Standards for Rangeland Health and Guidelines for Grazing Administration
Implementation Project: Allotment Assessment

Mt. Logan - 5218

I. Introduction

The Mt. Logan Allotment Assessment was conducted in accordance with directions set forth in the Washington Office Instruction Memorandum No. 98-91 and Arizona State Instruction Memorandum No. 99-012 for implementation of Standards for Rangeland Health and Guidelines for Grazing Administration (Standards and Guides).

The purpose of Standards and Guides is to insure the health of public rangelands. These standards help the Bureau of Land Management (BLM), rangeland users, and interested members of the public achieve a common understanding of acceptable resource conditions, and work together to implement that vision (see appendices for a copy of the Standards and Guidelines).

Arizona's Standards and Guides were developed by the BLM State Standards and Guides Team and the Arizona Resource Advisory Council (RAC), a state level council appointed by the Secretary of the Interior.

The Secretary of the Interior approved the Standards and Guides in April 1997. The Decision Record, signed by the BLM State Director (April 1997) provides for full implementation of the Standards and Guides in all Arizona Land Use Plans.

This assessment was conducted by an interdisciplinary assessment team (IAT) of resource specialists from:

- BLM.
- Natural Resource Conservation Service (NRCS).
- Arizona Game and Fish Department (AGFD).
- Mohave County Extension.

The IAT was assisted by the Rangeland Resource Team (RRT), a diverse group of local residents formed and appointed under the RAC charter (see appendices for a list of members on both teams). The RRT may provide informal advice to the BLM Field Manager regarding implementation of Standards and Guides, and "will have opportunities to raise any matter of concern with the resource advisory council and ... to provide information and options to the council for their consideration" as provided for by regulations at 43 CFR 1784.6-2(a)(2)(iv)(A).

The BLM/RAC Implementation Strategy for Arizona states that the RRT's primary role is to assist BLM managers in assuring the S&G's are consistently applied and technically sound. The IAT analyzed all available information in cooperation with the RRT. Based on field observations, team members determined whether rangeland conditions were meeting, progressing toward meeting, or not meeting the Standards for Rangeland Health.

The RRT, IAT, permittees and other interested parties were invited to attend an issue scoping meeting on October 27, 2004, and a field visit on June 8, 2005. At the conclusion of the field visit, the group determined the standards for rangeland health are being met.

After consultation with interested persons, permittees, and the IAT, the Authorized Officer will select the appropriate actions. The selected management actions will be analyzed through the National Environmental Policy Act (NEPA) process and a proposed decision will be issued.

II. Grazing Use

A. Total grazing privileges

Livestock Numbers	Season of Use	% Federal	Active AUMs
88 Cattle	03/01-02/28	88%	930

B. Season(s) of use

88 cattle from March 1st to February 28th

C. Kind and class of livestock

Cow/Calf Operation

D. Percent federal range

The Mt. Logan allotment is 88% federal range. The private and state lands within the allotment boundaries are grazed in conjunction with federal lands and are included in the Allotment Management Plan (AMP) grazing rotation.

III. Allotment Profile

A. Description

The Mt. Logan allotment is located approximately 55 miles south of Colorado City, Arizona on the Arizona Strip. The allotment is within the boundaries of T. 34 and 35N., R. 7 and 8W. on Mt. Logan and in Tuweep Valley. Elevations range from 4,800' in the grassland valleys of Tuweep to 7,600' on the ponderosa pine slopes of Mt. Logan.

B. Acreage

The allotment contains:

- 18,996 acres of federal land
- 1,120 acres of state land, plus 640 acres of uncontrolled state land
- 1,200 acres of private land, plus 320 acres of uncontrolled other private land

C. Objectives

1. Land Use Plan Objectives

Shivwits Resource Area Implementation Plan for the Arizona Strip Resource Management Plan

GZ17- Allowable use on key forage species is 50 percent of current years growth on allotments with rotational grazing systems.

RR06 - Implement actions to restore and/or maintain natural conditions or appearance in all areas.

RR08 - Manage the majority of the resource area for extensive recreation while maintaining its naturalness/remoteness. The exception to this is the Cedar Pockets Campground.

RR09 - Commercial recreation permits would be issued to the extent that their cumulative impacts are consistent with the overall objectives of this plan and in the public interest.

WS01- Manage vegetation cover towards ecological stability and sound long-term protective soil cover using mechanical, biological or fire as tools for accomplishment.

WS22-Manage watershed areas according to watershed categorizations to achieve identified objectives.

TE01 Carry out management consistent with multiple use for conservation of candidate species and their habitats and ensure that actions authorized, funded, or carried out do not contribute to the need to list any of these species as threatened or endangered.

WL02 Maintain productive wildlife habitat and ensure wildlife needs and considerations are incorporated into land use planning, National Environmental Policy Act documents, and management decisions.

WL06 Continue restoration of native wildlife into historic range by transplanting wildlife in cooperation with the Arizona Department of Game and Fish.

WL07 Manage wildlife habitat through the Habitat Management Plan process to achieve desired plant community objectives.

WL16 Complete ecological site inventories in key areas to determine site potentials and present ecological conditions; establish desired plant community objectives for various areas and include these objectives in Allotment

Management Plans (AMP), Habitat Management Plans (HMP), watershed plans, and other plans in order to prescribe management or improvement practices to achieve these objectives.

2. Specific Resource Objectives

California Condor Recovery Plan Objectives (April, 1996)

CC-1 Provide foraging habitat for California condors.

CC-2 Maintain a healthy, self-sustaining population of California condors with a positive growth rate of at least 150 individuals with at least 15 breeding pairs.

Bald Eagle[a]

BE-1 The wintering population of bald eagles would be recovered and delisted.

BE-2 Restrict authorized and/or permitted activities within 0.5 miles of active bald eagle wintering roosts.

Mule Deer

MD-1. Self-sustaining mule deer populations would be enhanced or maintained in Game Management Units 12B, 13A, and 13B. Initial or supplemental transplants could be authorized on a case by case basis. Existing habitat areas could be expanded and new habitat areas may be added where appropriate.

MD-2. Crucial summer mule deer habitat would be managed for at least 10% grasses and forbs and 30% palatable browse species CBW, where consistent with site potential. Crucial winter mule deer habitat would be managed to include at least 30% palatable browse species, where consistent with site potential. Palatable browse species would be maintained and enhanced through vegetation conversion. Palatable browse species could include, but are not limited to cliffrose, bitterbrush, ceanothus, four-wing saltbush, desert holly, Mormon tea, and mountain mahogany.

Allotment Management Plan[b]

Maintain or improve key species frequency and ground cover at each established key area. Change in species frequency and basal cover will be monitored using a 200 point pace-frequency method and 3X3 photo plot.

---

[a] The Arizona Strip BLM is currently in the process of developing a new resource management plan (RMP). These objectives are part of the draft RMP and were derived from recovery plans, conservation strategies, and other applicable documents. These objectives are subject to change pending completion of the RMP process.

[b] Current frequency objectives found in the Allotment Management Plan will be analyzed in this assessment. They will, however, be replaced by Desired Plant Community objectives for future assessments.

Key Area 1; Head of Tuweep Pasture
- Maintain the frequency of blue grama at 91 percent.
- Increase the frequency of galleta to 5 percent.
- Maintain the frequency of squirrel tail at 3.5 to 5 percent.
- Increase ground litter from 38 to 42 percent.

Key Area 2; Little Oak Pasture
- Maintain frequency of seeded wheatgrasses at 72 percent.
- Improve frequency of other cool season grasses from 5 to 7 percent.
- Maintain ground litter at 55 percent.

Key Area 3A; Little Spring Pasture; (Loamy Upland 18-22" p.z.)
- Maintain frequency of wheatgrasses at 46 percent.
- Improve ground litter from 21 to 30 percent.

Key Area 3B; Little Spring Pasture; (Loamy Upland 18-22" p.z.)
- Maintain frequency of wheatgrasses at 36 percent.
- Increase ground litter from 27 to 32 percent.

Desired Plant Community (DPC) Objectives

DPC objectives were developed during this evaluation process by an interdisciplinary team of resource specialists. These objectives focus on the ecological sites and their potentials, which reflect the vegetative diversity of the area. DPC objectives are expressed in figures of Composition by Weight (CBW). Composition data is collected using the Dry Weight Rank sampling method.

Key Area #1 – Head of Tuweep Pasture (Loamy Upland 10-14"pz)

Maintain the perennial grass composition between 20 to 50% through the year 2035 by:

Maintaining Bogr CBW at between 15 and 30%
Increasing Hija CBW to between 1 and 5%
Maintaining Sihy CBW at between 2 and 7%
Maintaining Spcr CBW at between 1 to 3%

Maintain shrub/tree composition between 15 to 45% through the year 2035 by:

Decreasing Artr CBW to between 5 and 20%
Maintaining Juos CBW at between 0 and 5%
Maintaining Pied CBW at between 0 and 5%

Maintain forbs CBW at between 5 to 15% through the year 2035.
Maintain ground litter at between 30 and 50% through 2035.
Maintain basal cover at between 5 and 15% through 2035.

Rational: The ecological site for this key area is a Loamy Upland 10-14" precipitation zone and is within the Great Basin Ecoregion identified in the Draft

Grand Canyon-Parashant National Monument Environmental Impact Statement/Land Use Plan (GCPNM EIS/LUP). This draft LUP proposes the ecoregion is to be managed for a mosaic of early and mid seral vegetation communities.

Sagebrush currently exceeds the 5 to 15% CBW allowable in the site guide, and while sagebrush is important for wildlife, it can often be too dominant. On this key area, sagebrush is the only species where a decrease is warranted. Other species of shrubs and trees found at the key area provide important thermal and hiding cover for wintering mule deer. Juniper in particular provides both cover and forage for mule deer in winter.

The grass species listed individually are components of the ecological site and are recognized as key species. The site guide allows from 15 to 30 % CBW for Bogr, 1 to 5% for Hija, 2 to 7% for Sihy, and 1 to 3% for Spcr. In this semi-arid climate, maintaining basal cover at between 5 and 15% is realistic under normal weather conditions. Even though the percentage of litter at key areas can be very dynamic, past monitoring data suggests DPC values for the litter are within the expected range for this climate. In general forbs are very important for wildlife, but forb CBW varies widely depending on the season of the year, weather, and other factors.

Current monitoring data suggests achievement of these DPC objectives is attainable and within the potential of the site.

<u>Key Area #2 – Little Oak Spring Pasture (Cinder Upland; Woodland 13-17"pz)</u>

Maintain the perennial grass composition between 2 to 15% through the year 2035 by:

- Maintaining seeded Agropyron species CBW at between 1 and 3%
- Maintaining Brin CBW at between 1 and 3%
- Maintaining Sihy CBW at between 1 and 5%

Maintain shrub/tree composition between 15 to 45% through the year 2035 by:

- Decreasing Artr CBW to between 20 to 40%
- Maintaining Juos CBW at between 5 to 15%
- Maintaining Pied CBW at between 5 to 15%

Maintain forbs CBW at between 5 to 15% through the year 2035.
Maintain ground litter at between 25 and 45% through 2035.
Maintain basal cover at between 2 and 8% through 2035.

Rational: The ecological site for this key area is a Cinder Upland (Woodland) 13-17" precipitation zone and is within the Great Basin Ecoregion identified in the Draft Grand Canyon-Parashant National Monument Environmental Impact Statement/Land Use Plan (GCPNM EIS/LUP). This draft LUP proposes the ecoregion is to be managed for a mosaic of early and mid seral vegetation communities.

This key area is in an old pinyon-juniper treatment which has re-grown with fairly thick tree and shrub cover. The site produces predominantly woody vegetation and very little grass has been found during monitoring. Without subsequent treatment or wildfire, little change is expected.

Key Area #3A – Little Oak Pasture (Loamy Upland; POPI 17-22"pz)

Maintain the perennial grass composition between 40 to 80% through the year 2035 by:

- Maintaining seeded Agropyron species CBW at between 30 and 65%
- Maintaining Brin CBW at between 5 and 10%
- Maintaining Sihy CBW at between 5 and 10%
- Maintaining Popr CBW at between 1 to 5%

Maintain shrub/tree composition between 20 to 45% through the year 2035 by:

- Maintaining Artr CBW at between 10 to 20%
- Maintaining Quga CBW at between 5 to 10%
- Maintaining Pipo CBW at between 1 to 5%

Maintain forbs CBW at between 2 to 10% through the year 2035.
Maintain ground litter at between 35 and 50% through 2035.
Maintain basal cover at between 5 and 15% through 2035.

Rational: The ecological site for this key area is a Loamy Upland (Ponderosa pine) 17-25" precipitation zone and is within the Ponderosa Pine Ecological Zone identified in the Draft Grand Canyon-Parashant National Monument Environmental Impact Statement/Land Use Plan (GCPNM EIS/LUP). This draft LUP proposes the ecological zone to be managed for a mosaic of tree densities, age classes, and openings with a mix of grasses, forbs and shrubs.

Key Area #3A is located in a park opening on the edge of the ponderosa pine forest. The area was plowed and seeded with a mix of wheat grasses, smooth brome, and forbs in the late 1970's. These open park areas provide important foraging areas for mule deer, turkey, and various avian species living in and around the ponderosa pine forest.

Key Area #3B – Little Oak Pasture (Loamy Upland; POPI 17-22"pz)

Maintain the perennial grass composition between 65 to 85% through the year 2035 by:

- Maintaining seeded Agropyron species CBW at between 60 and 80%
- Maintaining Brin CBW at between 1 and 5%
- Maintaining Sihy CBW at between 1 and 5%
- Maintaining Popr CBW at between 1 to 5%

Maintain shrub/tree composition between 5 to 15% through the year 2035 by:

- Maintaining Artr CBW at between 5 to 10%
- Maintaining other shrubs CBW at between 1 to 5%

Maintain forbs CBW at between 2 to 10% through the year 2035.
Maintain ground litter at between 40 and 55% through 2035.
Maintain basal cover at between 5 and 15% through 2035.

Rational: The ecological site for this key area is a Loamy Upland (Ponderosa pine) 17-25" precipitation zone and is within the Ponderosa Pine Ecological Zone identified in the Draft Grand Canyon-Parashant National Monument Environmental Impact Statement/Land Use Plan (GCPNM EIS/LUP). This draft LUP proposes the ecological zone to be managed for a mosaic of tree densities, age classes, and openings with a mix of grasses, forbs and shrubs.

Like Key Area #3A, #3B is also located in a park opening on the edge of the ponderosa pine forest. The area was also plowed and seeded with a mix of wheat grasses, smooth brome, and forbs in the late 1970's. Mule deer, turkey, and various avian species living in and around the ponderosa pine forest make frequent use of the open park area for foraging requirements.

D. Key Species

Plant Category	Common Name	Scientific Name
Cool Season Grasses	Squirrel Tail	Sitanion hystrix
	Indian rice grass	Oryzopsis hymenoides
	Smooth brome	Bromus inermus
	Seeded wheatgrass	Agropyron spp.
Warm Season grasses	Blue grama	Bouteloua gracilus
	Galleta grass	Hilaria jamesii
	Sand dropseed	Sporobolus cryptandrus

E. Grazing System

The permittee runs a cow/calf operation. The grazing system on Mt. Logan is a 4-pasture rest-rotation system. Pastures included in the grazing rotation are Little Spring, Little Oak, Toroweap, and Head of Tuweep. The Lower Kent (state) and Holding pasture (private/state) also receive grazing use in the rotation.

Little Spring serves as the summer/early fall (July 1-October 30) grazing unit. Little Oak, Toroweap, Head of Tuweep, Lower Kent (state), and Holding pasture are grazed and rotated through the late fall/spring (November 1-June 30) period. This grazing rotation is designed and intended to provide spring grazing rest, summer growing season deferment, trampling and planting of disseminated seed, seedling establishment, vigorous plant communities, and livestock production.

F. Other uses

1. Special Status Species

Animals:

The following federally listed, proposed, candidate, State, or BLM sensitive species may occur within or adjacent to this Allotment.

- Bald eagle (*Haliaeetus leucocephalus)* (Threatened - proposed for de-listing)
- California condor (*Gymnogyps californianus)* (Endangered – experimental, non-essential population)
- Ferruginous hawk (*Buteo regalis*) (AZ species of concern)
- Northern goshawk (*Accipiter gentilis*) (AZ species of concern)
- Western burrowing owl (*Athene cunicularia hypugaea*) (BLM sensitive)
- Loggerhead shrike (*Lanius ludovicianus*) (BLM sensitive)
- Spotted bat *(Euderma maculatum)* (AZ species of concern)
- Western small-footed myotis *(Myotis ciliolabrum)* (BLM sensitive)
- Fringed myotis (*Myotis thysanodes*) (BLM sensitive)
- Big free-tailed bats (*Nyctinomops macrotis*) (BLM sensitive)

Bald eagle. Only found on the Arizona Strip during the winter months. They do not nest in this area. In winter, they may fly over and forage for food in this allotment. They are infrequently seen along the slopes of the Kaibab Plateau and in canyons near the Grand Canyon during the colder months.

California condor. An experimental non-essential population of California condors was established on the Vermilion Cliffs in 1996. Condors may fly over or forage within this allotment at any time of the year. These birds may occasionally forage on carrion within the allotment.

Feruginous hawk. Typical habitat includes pinyon-juniper and open country. The Strip is at the periphery of the ferruginous hawk breeding range, but they are uncommon visitors in winter months.

Northern goshawk. Goshawks are found in ponderosa pine habitat on the Strip. One pair is known to have nested in the same nest in this allotment in 2003, 2004, and

2005. Another pair is known to have nested less than a mile north of this allotment for the same three years. In 2003 and 2004 both pairs each fledged two young.

Western burrowing owls have been known to nest in isolated instances on the Strip. They typically nest in burrows excavated by mammals and are most often associated with prairie dog towns. There are no prairie dog towns on the Strip. However, many areas have sufficient rodent burrows that could provide suitable nesting sites for burrowing owls.

Loggerhead shrikes range across the Arizona Strip. Habitat requirements include tree or shrub nesting substrate, perches for hunting and territory advertisement, open foraging areas, and prey impaling sites.

A variety of sensitive bat species have been captured on this and neighboring allotments at livestock watering areas. Species known to occur on the Tuweep Allotment, between the segments of the Mt. Logan Allotment, include spotted bats, small-footed myotis, fringed myotis, and big free-tailed bats.

2. Other Wildlife Species

The Mt. Logan allotment is in the Arizona Game and Fish Department's Game Management Unit 13A. Mule deer (*Odocoileus hemionus*) is the primary big game animal found in this allotment.

Introduced populations of Merriam's turkey (*Meleagris galopavo merriami*) and Kaibab squirrel (*Sciurus aberti kaibabensis*) are also present on the allotment. Other wildlife includes a variety of passerines, reptiles, small mammals, and invertebrates.

3. Recreation

The AMP area is considered to have recreation values for its geology, scenic view sheds, and remoteness. General recreation activities might include: Sight seeing, horseback riding, backpacking, hiking, camping, hunting, photography, bird watching and nature study.

Off Highway Vehicles: This AMP area falls in an area classified as Limited to Existing Roads and Trails. This would include all areas outside the wilderness designation.

Recreation Opportunity Spectrum: This AMP area was classified as having the following Recreation Spectrum Classes in it: Semi Primitive – Non Motorized, Semi Primitive - Motorized, and Roaded Natural.

4. Wilderness

Portions of the Mt. Logan Wilderness are within the boundary of this AMP.

G. Issues brought out in scoping.

1. Issues relating to Rangeland Health

a. Head of Tuweep Pasture: poor ground cover and gullies in valley bottoms at east end of pasture.

b. Vegetative diversity/lack of understory.

2. Issues not relating to Rangeland Health, and not discussed further in this document.

a. Trash from large camping groups

Trash from camping groups is being left at campsites on the allotment. A collective effort between BLM resources staff, law enforcement, AGFD, and the permittee will continue to work on this issue. This issue is being coordinated with the BLM recreation program.

b. Net wire approximate to the Lion wildlife catchment.

The BLM Rangeland Management Specialist, AGFD Wildlife Manager and the livestock permittee will collaborate on an individual project basis. They will work together to alleviate the wildlife access problems without compromising the effectiveness of the development for managing livestock.

c. Scotch thistle at Arkansas Ranch

Scattered infestations of scotch thistle occur on approximately 1 acre of ground. The majority of this infestation is found on an old farming plot of private ground at Arkansas Ranch. The area has been treated with herbicide and reseeded. Past efforts have stopped the spread of the noxious weed, but have not yet eradicated it. Future treatment and monitoring will be done in an effort to eradicate the weeds.

d. Water availability on the west end of Little Spring pasture, Turkey Track water catchment not functioning.

The apron pad at the Turkey track catchment is in need of resurfacing. The existing asphalt bidum apron has become largely not efficient and no longer sheds enough water to fill both the wildlife and livestock tanks. BLM plans to resurface the apron with a new 60 mil HDPE sheeting, which should restore water shedding capacities enough to fill both tanks and provide livestock water to the west end of the Little Spring pasture.

e. Integrity of boundary fence between Mt. Logan and Tuweep allotments. Fence maintenance is not being done by neighboring permittee.

In July of 2004, a segment of the boundary fence between Mt. Logan and Tuweep allotments was rebuilt. This was completed by a private contractor hired by the permittee of the Tuweep allotment. Efforts continue to maintain fence integrity between these two allotments.

f. Gates are being left open by large numbers of visitors in Little Spring pasture. Impacts to livestock management are increasing.

The permittee and BLM continue to work together to try and find a solution to the problem. The range and forestry programs are currently looking at installing a cattle guard or a new swing gate at the boundary fence in Sawmill Canyon to solve this problem.

g. Impacts of the restoration project and associated activities on the turkey population. (Sims)

The turkey population in the vicinity of this allotment was introduced in 1961. The population has been in apparent decline for the past five years but seems to be improving thus far in 2005. The cause of this downward population trend is not definitely known. Possible causes could be the recent drought, negative effects of restoration, disturbance associated with forest restoration activities, or other unknown causes. It is possible that there will be a negative effect on turkeys for the first few years following restoration treatments due to reduced cover, but the area should regenerate into good turkey habitat. AGFD is in the process of beginning a study of forest restoration treatment effects on turkeys in the Flagstaff area.

IV. Management Evaluation

A. Purpose of Evaluation

The purpose of this assessment is to determine if the existing soil, water, and vegetative resources are meeting/making progress toward meeting or are not meeting the Arizona Standards for Rangeland Health. These resources are managed according to resource management plans, Allotment Management Plans, and other activity plans, which identify terms and conditions for management on public lands within the Mt. Logan Allotment. If the current livestock grazing practices are determined to be causing non-attainment of Standards then they will be modified to comply with the Guidelines for Grazing Administration. This assessment will also evaluate and update existing Activity Plan objectives to ensure multiple use objectives are tied to the indicators for rangeland health.

B. Summary of Studies Data

1. Livestock Actual Use

Actual use was determined from licensed use. Total active preference for the allotment is 930 AUMs.

Grazing Year	AUMs Used	% of Authorized AUMs Used
1987	356	38%
1988	277	30%
1989	500	54%
1990	726	78%
1991	425	46%
1992	519	56%
1993	398	43%
1994	384	41%
1995	483	52%
1996	569	61%
1997	462	50%
1998	678	73%
1999	851	92%
2000	354	38%
2001	Non-use	0% (Livestock on Parashant allotment)
2002	Non-use	0% (Livestock on Parashant allotment)
2003	444	48%
2004	679	73%

2. Precipitation

Average annual precipitation over the allotment varies greatly between Mount Logan and Tuweep Valley. There is no rain gauge within the allotment boundaries. Therefore, the two nearest gauges at Mt. Trumbull and Tuweep are references for Mt. Logan's annual precipitation data. The Mt. Trumbull gauge is located in T34N, R8W, Sec. 5 approximately ½ mile north of the Little Spring pasture and is representative of the allotments higher elevations. Average precipitation is ~18.88" annually. Approximately 16% (2.97") comes in the fall, 35% (6.60") in the winter, 19% (3.55") in the spring and 30% (5.75") in the summer.

The Tuweep gauge is located in T33N, R8W, Sec. 5 approximately one mile south of the allotment at the National Park Service Tuweep Ranger Station. Average annual precipitation for this guage is ~11.75". Approximately 13% (1.53") comes in the fall, 29% (3.46") in the winter, 21% (2.52") in the spring, and 37% (4.24%) in the summer.

	Annual Precipitation 1989-1996							
Rain Guage	**1989**	**1990**	**1991**	**1992**	**1993**	**1994**	**1995**	**1996**
Mt. Trumbull	14.03"	19.62"	17.10"	20.25"	30.29"	15.38"	35.88"	17.00"
Tuweep	8.85"	11.90"	7.96"	14.44"	9.93"	10.40"	19.43"	10.05"

	Annual Precipitation 1996-2003							
Rain Guage	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**
Mt. Trumbull	23.38"	18.25"	17.58"	9.69"	18.50"	9.00"	16.25"	16.38"
Tuweep	12.52"	15.33"	10.98"	6.89"	12.18"	4.70"	9.40"	No data

3. Utilization

Utilization is the portion or amount of a key plant species current year's growth that is consumed or destroyed by animals. Utilization data from 1994-2004 has been compiled for this evaluation. The Key Species Grazed Class method was used to collect the data. Utilization is read at or around the designated key area for each pasture. ND = No data collected, NU = Non-use, meaning livestock did not graze the pasture.

Percent Utilization of Key Species at Key Area #1 (Head of Tuweep Pasture)											
	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Bogr	18	NU	37	39	38	38	NU	NU	NU	7	29
Hija	0	NU	10	43	34	40	NU	NU	NU	31	25
Sihy	20	NU	41	46	36	43	NU	NU	NU	15	39
Spcr	20	NU	39	20	32	46	NU	NU	NU	30	41

Utilization levels on a key species in the Head of Tuweep pasture has not exceeded the 50% allowable during the evaluation period from 1994 through 2004. The highest overall use in the Head of Tuweep pasture occurred in 1999 at 42%. Overall key species utilization in the pasture for the evaluation period was 31%.

Percent Utilization of Key Species at Key Area #2 (Little Oak Pasture)											
	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Hija	40	50	50	34	47	45	NU	NU	NU	48	45
Sihy	44	46	54	40	50	48	NU	NU	NU	44	22
Bogr	30	45	45	34	46	41	NU	NU	NU	24	23

Utilization levels on a key species in the Little Oak pasture exceeded the 50% allowable once during the evaluation period from 1994 through 2004. That use

occurred in 1996 on squirrel tail at 54%. The highest overall use in the Little Oak pasture was also in 1996 at 49%. Overall key species utilization in the pasture for the evaluation period was 38%.

Percent Utilization of Key Species at Key Area #3A (Little Spring Pasture)											
	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Agro	40	31	33	45	44	31	NU	NU	24	21	26
Brin	53	34	39	54	47	32	NU	NU	28	25	27
Poa	51	28	40	ND	ND	34	NU	NU	24	27	22

Utilization levels on a key species at Key Area #3A in the Little Spring pasture exceeded the 50% allowable three times during the evaluation period from 1994 through 2004. That use occurred on smooth brome and Poa spp. at 53% and 51% in 1994, and again on smooth brome at 54% in 1997. The highest overall use at Key Area #3A was also in 1994 at 48%. Overall utilization at the key area for the evaluation period was 34%.

Percent Utilization of Key Species at Key Area #3B (Little Spring Pasture)											
	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Agro	ND	32	47	52	46	26	NU	NU	35	27	31
Brin	ND	33	50	53	47	28	NU	NU	26	26	35
Poa	ND	38	50	49	46	22	NU	NU	29	28	28

Utilization levels on a key species at Key Area #3B in the Little Spring pasture exceeded the 50% allowable two times during the evaluation period from 1994 through 2004. That use occurred on Agropyron spp. and smooth brome at 52% and 53% in 1997. The highest overall use at Key Area #3B was also in 1997 at 48%. Overall key species utilization at the key area for the evaluation period was 34%.

4. Trend

Trend monitoring was conducted at four key areas over the allotment. The Head of Tuweep, Little Oak, and Little Spring pastures have key area locations where trend data is collected. Two of the four key areas are located in the Little Spring pasture.

Data was collected using the Pace-Frequency method. This method of monitoring measures the percent of bare ground, litter, rock and live vegetation/basal cover. In addition, it measures the occurrence frequency of plant species. Key areas #1 and #2 were established in 1981 and Key Areas #3A and #3B were established in 1983.

The trend index, which combines percent frequency of key forage species, percent litter, and percent live vegetation (basal cover) into one numerical value, shows Key Areas #'s 1 and 2 are in a downward trend, and #'s 3A and 3B are in an upward

trend. Key species are identified by with an astrix (*).

Key Area #1, Head of Tuweep Pasture, Loamy Upland 10-14" p.z , 5,710' elevation. Apparent Trend – Down; Live Basal Veg. Cover 10%.

Mt. Logan Allotment Key Area #1					
Plant Species (Pace Frequency)	**Included in the EcoSite Guide**	**Present at the Key Area**	**% Frequency in 1981**	**% Frequency in 2004**	**TREND**
Grasses					
Hija*	Y	Y	1	2	Static
Bogr*	Y	Y	91	54	Down
Spcr*	Y	Y	2	2	Static
Sihy*	Y	Y	3.5	8	Static
Muto	Y	Y	0.5	0	
Arlo	Y	Y	0	0.5	
Trpu	N	Y	0	3	
Forbs					
Purslane	Y	Y	0	41	
AAFF	Y	Y	0	9	
Sphae	Y	Y	1	4	
Shrubs					
Artr	Y	Y	55.5	37	
Gusa	Y	Y	10.5	13	
Pied	Y	Y	1	4	
Juos	Y	Y	0	6	
Opuntia	Y	Y	0.5	2	
Befr	Y	Y	0	1	
Cover (Step Point)	**EcoSite potential Basal Cover**	**Reading in 1981**	**Reading in 2004**	**AMP objective for cover**	**TREND**
Live Basal Veg.	NA	6.5% cover	10% cover	NA	Down

Key Area #2, Little Oak Pasture, Cinder Upland (Woodland) 13-17" p.z; 6,240' elevation. Apparent Trend - Down, Live Basal Veg. Cover 4%.

Mt. Logan Allotment Key Area #2					
Plant Species (Pace Frequency)	**Included in the EcoSite Guide**	**Present at the Key Area**	**% Frequency in 1981**	**% Frequency in 2004**	**TREND**
Grasses					
Ag. Spp.*	N	Y	73.5	0	Down
Brin*	N	Y	12.5	T	Down
Sihy*	Y	Y	2.5	4	Static
Orhy	Y	N	0.5	0	
Forbs					
Mullen	Y	N	0.5	0	
Grnd chrry	Y	Y	2	T	
Penst.	Y	Y	11	0	
Nicotinia	Y	N	1	0	
Marrubium	Y	Y	0	1	
Menzillia	Y	Y	0	4	
Oenothera	Y	N	2.5	0	
Sphae	Y	Y	0.5	T	
Senecio	Y	Y	0	9	
Viguiera	Y	Y	0	16	
AAFF	Y	Y	8.5	7	
Shrubs					
Pied	Y	Y	2	3	
Chryso.	Y	Y	3.5	11	
Juos	Y	Y	T	4	
Rhtr	Y	Y	0	1	
Artr	Y	Y	1.5	48	
Putr	N	Y	0	0.5	
Erph2	Y	Y	0	2	
Cover (Step Point)	**EcoSite potential Basal Cover**	**Reading in 1981**	**Reading in 2004**	**AMP objective for cover**	**TREND**
Live Basal Veg.	NA	9% cover	4% cover	NA	Down

Key Area #3A, Little Spring Pasture, Loamy Upland (PIPO) 17-25" p.z., 7,320' elevation. Apparent Trend - Upward, Live Basal Veg. Cover 21.5%.

Mt. Logan Allotment Key Area #3A					
Plant Species (Pace Frequency)	**Included in the EcoSite Guide**	**Present at the Key Area**	**% Frequency in 1983**	**% Frequency in 2004**	**TREND**
Grasses					
Ag. Spp.*	N	Y	92	91	Static
Brin*	N	Y	6	11	Static
Sihy*	Y	Y	6	15	Upward
Popr*	N	Y	1	0.5	Static
Poa spp.	Y	Y	0	0.5	
Brte	N	Y	1	1	
Forbs					
PPFF	Y	Y	3	T	
Lupin	Y	Y	0	0.5	
Bind weed	N	Y	0	0.5	
Mornglory	N	Y	0	2	
Tansy aster	Y	Y	0	0.5	
AAFF	Y	Y	0	7	
Vetch	Y	Y	30	0	
Shrubs					
Artr	Y	Y	5	42	
Quga	Y	Y	7	4	
Pipo	Y	Y	0	1	
Putr	N	Y	0	0.5	
Cema	Y	Y	0	0.5	
Locust	Y	Y	0	1	
Cover (Step Point)	**EcoSite Potential Basal Cover**	**Reading in 1983**	**Reading in 2004**	**AMP objective for cover**	**TREND**
Live Basal Veg.	NA	4% cover	21.5% cover	NA	Upward

Key Area #3B, Little Spring Pasture, Loamy Upland (PIPO) 17-25" p.z., 7,300' elevation. Apparent Trend - Upward, Live Basal Veg. Cover 21.5%.

Mt. Logan Allotment Key Area #3B					
Plant Species (Pace Frequency)	**Included in the EcoSite Guide**	**Present at the Key Area**	**% Frequency in 1983**	**% Frequency in 2004**	**TREND**
Grasses					
Ag. Spp.*	N	Y	72	97	Static
Brin*	N	Y	7	6	Static
Sihy*	Y	Y	3	13	Upward
Popr*	N	Y	13	T	Static
Brte	Y	Y	T	5	
Forbs					
Lupin	Y	Y	12	8	
Mornglory	N	Y	0	18	
Bind weed	N	Y	0	3	
Flax	Y	Y	2	0	
PPFF	Y	Y	26	3	
Tansy aster	Y	Y	0	1	
AAFF	Y	Y	1	10	
Vetch	Y	Y	1	0	
Shrubs					
Artr	Y	Y	9	11	
Locust	Y	Y	2	1	
Cover (Step Point)	**EcoSite Potential Basal Cover**	**Reading in 1983**	**Reading in 2004**	**AMP objective for cover**	**TREND**
Live Basal Veg.	NA	4% cover	24% cover	NA	Upward

5. Ecological Site Inventory

The "Dry Weight Rank" vegetative sampling method is used to determine species composition. The present composition and the potential for each key species are used to set composition objectives. The potential composition is determined by the applicable soil type and precipitation zone. These potentials are described in Ecological Site Guides provided by the Natural Resources Conservation Service.

Key Area #1 Plant Spp	**Site Guide Allowable Composition**	**1991 Composition**	**2004 Composition**	**Desired Composition Objective**
Grasses				
Bogr*	15-30%	58%	32%	15-30%
Hija*	5-15%	T	T	1-5%
Sihy*	5-10%	1%	3%	2-7%
Arlo	0-5%	5%	1%	
Spcr*	1-3%	T	T	1-3%
Trpu		0%	3%	

Forbs				
Sphae	5-10%	T	2%	1-5%
Eriog.	5-10%	T		
Penst.		T		
AAFF	5-10%	T		5-10%
Shrubs				
Artr	5-15%	58%	40%	15-40%
Gusa	0-5%	1%	10%	
Pied	0-5%	T	3%	0-5%
Juso	0-5%	T	2%	0-5%
Opuntia	0-10%	T	2%	
Algerita	0-3%	T	2%	

Key Area #1, Loamy Upland 10-14" p.z., Late seral (75% of PNC)

Key Area #2 Plant Spp	**Site Guide Allowable Composition**	**1991 Composition**	**2004 Composition**	**Desired Composition Objective**
Grasses				
Agropy.*	Up to 5%	1%	T	1-3%
Brin*	Up to 5%	5%	T	1-3%
Sihy*	0-10%	1%	2%	1-5%
Forbs				
Vimu	0-10%	7%	19%	
Sphae	0-5%	T	T	
Penst.	0-5%	4%	3%	
PPFF	0-10%	17%	6%	5-10%
AAFF	0-5%	T	T	1-5%
Shrubs				
Artr	25-49%	36%	55%	20-40%
Erph2	0-10%	T	T	
Pied	Up to 25%	T	T	5-15%
Juso	Up to 25%	4%	4%	5-15%
Chryso.	Up to 25%	25%	11%	5-15%

Key Area #2, Cinder Upland (Woodland) 13-17" p.z.; Ecological site guide places the site in the herbaceous/shrub stage based on present vegetation composition. This stage is defined as shrub dominated with medium amounts of forbs and small trees and minor amounts of grasses.

Key Area #3A Plant Spp.	Site Guide Allowable Composition	1989 Composition	2004 Composition	Desired Composition Objective
Grasses				
Agropy.*	NA	45%	62%	30-65%
Brin*	NA	13%	5%	5-10%
Sihy*	0-2%	5%	7%	5-10%
Popr*	0-5%	2%	1%	1-5%
Carex	NA	T	T	
Forbs				
Vetch	0-2%	2%	T	
Lupine	0-1%	T	T	
Mullen	NA	1%	0%	
PPFF	0-5%	3%	1%	1-5%
AAFF	0-5%	T	T	1-5%
Shrubs				
Artr	0-5%	3%	17%	10-20%
Quga	0-3%	26%	7%	5-10%
Putr	0-1%	T	T	0-1%
Pipo	1-10%	T	T	1-5%
Ceanothus	0-5%	0%	T	0-5%
Locust	0-1%	0%	T	0-1%

Key Area #3A, Loamy Upland (Pipo-Woodland) 17-25" p.z.; Ecological site guide places the site in the herbaceous/shrub stage based on present vegetation composition. This stage is defined as being dominated by grasses and shrubs with a few tree seedlings and forbs present. 15% of PNC

Key Area #3B Plant Spp.	Site Guide Allowable Composition	1989 Composition	2004 Composition	Desired Composition Objective
Grasses				
Agropy.*	NA	77%	75%	60-80%
Brin*	NA	5%	3%	1-5%
Sihy*	0-2%	1%	6%	1-5%
Popr*	0-5%	14%	1%	1-5%
Forbs				
Lupine	0-1%		1%	
PPFF	0-5%	2%	9%	1-5%
AAFF	0-5%	T	T	1-5%
Shrubs				
Artr	0-5%	T	5%	1-5%
Locust	0-2%	1%	1%	

Key Area #3B, Loamy Upland (Pipo-Woodland) 18-30" p.z.; Ecological site guide places the site in the herbaceous/shrub stage based on present vegetation composition. This stage is defined as being dominated by grasses and shrubs with a few tree seedlings and forbs present. 12% of PNC

6. Special Status Species

Bald eagle: Bald eagles have not been known to nest anywhere on the Arizona Strip. Their typical habitat components include bodies of water with fish, which are not available in this allotment. There have not been studies or data collected on bald eagles on the Arizona Strip. To date, there are no official records of this species roosting, foraging, or flying over this allotment.

California condor: The re-introduction of condors to northern Arizona began with the release of six captive-reared birds on the Vermilion Cliffs in 1996. As of June 1, 2005, there were 53 condors in the wild in northern Arizona. The reintroduced population as a whole appears to be stable and is increasing.

California condors currently range across the entire Arizona Strip, throughout the Grand Canyon, into adjacent Utah and Nevada, and south of the Grand Canyon in Arizona. Condors range widely, easily covering over 100 miles in a day. Condors are most commonly observed near the release site on the Vermilion Cliffs, at Navajo Bridge near Marble Canyon, on the Kaibab Plateau, and near the South Rim of the Grand Canyon. Condors occasionally fly over and may feed on carrion in this allotment.

Ferruginous hawk: Typical habitat requirements of open country with pinyon-juniper or woodland periphery are present on the Strip but the area is at the edge of their breeding range. There are probably only 5-10 known laying pairs in Arizona. There have not been studies or data collected on ferruginous hawks on the Arizona Strip. To date, this species has not been observed nesting, roosting, foraging, or flying over this allotment.

Northern goshawk: Goshawks are residents of ponderosa pine habitat on the Strip. One resident pair is known to have nested in the forested portion of this allotment for at least the past three years.

Western burrowing owl: Burrowing owls are occasionally observed on the Strip but are uncommon. In this allotment their habitat requirements are in place with the exception of an abundance of suitable burrows. To date, this species has not been observed nesting, roosting, foraging, or flying over this allotment.

Loggerhead shrike: Loggerhead shrikes are permanent residents on the Strip and are fairly common. Their habitat requirements appear to be adequately met on this allotment. Rangewide, the loggerhead shrike is in decline due primarily to loss and degradation of suitable habitat. Arizona Strip habitat has not been altered to the

degree of most of the overall shrike range. This species occurs on this allotment, but population trend data is not available.

7. Wildlife Habitat

Habitat for mule deer on this allotment is considered summer crucial in the western portion of the allotment, summer in the central portion, and yearlong in the remainder. Deer population data is not collected specifically for this allotment, but is collected for the Game Management Unit as a whole. Game Management Unit 13A covers Arizona Strip BLM managed lands between the Hurricane Cliffs and Kanab Creek. Please refer to Appendix E for data.

Mule deer generally occupy sagebrush, pinyon/juniper, interior chaparral and pine/oak woodlands in this unit. Deer densities are generally low throughout the unit even in high quality habitat areas. Although deer densities are low, the unit provides a trophy quality hunt opportunity to those who draw a permit.

The 13A population trend/status as of early 2004 is stable-possibly increasing.

The western portion of the allotment is part of the Mount Trumbull Restoration Project. This project includes units of varying treatments for research and forest health improvement. Numerous studies on wildlife are being conducted by AGFD in the treatment units, including bluebird nestling parasite loads, mule deer habitat use, changes in lizard populations, and foraging rates of migratory songbirds. Results from the bluebird study indicate that nestling parasite loads are higher in treated areas, but nest rate success is also higher in these areas.

Surveys for Mexican spotted owls *(Strix occidentalis lucida)* were conducted in the area between Mt. Trumbull and Mt. Logan in 2003, 2000, 1999, 1998, 1992, 1991, and 1978. No spotted owls were found during the surveys, and it is now believed that the area is not suitable habitat for spotted owls. Owl species that were found during the course of the surveys were long-eared, great horned, flammulated, saw-whet, and western screech.

8. Riparian/Fisheries Habitat

There is no riparian or fisheries habitat on this allotment.

9. Wild Horse and Burro Habitat

There are no wild horses or burros on this allotment.

10. Lithology and Soils

Lithology

The Mt. Logan Allotment consists mainly of scoriaceous basalt, pyroclastics, basalt flows, limestone, and associated alluvial fans and floodplains. Landscape slopes range from one to seventy percent.

Soils

Soils and Ecological Sites - SSA 625

11 Curhollow-Prieta complex, 4 to 20 percent slopes, (fan terraces, hills), limestone, basalt; Basalt Upland, 10" to 14" ppt

12 Godding gravelly loam, 3 to 40 percent slopes, (hills, fan terraces), basalt, pyroclastics; Loamy Upland (PJ-Woodland), 18" to 30" ppt

20 Jocity silty clay loam, 1 to 4 percent slopes, (stream terraces), mixed alluvium; Silty Upland, 7" to 11" ppt

22 Kinan gravelly loam, 1 to 15 percent slopes, (fan terrace), limestone; Loamy Upland, 7" to 11" ppt

26 Lava Flows, basalt; No Ecosite

27 Lozinta extremely gravelly loam, 1 to 15 percent slopes, (fan terraces), scoriaceous basalt and pyroclastics; Cinder Upland (PJ-Woodland), 14" to 18" ppt

28 Lozinta extremely gravelly loam, 15 to 45 percent slopes, (cinder cones), scoriaceous basalt and pyroclastics; Cinder Hills (PJ-Woodland), 14" to 18" ppt

29 Manikan silty clay loam, 1 to 4 percent slopes, (stream terraces), sandstone, shale; Clayey Upland, 10" to 14" ppt

33 Mellenthin very gravelly loam, 1 to 25 percent slopes, (hills), limestone; Shallow Loamy, 10" to 14" ppt

39 Milok gravelly loam, 1 to 15 percent slopes, (fan terraces), limestone; Loamy Upland, 10" to 14" ppt

40 Moab loam, 1 to 5 percent slopes, (fan terraces), limestone; Loamy Upland, 10" to 14" ppt

48 Poley cobbly silty clay loam, 1 to 5 percent slopes, (fan terraces), basalt, pyroclastics; Clay Loam Upland, 10" to14" ppt

49 Poley-Moab complex, 1 to 10 percent slopes, (fan terraces), basalt, pyroclastics; Poley=Clay Loam Upland, 10" to 14" ppt; Moab=Loamy Upland, 10" to 14" ppt

57 Showlow-Section complex, 1 to 15 percent slopes, (hills, fan terraces), basalt, pyroclastics, limestone; Showlow= Clay Loam Upland (P-J Woodland),14" to 18" ppt; Section= Loamy Upland (P-J Woodland), 14" to 18" ppt

59 Showlow very cobbly clay loam, 1 to 15 percent slopes, (hills, fan terraces), basalt, pyroclastics; Clay Loam Upland (PJ-Woodland), 14" to 18" ppt

60 Showlow very cobbly silty clay loam, 15 to 35 percent slopes, (hills, fan terraces), basalt, pyroclastics; Clay Loam Upland (PJ-Woodland), 14" to 18" ppt

61 Sponiker gravelly loam, 1 to 15 percent slopes, (hills, fan terraces), basalt, pyroclastics; Loamy Upland (PIPO-Woodland), 18" to 30@ ppt

62 Sponiker gravelly loam, 15 to 40 percent slopes, (hills, fan terraces), basalt, pyroclastics; Loamy Upland (PIPO-Woodland), 18" to 30@ ppt

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

66 Whiskey silt loam, 1 to 4 percent slopes, (stream terraces) mixed alluvium; Loamy Upland, 14" to 18" ppt

68 Wutoma-Lozinta complex, 1 to 15 percent, slopes, (fan terraces), scoriaceous basalt, pyroclastics; Cinder Upland (PJ-Woodland), 14" to 18" ppt

69 Wutoma-Lozinta complex, 15 to 50 percent slopes, (cinder cones), scoriaceous basalt, pyroclastics; Cinder Hills (PJ-Woodland), 14" to 18" ppt

70 Wutoma-RO complex, 1 to 15 percent slopes, (fan terraces), scoriaceous basalt, pyroclastics; Cinder Upland (PJ-Woodland), 14" to 18" ppt

73 Yumtheska very gravelly loam, 30 to 50 percent slopes, (hills), limestone; Limestone Hills (PJ-Woodland), 14" to 18" ppt

C. Information and/or Data Pertaining to Issues (from III.G.1.)

1. Issues relating to Rangeland Health

a. Head of Tuweep Pasture: poor ground cover and gullies in valley bottoms at east end of pasture.

The specific issue area at the Head of Tuweep is on the east side of the pasture. The area of poor ground cover and gullies is within an old road bed from earlier years. The road has since been moved out of the immediate bottom and natural ecological healing is now occurring. The area of concern is approximately 30 acres in size and is confined to the east end of the drainage. The west end of the drainage appears to be further along in the ecological healing process.

b. Vegetative diversity/lack of understory

The vegetative diversity and lack of understory issue is also associated with the 30 acre area within the old road bed and adjacent sagebrush bottom. Much of the issue is directed at the over abundance of sage brush in this particular area. As is the case with other areas, there is a direct correlation with sagebrush dominated sites and the lack of an understory component.

V. Conclusions

A. Pertaining to Objectives

1. Land Use Plan Objectives

GZ17- *Allowable use on key forage species is 50 percent of current years growth on allotments with rotational grazing systems.*

This objective has been met. Utilization levels for the evaluation period across the allotment at established key areas were 31%, 38%, 34%, and 34%, which is well below the 50% allowable.

RR06 - *Implement actions to restore and/or maintain natural conditions or appearance in all areas.*

This objective is being met. This objective is a process that is an ongoing effort based on observations of range and other specialists and restoration actions are evaluated through the planning and NEPA process for interdisciplinary input and review.

RR08 - *Manage the majority of the resource area for extensive recreation while maintaining its naturalness/remoteness. The exception to this is the Cedar Pockets Campground.*

This objective is being met. Visitors to this AMP area engage in hunting, camping, and sightseeing and indulge in a variety of legitimate recreation activities and are monitored to see that the area's values are not degraded by overuse.

RR09 - *Commercial recreation permits would be issued to the extent that their cumulative impacts are consistent with the overall objectives of this plan and are in the public interest.*

This objective is being met. As new requests for commercial special recreation use permits are received they are evaluated and reviewed for consistency with this objective and processed accordingly.

WS01- *Manage vegetation cover towards ecological stability and sound long-term protective soil cover using mechanical, biological or fire as tools for accomplishment.*

This has been accomplished over most of the allotment. Work is ongoing with the Ponderosa Pine thinning and restoration projects on Mt. Logan.

WS22-*Manage watershed areas according to watershed categorizations to achieve identified objectives.*

The allotment was classified in the RMP as category IV. This means that some watershed units currently are in unsatisfactory erosion condition and the soils would be responsive to treatment. The allotment should remain a category IV until treatments and management have reduced the erosion to an acceptable level.

TE01 *Manage areas consistent with multiple use to conserve candidate species and their habitats and ensure that actions authorized, funded, or carried out do not contribute to the need to list any of these species as threatened or endangered. Adverse impacts to listed species will be avoided.*

This objective is being met. No actions which might contribute to the need to list candidate species are known. No adverse impacts to listed animal species are known.

WL02 *Maintain productive wildlife habitat and ensure wildlife needs and considerations are incorporated into land use planning, National Environmental Policy Act documents, and management decisions.*

This objective is being met. All proposed actions with potential to impact wildlife species are reviewed through the NEPA process. Biological evaluations would be prepared to document the effects of any proposed action on listed or proposed species.

WL06 *Continue restoration of native wildlife into historic range by transplanting wildlife in cooperation with the Arizona Department of Game and Fish.*

This objective is being met. The California condor re-introduction program is a successful example.

WL07 *Manage wildlife habitat through the Habitat Management Plan process to achieve desired plant community objectives.*

This objective is being met. Wildlife species and habitats are managed through the Mt Trumbull HMP. Desired plant community objectives consider the needs of wildlife and their habitat. Objectives for this Allotment have been developed that incorporate wildlife needs.

WL16 *Complete ecological site inventories in key areas to determine site potentials and present ecological conditions; establish desired plant community objectives for various areas and include these objectives in Allotment Management Plans, Habitat Management Plans, watershed plans, and other*

plans in order to prescribe management or improvement practices to achieve these objectives.

This objective has been met. ESIs have been recently conducted in the key areas to determine site potentials. This information will be included as plans are updated.

2. Specific Resource Objectives

Mt. Logan Allotment Management Plan (AMP), 1997

Key Area #1; Head of Tuweep Pasture

- *Maintain the frequency of blue grama at 91 percent.*

Not currently met. The 2000-2002 droughts had a significant effect on blue grama and in 2004 the frequency was 54%, a 37% reduction.

- *Increase the frequency of galleta to 5 percent.*

Not currently met. In 1991 the objective was met, however since the recent drought the frequency of galleta grass has been reduced to 2%.

- *Maintain the frequency of squirrel tail from 3.5 to 5 percent.*

Met. The frequency of squirrel tail in 2004 was 8%, which is a 3% increase of the objective.

- *Increase ground litter from 38 to 42 percent.*

Not currently met. Ground litter at the key area in 2004 was 39.5%. This is up 1.5% from the 1991 reading of 38%.

Key Area #2; Little Oak Pasture

- *Maintain frequency of seeded wheatgrasses at 72 percent.*

Not met. Seeded wheatgrasses at key area #2 has declined since the early 1980's. Squirrel tail however, has increased from 2.5% in 1981 to 4% in 2004.

- *Improve frequency of other cool season grasses from 5 to 7 percent.*

Not currently met. The frequency of other cool season grasses (squirrel tail) is at 4%.

- *Maintain ground litter at 55 percent.*

Not currently met. Ground litter at key area #2 is at 45.5%. This percentage is up slightly from the 1991 reading of 43.5%.

Key Area #3A; Little Spring Pasture

- *Maintain frequency of wheatgrasses at 46 percent.*

Met. The frequency of wheatgrasses at key area #3A in 2004 was 91%

- *Improve ground litter from 21 to 30 percent.*

Met. Ground litter was at 37% in 2004. Ground littler percentage has fluctuated slightly since 1983, but has always been within the objective range.

Key Area #3B; Little Spring Pasture

- *Maintain frequency of wheatgrasses at 36 percent.*

Met. The frequency of wheatgrass at key area #3B has been above 36% since 1983. In 2004, the percent frequency of wheatgrass was 97%.

- *Increase ground litter from 27 to 32 percent.*

Met. Ground litter was at 42.5% at key area #3B in 2004.

Desired Plant Community Objectives developed during this evaluation

Key Area #1 – Head of Tuweep Pasture

Maintain the perennial grass composition between 20 to 50% through the year 2035 by:

Maintaining Bogr CBW at between 15 to 30%
Increasing Hija CBW to between 1 to 5%
Maintaining Sihy CBW at between 2 and 7%
Maintaining Spcr CBW at between 1 to 3%

Maintain shrub/tree composition between 15 to 45% through the year 2035 by:

Decreasing Artr CBW between 5 to 20%
Maintaining Juos CBW at between 0 to 5%
Maintaining Pied CBW at between 0 to 5%

Maintain forbs CBW at between 5 to 15% through the year 2035.
Maintain ground litter at between 30 and 50% through 2035.
Maintain basal cover at between 5 and 15% through 2035.

These objectives are partially met. The ecological condition is 74 percent similar to PNC, which is late seral. Present CBW for key species is as follows: Bogr is 32%, Hija trace, Sihy 3%, and Spcr is at a trace.

By functional group, CBW for shrubs is at 54 percent with Artr contributing 40 percent, CBW for trees is 5 percent, CBW for grasses is at 39 percent, and the CBW for forbs are at 2 percent.

Key Area #2 – Little Oak Spring Pasture

Maintain the perennial grass composition between 2 to 15% through the year 2035 by:

Maintaining seeded Agropyron species CBW at between 1 and 3%
Maintaining Brin CBW at between 1 and 3%
Maintaining Sihy CBW at between 1 and 5%

Maintain shrub/tree composition between 15 to 45% through the year 2035 by:

Decreasing Artr CBW to between 20 to 40%

Maintaining Juos CBW at between 5 to 15%
Maintaining Pied CBW at between 5 to 15%
Maintain forbs CBW at between 5 to 15% through the year 2035.
Maintain ground litter at between 25 and 45% through 2035.
Maintain basal cover at between 2 and 8% through 2035.

These objectives are not met. The ecological site guide places the site in the herbaceous/shrub stage based on present vegetation composition. Present CBW for key species is as follows: Agropyron spp. is 0%, Brin 0%, and Sihy is 2%.

By functional group, CBW for shrubs is at 66 percent with Artr contributing 55 percent, CBW for trees is 4 percent, CBW for grasses is at 2 percent, and the CBW for forbs are at 28 percent.

Key Area #3A – Little Oak Pasture

Maintain the perennial grass composition between 40 to 80% through the year 2035 by:
Maintaining seeded Agropyron species CBW at between 30 and 65%
Maintaining Brin CBW at between 5 and 10%
Maintaining Sihy CBW at between 5 and 10%
Maintaining Popr CBW at between 1 to 5%
Maintain shrub/tree composition between 20 to 45% through the year 2035 by:
Maintaining Artr CBW at between 10 to 20%
Maintaining Quga CBW at between 5 to 10%
Maintaining Pipo CBW at between 1 to 5%
Maintain forbs CBW at between 2 to 10% through the year 2035.
Maintain ground litter at between 35 and 50% through 2035.
Maintain basal cover at between 5 and 15% through 2035.

These objectives met. Ecological site guide places the site in the herbaceous/shrub stage based on present vegetation composition, which is 15% of PNC. This stage is defined as being dominated by grasses and shrubs with a few tree seedlings and forbs present. Present CBW for key species is as follows: Agropyron spp. are 62%, Brin 5%, Sihy 7%, and Popr is at a trace.

By functional group, CBW for shrubs is at 25 percent with Artr contributing 17 percent, CBW for trees is a trace, CBW for grasses is at 74 percent, and the CBW for forbs are at 1 percent.

Key Area #3B – Little Oak Pasture

Maintain the perennial grass composition between 65 to 85% through the year 2035 by:

Maintaining seeded Agropyron species CBW at between 60 and 80%
Maintaining Brin CBW at between 1 and 5%
Maintaining Sihy CBW at between 1 and 5%
Maintaining Popr CBW at between 1 to 5%

Maintain shrub/tree composition between 5 to 15% through the year 2035 by:

Maintaining Artr CBW at between 5 to 10%
Maintaining other shrubs CBW at between 1 to 5%

Maintain forbs CBW at between 2 to 10% through the year 2035.
Maintain ground litter at between 40 and 55% through 2035.
Maintain basal cover at between 5 and 15% through 2035.

These objectives are met. Ecological site guide places the site in the herbaceous/shrub stage based on present vegetation composition, which is 12% of PNC. This stage is defined as being dominated by grasses and shrubs with a few tree seedlings and forbs present. Present CBW for key species is as follows: Agropyron spp. are 75%, Brin 3%, Sihy 6%, and Popr is at a trace.

By functional group, CBW for shrubs is at 6 percent with Artr contributing 5 percent, CBW for trees is a trace, CBW for grasses is at 84 percent, and the CBW for forbs are at 10 percent.

Bald Eagle

BE-1 *The wintering population of bald eagles would be recovered and delisted.*

This objective is being met, although it is more a nationwide objective that an Arizona Strip objective. Bald eagles are tentatively slated for delisting in 2005.

BE-2 *Restrict authorized and/or permitted activities within 0.5 miles of active bald eagle wintering roosts.*

This objective is being met. Site visits and clearances for any proposed activities are conducted by BLM biologists. Active bald eagles roosts are reported and appropriate actions taken to restrict activities within the 0.5 mile radius. At present, no known wintering roosts for bald eagles are known from this allotment.

California Condor Recovery Plan

CC-1 *Provide foraging habitat for California condors.*

Foraging habitat is available for condors. Due to recent concerns raised about the condors eating contaminated food, leaving dead livestock on the range for the

condors is not being encouraged. Condors are especially vulnerable to lead poisoning and carcasses possibly containing lead should be removed from the range. There is no evidence that the habitat is limiting or restricting condor population growth.

CC-2 *Maintain a healthy, self-sustaining population of California condors with a positive growth rate of at least 150 individuals with at least 15 breeding pairs.*

While this objective has not yet been met, the condor population appears to be stable and is increasing. Recent reports of at least two successful nests indicate that the birds are beginning to make progress towards self-sustaining populations. The condors at the Vermilion Cliffs are still very young birds, with many having just recently reached sexual maturity. It may still be many years before the population objective reaches 150 individuals and at least 15 breeding pairs. There is no evidence that rangeland health on this allotment would inhibit the condor population from reaching this objective.

MD-1. Self-sustaining mule deer populations would be enhanced or maintained in Game Management Units 12B, 13A, and 13B. Initial or supplemental transplants could be authorized on a case by case basis. Existing habitat areas could be expanded and new habitat areas may be added where appropriate.

This objective is being met. Deer populations in this area are stable.

MD-2. Crucial summer mule deer habitat would be managed for at least 10% grasses and forbs and 30% palatable browse species CBW, where consistent with site potential. Crucial winter mule deer habitat would be managed to include at least 30% palatable browse species, where consistent with site potential. Palatable browse species would be maintained and enhanced through vegetation conversion. Palatable browse species could include, but is not limited to cliffrose, bitterbrush, ceanothus, four-wing saltbush, desert holly, Mormon tea, and mountain mahogany.

This objective is being met. Please refer to vegetation data.

B. Pertaining to Issues

1. Issues relating to Rangeland Health

a. Head of Tuweep Pasture: poor ground cover and gullies in valley bottoms at east end of pasture.

The specific issue area at the Head of Tuweep is on the east side of the pasture. The area of poor ground cover and gullies is within an old road bed from earlier years. The road has since been moved out of the immediate bottom and natural ecological healing is now occurring. The road bed is silting in and grasses, forbs, and shrubs have re-established within the road

corridor.

b. Vegetative diversity/lack of understory

The vegetative diversity and lack of understory issue is also associated with the old road bed and adjacent sagebrush bottom. Much of the issue is directed at the over abundance of sage brush in this particular 30 acre area. However, to the south and north, the area was treated with herbicide to reduce the composition of sagebrush and demonstrates a more diverse, ecologically healthy rangeland. Although this area to the south is a different range site, similar results in the issue area could be achieved through herbicide treatment.

The following is added for conclusions relative to implementation of the Standards for Rangeland Health and Guidelines for Grazing Administration

Based on the analyses and supporting documentation referenced herein, resource conditions on the allotment:

[**X**] Meet all applicable standards for rangeland health

[ ] Are making significant progress toward meeting the applicable standards for rangeland health

Do not meet the standards for rangeland health for:
[ ] No. 1: Upland sites
[ ] No. 2: Riparian-Wetland sites
[ ] No. 3: Desired Resource Conditions

[ ] Have not been sufficiently documented to make a specific determination, but there is no reason to believe that current management would preclude meeting the standards for rangeland health.

VI. Recommendations

A. Renew the ten year grazing permit on Mt. Logan allotment with current terms and conditions.

B. A recommendation during the allotment visit was made to implement one or two trial plots at Key Area #3A. The purpose of the plots would be to evaluate how effective planting native forb and grass seed would be in establishing a plant community with a larger composition of forbs and native grasses.

C. Plan for and implement a more reliable water source on the west end of Mt. Logan, or at least enlarge apron at the Turkey Track catchment.

AUTHORIZED OFFICER CONCURRENCE:

__X__ I concur with the conclusions and recommendations as written.

_____ I do not concur.

_____ I concur, with the following modifications:

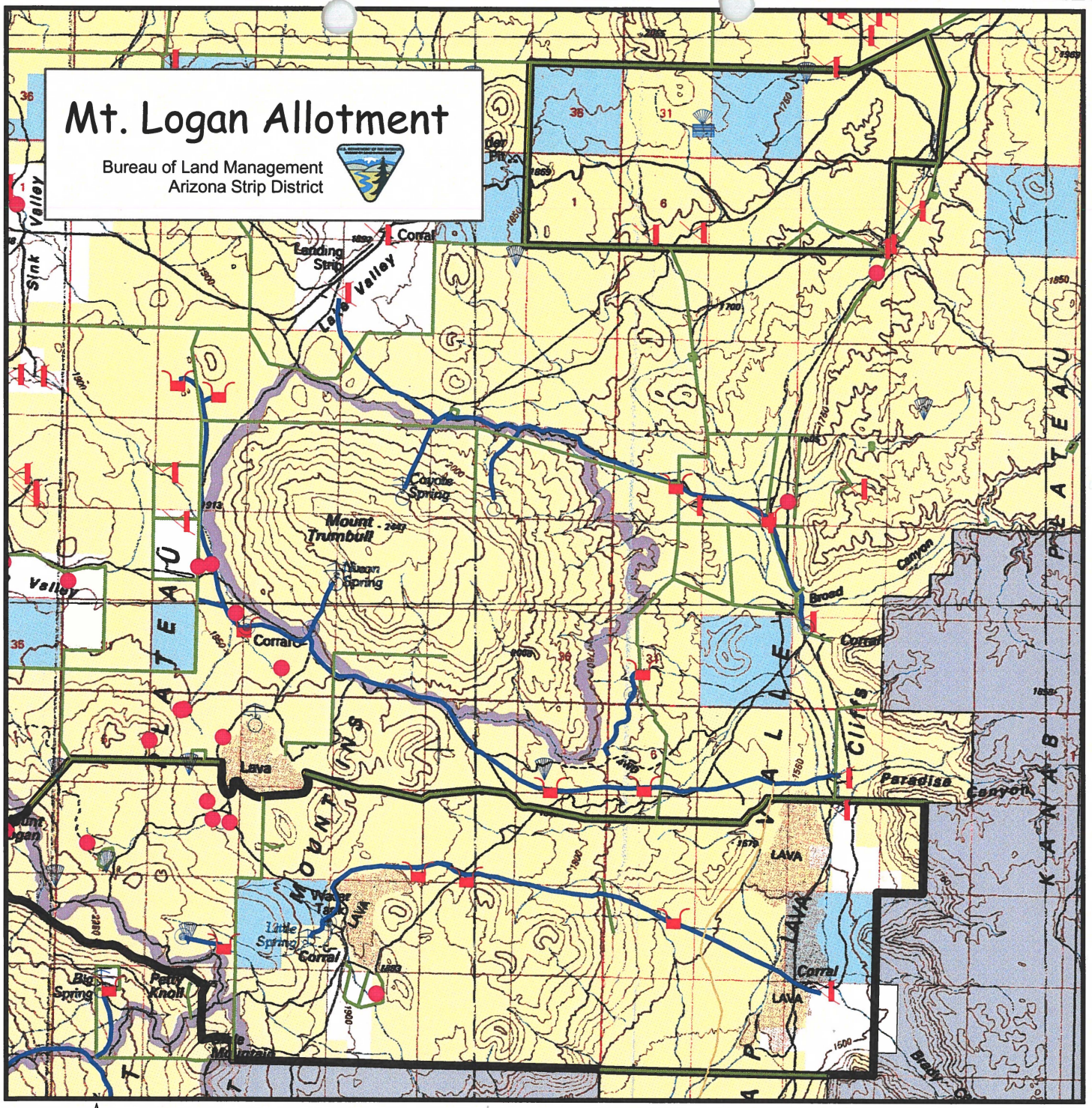
Dennis Curtis — 1/3/07

Monument Manager
Grand Canyon-Parashant Nat'l Monument

Date

Mt. Logan Allotment

Bureau of Land Management
Arizona Strip District



W E S

1:100,000

1 0.5 0 1 Miles

1 0.5 0 1 Kilometers

- Noxious Weeds
- Livestock Catchment
- Key Area
- Fence
- Pipeline
- Monument Boundary
- Allotment Boundary
- Wilderness Boundary

Ownership
- BLM
- Forest Service
- Indian Reservation
- National Park
- Private
- Recreation Area
- State

- Fenced Reservoir
- Trough
- Undeveloped Spring
- Unfenced Reservoir
- Water Storage Tank
- Well
- Wildlife Catchment
- Wildlife Drinker
- Windmill
- Cattleguard
- Corral
- Developed Spring

This product may not meet BLM standards for accuracy and content. Different data sources and input scales may cause some misalignment of data layers.

Produced by
Linda Price
October 30, 2006

Appendix A

ARIZONA STANDARDS FOR RANGELAND HEALTH AND GUIDELINES FOR GRAZING ADMINISTRATION

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 B

TEAM MEMBERSHIP

Team Membership

Interdisciplinary Assessment Team

Linda Price	Project Coordinator (BLM)
Scot Franklin	Wildlife Biologist (BLM)
Larry Gearhart	Wilderness/Recreation Specialist (BLM)
Whit Bunting	Vegetation/Grazing Administration (BLM)
Robert Smith	Soil Scientist and Watershed (BLM)
Brian Bock	Watershed (BLM)
Luke Thompson	Wildlife Manager (Arizona Game and Fish Department)
Kyle Spencer	Soils and Vegetation (Natural Resource Conservation Service)
Rob Grumbles	Vegetation and Social Economics (Mohave County Extension Service)

Rangeland Resource Team

Commodity Interests

Bill Gubler,
Grazing
Rancher, St. George, UT

Bill Howes
Off Road Vehicle Use
Wizards Motorcycle Club

Kent McComb,
Grazing
Retired, St. George, UT

Non-Commodity Interests

Scott Hansen,
Environmental Conservation
Retired, St. George, UT

Spence Esplin,
Historical
Retired, St. George, UT

Phil Squire,
Dispersed Recreation/Wildlife
Retired, St. George, UT

Local Area Interests

Frank Malan,
Public-at-Large
Retired, St. George, UT

Roger McPeek
Public-at-Large
Retired, St. George, UT

Dennis Becenti
Native American Interests
Hopi and Navajo Tribes, AZ

Alternates

Maggie Sacher,
Commercial Recreation/Tourism
Owner: Lee's Ferry Lodge,
Marble Canyon, AZ

Paul Weaver
Non-Commodity
St. George, UT

Appendix C:
PRECIPITATION DATA

Historical Precipitation Report

Field Office 110 **Rain Gauge Name:** Tuweep **Rain Gauge Number:** 06

	Seasonal Precipitation Amounts					Annual Average					Percent of Normal				
Year	Fall	Winter	Spring	Summer	Annual	Fall	Winter	Spring	Summer	Annual	Fall	Winter	Spring	Summer	Annual
1980	1.80	8.24	4.73	4.06	18.83	1.53	3.46	2.52	4.24	11.75	118%	238%	188%	96%	160%
1981	1.42	1.28	4.18	5.29	12.17	1.53	3.46	2.52	4.24	11.75	93%	37%	166%	125%	104%
1982	4.20	2.86	0.94	7.01	15.01	1.53	3.46	2.52	4.24	11.75	275%	83%	37%	165%	128%
1983	2.71	1.81	3.12	5.37	13.01	1.53	3.46	2.52	4.24	11.75	177%	52%	124%	127%	111%
1984	1.79	1.86	0.55	9.39	13.59	1.53	3.46	2.52	4.24	11.75	117%	54%	22%	222%	116%
1985	1.34	5.07	1.10	2.21	9.72	1.53	3.46	2.52	4.24	11.75	88%	146%	44%	52%	83%
1989	0.46	3.51	1.51	3.37	8.85	1.53	3.46	2.52	4.24	11.75	30%	101%	60%	80%	75%
1990	0.49	2.60	1.27	7.54	11.90	1.53	3.46	2.52	4.24	11.75	32%	75%	50%	178%	101%
1991	0.50	2.07	2.44	2.95	7.96	1.53	3.46	2.52	4.24	11.75	33%	60%	97%	70%	68%
1992	0.54	4.58	5.05	4.27	14.44	1.53	3.46	2.52	4.24	11.75	35%	132%	200%	101%	123%
1993	1.31	4.58	2.32	1.72	9.93	1.53	3.46	2.52	4.24	11.75	86%	132%	92%	41%	85%
1994	2.62	3.22	2.09	2.47	10.40	1.53	3.46	2.52	4.24	11.75	171%	93%	83%	58%	89%
1995	2.15	8.10	6.24	2.94	19.43	1.53	3.46	2.52	4.24	11.75	141%	234%	248%	69%	165%
1996	0.65	5.04	0.95	3.41	10.05	1.53	3.46	2.52	4.24	11.75	42%	146%	38%	80%	86%
1997	1.40	2.44	1.65	7.03	12.52	1.53	3.46	2.52	4.24	11.75	92%	70%	65%	166%	107%
1998	0.75	5.43	3.43	5.72	15.33	1.53	3.46	2.52	4.24	11.75	49%	157%	136%	135%	130%
1999	1.74	1.31	2.86	5.07	10.98	1.53	3.46	2.52	4.24	11.75	114%	38%	113%	120%	93%
2000	0.01	1.52	1.53	3.83	6.89	1.53	3.46	2.52	4.24	11.75	1%	44%	61%	90%	59%
2001	4.24	2.33	4.77	0.84	12.18	1.53	3.46	2.52	4.24	11.75	277%	67%	189%	20%	104%
2002	0.84	1.16	0.30	2.40	4.70	1.53	3.46	2.52	4.24	11.75	55%	34%	12%	57%	40%
2003	1.70	3.70	1.90	2.10	9.40	1.53	3.46	2.52	4.24	11.75	111%	107%	75%	50%	80%
2004	1.00					1.53	3.46	2.52	4.24	11.75	65%				

Historical Precipitation Report

Field Office 130 **Rain Gauge Name:** Mt Trumbull **Rain Gauge Number:** 05

	Seasonal Precipitation Amounts					Annual Average					Percent of Normal				
Year	Fall	Winter	Spring	Summer	Annual	Fall	Winter	Spring	Summer	Annual	Fall	Winter	Spring	Summer	Annual
1978	1.55	11.13	4.11	2.02	18.81	3.01	6.74	3.68	5.70	19.13	52%	165%	112%	35%	98%
1979	7.18	2.71	2.70	4.23	16.82	3.01	6.74	3.68	5.70	19.13	239%	40%	73%	74%	88%
1980	2.27	15.78	5.55	4.93	28.53	3.01	6.74	3.68	5.70	19.13	76%	234%	151%	87%	149%
1982	3.06	4.68	5.45	5.02	18.21	3.01	6.74	3.68	5.70	19.13	102%	69%	148%	88%	95%
1983	5.06	7.69	4.17	8.44	25.36	3.01	6.74	3.68	5.70	19.13	168%	114%	113%	148%	133%
1984	3.12	3.22	1.15	6.88	14.37	3.01	6.74	3.68	5.70	19.13	104%	48%	31%	121%	75%
1985	2.97	4.69	2.74	5.94	16.34	3.01	6.74	3.68	5.70	19.13	99%	70%	74%	104%	85%
1986	4.18	1.68	3.72	6.15	15.73	3.01	6.74	3.68	5.70	19.13	139%	25%	101%	108%	82%
1987	2.12	2.95	2.17	5.28	12.52	3.01	6.74	3.68	5.70	19.13	71%	44%	59%	93%	65%
1988	5.76	3.03	4.98	5.04	18.81	3.01	6.74	3.68	5.70	19.13	192%	45%	135%	88%	98%
1989	1.11	4.95	2.04	5.93	14.03	3.01	6.74	3.68	5.70	19.13	37%	73%	55%	104%	73%
1990	0.47	4.64	4.03	10.48	19.62	3.01	6.74	3.68	5.70	19.13	16%	69%	109%	184%	103%
1991	1.28	7.00	3.78	5.04	17.10	3.01	6.74	3.68	5.70	19.13	43%	104%	103%	88%	89%
1992	1.20	7.25	6.51	5.29	20.25	3.01	6.74	3.68	5.70	19.13	40%	108%	177%	93%	106%
1993	2.48	17.55	4.99	5.27	30.29	3.01	6.74	3.68	5.70	19.13	82%	260%	136%	92%	158%
1994	3.35	6.65	4.13	1.25	15.38	3.01	6.74	3.68	5.70	19.13	111%	99%	112%	22%	80%
1995	3.63	16.12	6.13	10.00	35.88	3.01	6.74	3.68	5.70	19.13	121%	239%	166%	176%	188%
1996	0.69	8.25	1.44	6.62	17.00	3.01	6.74	3.68	5.70	19.13	23%	122%	39%	116%	89%
1997	3.51	6.62	2.31	10.94	23.38	3.01	6.74	3.68	5.70	19.13	117%	98%	63%	192%	122%
1998	1.31	8.25	4.94	3.75	18.25	3.01	6.74	3.68	5.70	19.13	44%	122%	134%	66%	95%
1999	4.00	2.00	4.75	6.83	17.58	3.01	6.74	3.68	5.70	19.13	133%	30%	129%	120%	92%
2000	0.12	3.51	2.37	3.69	9.69	3.01	6.74	3.68	5.70	19.13	4%	52%	64%	65%	51%
2001	4.50	7.00	2.13	4.87	18.50	3.01	6.74	3.68	5.70	19.13	150%	104%	58%	85%	97%
2002	1.00	2.38	0.81	4.81	9.00	3.01	6.74	3.68	5.70	19.13	33%	35%	22%	84%	47%
2003	2.62	4.73	2.90	6.00	16.25	3.01	6.74	3.68	5.70	19.13	87%	70%	79%	105%	85%
2004	2.00	7.25	2.25	4.88	16.38	3.01	6.74	3.68	5.70	19.13	67%	108%	61%	86%	86%
2005	11.50	15.51	4.88	5.93	37.82	3.01	6.74	3.68	5.70	19.13	383%	230%	133%	104%	198%
2006	2.13	1.50	5.97	4.02	13.62	3.01	6.74	3.68	5.70	19.13	71%	22%	162%	71%	71%

Appendix D:
Wildlife Data

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	Insuff. 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