policies.

Desired plant community objectives will be developed to assure that soil conditions and ecosystem function described in Standards 1 and 2 are met. They detail a site-specific plant community, which when obtained, will assure rangeland health, State water quality standards, and habitat for

endangered, threatened, and sensitive species. Thus, desired plant community objectives will be used as an indicator of ecosystem function and rangeland health.

As indicated by such factors as:

Composition
Structure
Distribution

Exceptions and exemptions (where applicable):

Ecological sites or stream reaches on which a change in existing vegetation is physically, biologically, or economically impractical.

Guidelines:

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

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

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

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

3-5. Grazing on designated ephemeral (annual and perennial) rangeland may be authorized if the following conditions are met:

ephemeral vegetation is present in draws, washes, and under shrubs and has grown to useable levels at the time grazing begins;

sufficient surface and subsurface soil moisture exists for continued plant growth;

serviceable waters are capable of providing for proper grazing distribution;

sufficient annual vegetation will remain on site to satisfy other resource concerns, (i.e., watershed, wildlife, wild horses and burros); and

monitoring is conducted during grazing to determine if objectives are being met.

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

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

Appendix 3

Arizona Game & Fish Unit 13A Mule Deer Population Counts			
Year	Number of Animals Surveyed	Bucks / 100 does	Fawns / 100 does
1989	86	52	39
1990	44	10	27
1991	15	29	57
1992	Insufficient Data		-
1993	9	0	13
1994	43	42	84
1995	51	29	35
1996	55	42	69
1997	No Survey		-
1998	59	8	44
1999	108	23	31
2000	170	27	33
2001	165	36	68
2002	57	28	50
2003	148	39	59
2004	140	40	75
2005	136	38	84
2006	230	43	61
2007	145	54	38
2008*	97	50	42
2009*	68	14	70
2010	125	33	48
2011	243	39	78
2012	113	31	104
2013	182	38	99
2014	199	60	83

* Surveys were minimal in 2008 and 2009 due to AGFD wildlife manager position in this unit being vacant.

Arizona Game & Fish Unit 13A Pronghorn Population Counts				
Year	Total Animals Surveyed	Bucks / 100 does	Fawns / 100 does	Population Estimate
1981	171	35	18	No data available
1982	206	31	40	No data available
1983	141	47	33	No data available
1984	186	25	11	No data available
1985	145	22	16	No data available
1986	141	20	13	No data available
1987	139	42	25	No data available
1988	215	21	28	No data available
1989	174	40	21	No data available
1990	222	30	13	No data available
1991	196	17	43	No data available
1992	214	41	34	No data available
1993	282	61	51	No data available
1994	372	43	29	No data available
1995	398	49	34	No data available
1996	339	45	16	No data available
1997	447	27	20	No data available
1998	357	25	17	No data available
1999	209	21	23	No data available
2000	205	22	10	No data available
2001	278	24	38	No data available
2002	284	37	4	No data available
2003	333	21	33	No data available
2004	358	26	61	No data available
2005	335	20	67	No data available
2006	221	30	20	244
2007	184	29	5	237
2008*	101	19	8	178
2009*	112	33	21	153
2010	74	14	12	51
2011**	178	14	24	233
2012	104	15	5	133
2013	175	24	13	No data available
2014	126	24	25	No data available

* Surveys were minimal in 2008 and 2009 due to AGFD wildlife manager position in this unit being vacant.

** Bad survey year due to overcast skies and rain throughout every survey day.

Appendix 4

Land Health Evaluation Update for the Rock Pockets Allotment - #5224

The Rock Pockets Allotment land health evaluation was completed on September 22, 2008. That evaluation determined all applicable standards for rangeland health on the allotment were being met. This update constitutes a re-evaluation of the 2008 assessment determination by considering and analyzing new monitoring data.

DPC Objectives

The DPC objectives for the allotment have been updated using the description of the ecological site guides for the three key areas. The DPCs have also been updated and revised to reflect functional groups rather than specific plant species. Plant functional types are sets of plants exhibiting similar responses to environmental conditions and having similar effects on the dominant ecosystem processes (Gitay and Noble, 1997). It is very difficult to manage large areas (such as a grazing allotment) for specific species because variations within such a large area can be quite dramatic (even within a single ecological site). By contrast, managing by functional groups allows range managers to study patterns of vegetation responses from plant groups that have similar life history strategies and responses to environmental stress and disturbance (McIntyre, 1999), which is more useful on the allotment scale.

The revised DPCs for the Rock Pockets Allotment are:

Key Area#1, Yellowstone Pasture (Sandy Loam Upland 7-11" p.z.)

- Maintain the perennial grass composition between 35-45%.
- Maintain the shrub/browse composition between 10-30%.
- Maintain the forb composition between 1-10%.

Key Area#2, Horse Knoll Pasture (Clay Loam Upland 7-11" p.z.)

- Maintain the perennial grass composition between 5-25%.
- Maintain the shrub/browse composition between 20-45%.
- Maintain the forb composition between 1-5%.

Key Area#3, Rock Pockets Pasture (Gyp. Upland 7-11" p.z.)

- Maintain the perennial grass composition between 20-10%.
- Maintain the shrub/browse composition between 15-35%.
- Maintain the forb composition between 1-10%.

Rationale for these objectives: DPC objectives were developed that would ensure the biodiversity, health, and sustainability of wildlife species indigenous to this area (such as pronghorn); protection of ecological functions (including hydrological processes); and sustainability of diverse vegetative communities. These objectives are set according to the ecological site guide (developed by the NRCS) – to determine what was within the site potential for each key area – and the current

composition at each site. For example, all three key areas are located in different ecological sites representative of the allotment, and long-term monitoring has shown that Key Area #2 is a shrub-dominated site that is not capable of producing a high grass composition such as occurs at Key Area #1. The objectives were created with a “range” to account for fluctuations in plant populations due to factors such as drought and wet periods; this range also represents an achievable percentage given the ecological site guide potentials. It was determined that the DPC objectives identified above would result in healthy and diverse plant communities, which in turn would provide for the habitat needs (both forage and cover) of wildlife, protection for soils and hydrologic functions, and forage for livestock. While DPCs were established for forbs, it should be noted that their composition is highly variable and is influenced by spring and summer precipitation.

Monitoring

Trend monitoring data collected in 2010 is intended to supplement existing data found in the 2008 assessment. This new monitoring data is summarized below.

Observations and data collected for Rock Pockets Allotment indicate that deferred rotation grazing has resulted in widely dispersed grazing with good rest and recovery periods. All three pastures have good water availability to provide good distribution throughout the allotment. Utilization at all key areas has been light.

Each of the key areas was read for Pace-Frequency, trend and dry weight rank (DWR). The percent of key species at Key Area #1 declined from 174% in 1981 to 131% in 2010; most of this decline was recorded in 1990 when it decreased from 174% to 116% during a severe drought (1988-1990). In the early 1980s, when this key area was established, the site was receiving 12 to 14 inches of rain per year. As shown in Table 5, average annual precipitation for the Clayhole rain gauge (the nearest one to Key Area #1) is 9 inches, which is substantially less than that recorded in the early 1980s. Since 1990, the frequency of key species has steadily been increasing, and even increased by 13% from 2005 to 2010. The shift in annual precipitation (to a more “normal” amount, which is much less than that received when the key area was established) is thought to be the reason for the downward trend at Key Area #1.

The frequency at Key Area #2 increased from 80 in 1981 to 113 in 2010. Live vegetative cover increased from 3% to 6%. Based on frequency data, trend is upward at Key Area #2. Frequency at Key Area #3 increased from 54% to 88% composition of key species; percent live basal vegetative cover is 3%. Based on the frequency data, trend is upward at Key Area #3.

The Rock Pockets Allotment would be managed to achieve the DPC (desired plant community) objectives listed above. This allotment evaluation update lists and evaluates achievement of the allotment’s DPC objectives.

Table A-1. Desired Plant Community Objectives Determination

Key Area #1 – Yellowstone			
Ecological site: Sandy Loam Upland 7-11” p.z.			
Plant Group (or Ground Cover)	Current Composition	Desired Plant Composition	Objective Met or Not Met
Perennial Grass	49%	35-45%	Met (exceeds)
<i>Galleta</i>	36%		
<i>Needle-n-thread</i>	1%		
<i>Blue grama</i>	7%		
<i>Three-awn</i>	1%		
<i>Squirreltail</i>	1%		
<i>Sand dropseed</i>	3%		
Shrubs / Browse	43%	10-30%	Met (exceeds)
<i>Fourwing saltbush</i>	2%		
<i>Green rabbitbrush</i>	5%		
<i>Mormon tea</i>	31%		
<i>Snakeweed</i>	5%		
Forbs	9%	1-10%	Met
Key Area #2 – Horse Knoll			
Ecological site: Clay Loam Upland 7-11” p.z.			
Perennial Grass	18%	5-25%	Met
<i>Galleta</i>	14%		
<i>Squirreltail</i>	2%		
<i>Indian ricegrass</i>	2%		
Shrubs / Browse	79%	20-45%	Met (exceeds)
<i>Fourwing saltbush</i>	3%		
<i>Winterfat</i>	52%		
<i>Green rabbitbrush</i>	20%		
<i>Mormon tea</i>	3%		
<i>Snakeweed</i>	1%		
Forbs	4%	1-5%	Met
Key Area #3 - Rock Pockets			
Ecological site: Gyp Upland 7-11” p.z.			
Perennial Grass	37%	20-40%	Met
<i>Galleta</i>	11%		
<i>Squirreltail</i>	1%		
<i>Sand dropseed</i>	25%		
Shrubs / Browse	59%	15-35%	Met (exceeds)
<i>Fourwing saltbush</i>	18%		
<i>Winterfat</i>	19%		
<i>Green rabbitbrush</i>	9%		
<i>Snakeweed</i>	12%		
<i>Wolfberry</i>	1%		
Forbs	5%	1-10%	Met

Standard 1 (Upland Sites)

If Standard 1 is achieved, the health of the rangelands is not at risk (i.e., the rangelands do not show signs of accelerated soil erosion by wind or water).

If Standard 1 is not achieved, the health of the ecological site is at risk because of clear evidence of soil loss and hydrological function. Ground cover and signs of erosion are surrogate measures for hydrologic function, nutrient cycles, and energy flow. At risk rangelands show evidence of soil movement and there is clear evidence of soil degradation and transport of nutrients, water, and organic matter off the site.

X Meeting the Standard.

Rationale:

This means that the watershed units currently are in satisfactory erosion condition but susceptible to wind and water erosion following disturbance. In addition, these soils have a low productivity rate, can be susceptible to compaction, and are moderately alkaline due to the slight leaching of salts.

Ground cover was measured at all three key areas; plants, litter, and rock are present in pattern, kind, and amount sufficient to prevent accelerated erosion. At Key Area #1 the ground cover increased from the base year. Ground cover at Key Area 2 is slightly downward. Ground cover data collected (1982 to 2011) compared to similar years from a key area located within an area noted to be the “Type” (reference area) for the Breaks 10-14” ecological site showed similar results. Based on this comparison, the amount of ground cover is appropriate at each study site. Ecological status data indicates both key areas are in late seral stage. The determination for all three key areas is that they are functioning properly and meeting Standard #1.

Standard 2 (Riparian-Wetland Sites)

There are no riparian/wetland areas on federal lands within the Rock Pockets Allotment.

Standard 3 (Desired Resource Conditions)

If Standard 3 is achieved, ecological sites contain productive and diverse communities of native species, resulting in proper ecosystem function. Under Standard 3, when Desired Plant Community (DPC) objectives for wildlife habitat are being achieved, the site is producing desirable forage, cover and soil protection. For wildlife this means “healthy” rangeland should provide the necessary food and cover to sustain the species.

If Standard 3 is not achieved, the soil conditions and ecosystem function described in Standard 1 are at risk and may not be providing forage and habitat for threatened, endangered and sensitive wildlife species.

X Meeting the Standard at Key Areas 1 and 2

Rationale:

BLM's determined that the area was meeting Standard #3 for rangeland health. The plant composition was such that it met the desired plant community objectives.

The relative criteria for meeting standards, and indicators of rangeland health, resulted in a recommendation that the area was fully meeting Standard #3. All three key areas have a good mix of perennial grasses, shrubs/browse and forbs, all due to the natural variation that occurs across each ecological site. Long-term monitoring has shown that all key areas are capable of producing a good grass and shrub composition, although key area #2 is a more shrub-dominated site so it contains less grass composition than the other two key areas. Based on the complete ecological site inventory the group agreed that Rock Pockets allotment is meeting Standard #3.

Summary:

After considering all available data, the interdisciplinary assessment team (composed of various resource specialists – including rangeland management specialists, wildlife biologist, and soil scientist) is recommending that the Rock Pockets Allotment meets all applicable standards for rangeland health.