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

DUNCAN TANK #4820

I. Introduction

The Duncan Tank 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 Guides).
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&Gs 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 January 14, 2003.

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. Grazing Privileges

Livestock Numbers	Season of Use	% Federal	Active AUMs
53 Cattle	03/01-07/31	78	208
53 Cattle	10/01-02/28	78	205
2 Horses	03/01-07/31	78	7
2 Horses	10/01-02/28	78	8

B. Season of Use

53 cows and 2 horses from 03/01 to 07/31 and 53 cows and 2 horses from 10/01 to 02/28

C. Kind and class of livestock

Cow/Calf Operation

D. Percent Public Land

The Duncan Tank Allotment is 78% public land. The state and private lands within the allotment boundaries are grazed in conjunction with the federal lands. Fees for AUMs on state ground are paid to the State of Arizona by the permittee.

III. Allotment Profile

A. Geographic Description

The Duncan Tank Allotment is located approximately 60 miles south of St. George, Utah, on the Arizona Strip. The allotment is within the boundaries of T. 33 and 34 N., R.10 W. southwest of Bundyville. Elevations range from 3880' in Parashant Canyon to 5520' on the pinyon-juniper ridges. The allotment contains four major range sites. Range sites at the lower elevations in Parashant Canyon are classified as Limestone Hills 6-9" precipitation zone (pz) and a Sandy Wash 9-12" pz. At higher elevations on the allotment, the limestone ridges and slopes are classified as a Shallow Loamy Upland 9-13" pz. The sagebrush draws are Loamy Uplands 9-13" pz.

B. Acreage

Public Lands (BLM)	6,250
State	1,220
Private	2,168
Total	9,638

C. Objectives

Program guidance decisions for the Duncan Tank Allotment are found in the Arizona Strip Resource Management Plan (RMP, 1992) and the Shivwits Resource Area RMP Implementation Plan (SRAIP).

1. Land Use Plan Objectives

SRAIP For The Arizona Strip RMP.

GZ17 Allowable use on key forage species is 50 percent on allotments with rotational grazing systems.

RR-06 Implement actions to restore and/or maintain natural conditions or appearance in all areas.

RR-08 Manage the majority of the resource area for extensive recreation while maintaining its naturalness/remoteness. The exception to this is the Cedar Pockets Campground.

RR-09 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.

The allotment was classified in the RMP as category I. This means that the watershed units currently are in satisfactory erosion condition, but are not especially susceptible to wind and water erosion.

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.

2. Specific Resource Objectives

Duncan Tank Allotment Management Plan (1979) being evaluated in this process

- Maintain galleta grass (*Hilaria jamesii*) at 15% of the composition in the Brown pasture.
- In Mule Canyon, maintain cliffrose (*Cowania mexicana*) at 35% of the composition and improve vigor.
- Allocate the annual forage production at a ratio of 78 acres; one deer. Shrub and browse species should not be over utilized so that nesting birds and protective wildlife cover can be preserved.
- Any new range improvements implemented in Mule Canyon should meet Visual Resource Management (VRM) requirements to preserve the scenic quality of the resource.

California Condor Recovery Plan Objectives (April, 1996)

CC-1 Provide foraging habitat for California condors.

Parashaunt Habitat Management Plan

MD-9 Maintain adequate mule deer cover conditions to support 2,200 deer by 1995.

NG-4 Ensure that all the components needed to sustain certain populations of nongame species are conserved.

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 #5; Back Pasture (Loamy Upland 10-14" p.z.)

Maintain perennial grass composition between 50-70% through 2030 by:
- Maintaining Hija CBW between 10 to 15%
- Maintaining Spcr CBW between 3 to 10%
- Maintaining Orhy CBW between 5 to 10%
- Maintaining Sihy CBW between 5 to 10%

Maintain shrub CBW between 15-50% through 2030.
Maintain forb CBW between 2-10% through 2030.
Maintain tree CBW between 0 to 5% through 2030.

Rationale: The ecological site for this key area is a Loamy Upland 10-14" pz and is within the Great Basin Ecological zone identified in the Grand Canyon-Parashant National Monument Environmental Impact Statement/Land Use Plan (GCPNM EIS/LUP) currently being drafted.

This area was mechanically treated in the late1950s and then treated with the herbicide "Spike 20P" in 1999 with an objective to reduce the composition of woody species. Past treatments have resulted in maintaining the area in a mid to late seral stage of ecological succession. Current monitoring data suggests achievement of the DPC objectives is attainable and is within the potential of the site.

The species listed individually are components of the ecological site and are recognized as key species. The site guide allows from 5 to 15 % CBW for Hija, 1 to 3% for Spcr, 5 to 20% for Orhy, and 5 to 10% for Sihy.

Key Area #6 (Stony Upland 7-11" p.z.)

Maintain perennial grass composition between 50 to 70% through 2030 by,
- Maintaining Hija CBW between 5 to 20%
- Maintaining Boer CBW between 10 to 15%
- Maintaining Spcr CBW between 5 to 20%

Maintain shrub CBW between 25 to 40% through 2030.
Maintain forb CBW between 5 to 15% through 2030.
Maintain tree CBW between 0 to 2% through 2030.

Rational: The ecological site for this key area is a Stony Upland 7-11" pz and is within the Mohave/Great Basin Ecological zone identified in the Grand Canyon-Parashant National Monument Environmental Impact Statement/Land Use Plan (GCPNM EIS/LUP) currently being drafted. This site is currently in the late seral stage. Monitoring data at the key area suggests achievement of the DPC objectives is attainable and is within the potential of the site.

Species listed individually are components of the ecological site and are recognized as key species. The site guide allows from 5 to 20 % CBW for Hija, 10 to 15% for Boer, and 5 to 20% for Spcr.

D. Key Species

Plant Category	Common Name	Scientific Name
Cool Season Grasses	Squirrel Tail	Sitanion hystrix
	Indian rice grass	Oryzopsis hymenoides
Warm Season Grasses	Sand dropseed	Sporobolus cryptandrus
	Galleta grass	Hilaria jamseii
	Black grama	Bouteloua eriopoda

E. Grazing System Description

The permittee runs a cow-calf operation. The allotment is divided into summer and winter use. The Duncan Tank pastures are used during the summer period (May-July and October-November) while the Mule Canyon pastures receive winter use (December-April).

The grazing system was developed and has been in place since 1979 and only includes pastures containing public land, which are Brown #3, Back #5, and the Mule Canyon pastures. The 160, or Weaning pasture, although all public land, are not included in the grazing system. This pasture is used as a weaning and bull pasture. There are eight fenced private pastures which are not a part of the grazing system. Private pastures are under a prescribed grazing rotation at the permittees discretion and are used in conjunction with the BLM system.

The Duncan Tank unit consists of the Brown and Back pastures. Each pasture is used under a deferred-rotation grazing treatment. With this system, each pasture is grazed only once in the spring every three years.

Mule Canyon pastures are grazed on a deferred-rotation schedule as well. There are two pastures within this unit, Mule Canyon North and Mule Canyon South. Each year, grazing use in the pastures is rotated, deferring early spring use every other year.

F. Other Uses

1. Special Status Species

Plants

The special status plant Mt Trumbull Beardtongue (*Penstemon distans*) occurs on the steep north facing limestone derived soils of Parashant Canyon, which is within the boundaries of the Duncan Tank Allotment.

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)
- Peregrine falcon (*Falco peregrinus*) (delisted, monitoring is ongoing)

Bald eagles are only found on the Arizona Strip during the winter months. They do 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 forage on carrion within the allotment, though none have been observed here to date.

Peregrine falcons range across the Arizona Strip and nest on cliff faces. Peregrines were removed from federal listing in 1999, and a monitoring plan is in place. Peregrine falcons are an Arizona Species of Concern.

BLM Sensitive and State Species of Concern

Sensitive species are usually rare within at least a portion of their range. Listed below are the sensitive animal species that may occur within or adjacent to the Belnap West Allotment.

- Ferruginous hawks (*Buteo regalis*)
- Western burrowing owls (*Athene cunicularia hypugea*)
- Spotted bat *(Euderma maculatum)*
- Western small-footed myotis *(Myotis ciliolabrum)*
- Fringed myotis (*Myotis thysanodes*)
- Allen's lappet-browed bat (*Idionycteris phyllotis*)
- Townsend's big-eared bat *(Corynorhinus townsendii)*
- Big free-tailed bats (*Nyctinomops macrotis*)

Ferruginous hawks and western burrowing owls are known to use habitat similar to that found on this allotment, though specific sightings have not been recorded for any of these species.

Herpetological inventories have not been done for this allotment. No sensitive reptiles or amphibians are known or suspected to occur on this allotment.

2. Other Wildlife Species

The primary big game species found on the Duncan Tank Allotment is mule deer. This allotment lies on the edge of the pronghorn distribution and while pronghorn are not common, they may be found in this allotment.

Non-game wildlife found on the allotment are typical of the area, including a variety of small mammals, grassland birds, raptors, and reptiles.

Predators including coyotes, bobcats, and mountain lions can be found in this allotment. Coyotes, in particular, are usually common and are opportunistic hunters. This allotment provides some very good coyote habitat and is frequently used by coyote hunters from the St. George area.

3. Recreation Resources

The Duncan Tank Allotment is considered to have recreation values for its geology, scenic view sheds, and remoteness. General recreation activities might include sightseeing, horseback riding, hiking, camping, hunting, rock collecting, photography, bird watching and nature study.

Off Highway Vehicles: This allotment falls in an area classified as Limited to Existing Roads and Trails.

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

4. Wilderness

No formally designated wilderness resources are located in this allotment.

G. Issues Raised by Team Members or Interested Parties

1. Issues Raised Relating to Standards for Rangeland Health

There were no issues brought forward in the scooping meeting on the Duncan Tank Allotment relating to standards for rangeland health.

2. Issues Not Relating to Rangeland Health

There were no issues not related to rangeland health brought forward in the scoping meeting on the Duncan Tank Allotment.

IV. Management Evaluation

A. Purpose of Assessment

The purpose of this assessment is to determine if the existing permitted livestock use, Allotment Management Plan, and other activity plans, which identify terms and conditions for management on public lands within the Duncan Tank Allotment are meeting/making progress toward meeting or are not meeting the Arizona Standards for Rangeland Health. If the current livestock grazing practices are determined to be causing the 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

1. Actual Use Livestock

Actual use was determined from licensed use. Total active preference for the allotment is 429 AUMs.

Grazing year	AUMs Used	Percent of Authorized AUMs Used
1986	429	100%
1987	414	97%
1988	429	100%
1989	429	100%
1990	429	100%
1991	357	83%
1992	289	67%
1993	389	91%
1994	414	97%
1995	385	90%
1996	425	99%
1997	382	89%
1998	398	93%
1999	344	80%
2000	382	89%
2001	429	100%
2002	371	87%
2003	296	69%
2004	286	67%
2005	399	93%

2. Precipitation

Average annual precipitation on the upper portions of Duncan Tank Allotment is 9-13". There is no rain gauge within the allotment boundaries. Therefore, the two nearest gauges at Acorn and Bundyville are references for Duncan Tank's annual precipitation data. The Alcorn rain gauge is located in T. 35 N., R. 10 W., Sec. 30, approximately 2 miles west of the allotment boundary. Average precipitation is ~13.02" annually. Approximately 12%

(1.58") comes in the fall, 30% (3.94") in the winter, 19% (2.44") in the spring and 39% (5.05") in the summer.

The Bundyville gauge is located in T. 35 N., R. 9 W., Sec. 19 approximately two miles northeast of the allotment. Average annual precipitation for this guage is ~10.88". Approximately 13% (1.42") comes in the fall, 24% (2.63") in the winter, 24% (2.56") in the spring, and 39% (4.27%) in the summer.

	Annual Precipitation 1988-1995							
Rain Guage	1988	1989	1990	1991	1992	1993	1994	1995
Alcorn	12.51"	6.55"	10.57"	11.15"	15.05"	17.00"	10.50"	16.50"
Bndyvlle	15.01"	6.75"	9.93"	8.36"	8.59"	12.28"	10.99"	13.02"

	Annual Precipitation 1996-2003							
Rain Guage	1996	1997	1998	1999	2000	2001	2002	2003
Alcorn	7.50"	14.88"	17.25"	11.95"	6.25"	12.75"	4.50"	9.50"
Bndyvlle	9.57"	13.80"	15.30"	13.30"	3.14"	10.35"	6.22"	12.93"

At the lower elevations of Mule Canyon average precipitation is 6-9" annually. Rainfall distribution for the area is as follows: Approximately 16% (1.17") occurs in the fall, 31% (2.20") in the winter, 22% (1.62") in the spring, and 31% (2.24") in the summer.

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 1993-2003 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.

Utilization of Key Species at Key Area #3											
	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Orhy	41	ND	43	50	39	38	41	42	51	47	35
Sihy	43	ND	33	48	25	23	37	38	46	40	42
Hija	37	ND	39	51	36	41	38	42	46	46	43
Spcr	42	ND	44	39	32	25	41	31	42	45	37

Utilization levels on a key species in the Brown Pasture exceeded the 50% allowable in 1996 and 2001. The highest overall use level in Brown pasture occurred in 1996 at 49%. In all years of the evaluation period, utilization was below 50%. Overall utilization in the Brown pasture for the evaluation period was 40%.

Utilization of Key Species at Key Area #5											
	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Hija	39	ND	51	51	41	45	44	45	35	NU	43
Spcr	43	ND	46	48	42	44	41	44	39	NU	38
Sihy	31	ND	49	47	38	46	46	39	46	NU	52
Orhy	49	ND	34	52	21	48	38	45	45	NU	49

In the Back Pasture, the highest utilization on a key species occurred in 1995, 1996 and 2003. However, overall utilization in the Back Pasture for the evaluation period was 43%.

Utilization of Key Species at Key Area #6											
	1991	1992	1993-95	1996	1997	1998	1999	2000	2001	2002	2003
Hija	21	35	ND	50	ND	47	ND	45	52	47	32
Boer	40	41	ND	41	ND	34	ND	39	54	45	28
Spcr	37	46	ND	52	ND	34	ND	34	45	52	29
Atca	54	50	ND	53	ND	41	ND	48	57	55	37

The Mule Canyon Pastures do not have extensive utilization data like the Brown and Back Pastures. The canyon pastures do not have consistent accessibility by motor vehicle. The access road is frequently washed out and at times has remained impassable for up to two years. The most consecutive utilization data occurred within 1991-2003, with gaps from 1993-1995. Use levels on individual key species above the 50% level occurred eight times as shown in the table above. The overall pasture average for all key species is 43%.

4. Trend

Trend monitoring was conducted at three key areas over the allotment. The Brown, Back, and Mule Canyon Pastures have key area locations where trend data was collected. Key Area #3, in Brown Pasture, is an auxiliary trend location and consists mostly of state and private land. The key area was established in 1970. In 1979 a water harvest catchment was constructed on private land less than 100 meters from the key area. Since construction of the catchment, the key area is in the middle of a trailing area to the water source and no longer is representative of the pasture. Thus, Key Area #3 will be excluded from further analysis in this evaluation.

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 #5 and #6 were established in 1982 and are in static trend.

The trend index, which combines percent forage species, percent litter, and percent live vegetation into one numerical value, shows the key area is in an upward trend.

Key Area #3, (Auxiliary) Brown Pasture, Loamy Upland 9-13" pz, 5,350' elevation
Apparent Trend - Down, Live Basal Veg. Cover 17%.

Duncan Tank Allotment Key Area #3					
Plant Species (Pace Frequency)	**Included in the EcoSite Guide**	**Present at the Key Area**	**% Frequency in 1982**	**% Frequency in 2004**	**TREND**
Grasses					
Hija*	Y	Y	50	36	Down
Bogr*	Y	Y	37	22	Down
Spcr	Y	Y	2	9	
Sihy*	Y	Y	50	20	Down
Orhy*	Y	Y	1	3	Static
Arlo	Y	Y	4	2	
Stco	Y	Y	2	8	
Muto	Y	Y	25	7	
Forbs					
Euphorb	N	Y	6	0	
Asrtag	Y	Y	0	0	
AAFF	Y	Y	10	20	
Spam	Y	Y	3	3	
Aster		Y	0	2	
Eriog		Y	0	2	
Shrubs					
Artr	Y	Y	7	6	
Gusa	Y	Y	3	8	
Chvi	N	Y	14	6	
Juos	Y	Y	0	0	
Lyan	Y	Y	9	3	
Cela	N	Y	3	2	
Atca	Y	Y	0	2	
Opuntia	Y	Y	T	T	
Psco	N	Y	1	1	
Cover (Step Point)	**EcoSite potential Basal Cover**	**Reading in 1982**	**Reading in 2004**	**AMP objective for cover**	**TREND**
Live Basal Veg.	NA	14% cover	17% cover	NA	Down

Key Area #5, Back Pasture, Loamy Upland 9-13" pz, 5,260' elevation
Apparent Trend - Static, Live Basal Veg. Cover 21%.

Duncan Tank Allotment Key Area #5					
Plant Species (Pace Frequency)	**Included in the EcoSite Guide**	**Present at the Key Area**	**% Frequency in 1982**	**% Frequency in 2004**	**TREND**
Grasses					
Hija*	Y	Y	38	46	Static
Bogr	Y	Y	7	21	
Spcr*	Y	Y	3	16	Upward
Sihy*	Y	Y	15	26	Upward
Orhy*	Y	Y	3	9	Static
Arlo	Y	Y	2	5	
Stco	Y	Y	0	2	
Muto	Y	Y	0	0.5	
Spco	N	Y	0	0.5	
Forbs					
AAFF	Y	Y	T	28	
Spam	Y	Y	0	2	
Eriog	N	Y	0	1	
Cryptogram	N	Y	0	4	
Ambrosia	N	Y	0	1	
Aster	N	Y	0	3	
Shrubs					
Artr	Y	Y	47	18	
Gusa	Y	Y	4	8	
Chvi	N	Y	2	7	
Juos	Y	Y	T	2	
Opuntia	Y	Y	0	1	
Psco	N	Y	0	2	
Atca	Y	Y	0	1	
Cela	N	Y	0	1	
Cover (Step Point)	**EcoSite potential Basal Cover**	**Reading in 1982**	**Reading in 2004**	**AMP objective for cover**	**TREND**
Live Basal Veg.	NA	5% cover	21% cover	NA	Upward

Key Area #6, Mule Canyon, Stony Upland 7-11 pz, 3,880' elevation
Apparent Trend - Upward, Live Basal Veg. Cover 16.5%

Duncan Tank Allotment Key Area #6					
Plant Species (Pace Frequency)	**Included in the EcoSite Guide**	**Present at the Key Area**	**% Frequency in 1982**	**% Frequency in 2004**	**TREND**
Grasses					
Boer*	Y	Y	9	21	Upward
Hija*	Y	Y	26	20	Static
Stco4	Y	Y	5	5	
Spcr*	Y	Y	20	19	Static
Trmu	N	Y	0	0.5	
Mupo	Y	Y	0	2	
Cryptogram	N	Y	0	4	
Arlo	Y	Y	0	2	
Forbs					
Enfr	N	Y	T	4	
Spam	Y	Y	T	2	
Astrag	N	Y	0	0	
Erin	Y	Y	0	5	
Shrubs					
Eriog	N		0	2	
Gusa	Y	Y	78	44	
Yuba	Y	Y	6	3	
Glne	N	Y	2	T	
Opuntia	Y	Y	T	2	
Rhus spp.	N	Y	2	2	
Atca*	Y	Y	2	2	Static
Juos	Y	Y	T	0.5	
Epne	Y	Y	2	1	
Cover (Step Point)	**EcoSite potential Basal Cover**	**Reading in 1982**	**Reading in 2004**	**AMP objective for cover**	**TREND**
Live Basal Veg.	NA	2% cover	16.5% cover	NA	Upward

5. Ecological Status Information

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 (NRCS).

Key Area #5 Plant Spp	Site Guide Allowable Composition	Vegetation Composition 1991	Vegetation Composition 2004	Desired Composition Objective
Grasses				
Hija*	5-15%	10	31%	10-15%
Spcr*	1-3%	10	4%	1-10%
Spco	5-10%	0	T	
Stco	5-10%	5	2%	
Orhy*	5-20%	T	9%	1-5%
Sihy*	5-10%	T	7%	5-10%
Bogr	15-30%	34	13%	10-20%
Boer	NA	T	T	
Arist	0-5%	T	T	
Muto	0-5%	T	T	
Forbs				
Sphae	5-10%	3%	2%	2-10%
Crypogram		T	T	
Eriog		0	0.5	
4 o'clock		0	T	
Ambrosia		0	T	
AAFF	5-10%	0	13%	5-10%
Shrubs				
Artr	5-15%	38	8%	5-20%
Juos	0-5%	T	1%	0-5%
Gusa	0-5%	T	1%	
Chvi	NA	T	5%	1-5%
Opuntia	0-10%	T	T	
Cela		0	2%	
Atca	5-15%	0	1%	
Psco		0	T	

Key Area #5, Loamy Upland 9-13" p.z., Late seral (66% of Potential Natural Community - PNC)

Key Area #6 Plant Spp	Site Guide Allowable Composition	Vegetation Composition 1991	Vegetation Composition 2004	Desired Composition Objective
Grasses				
Hija*	5-20%	7%	12%	5-20%
Spcr*	5-20%	12%	7%	5-20%
Spco4	25-35%	2%	2%	
Orhy	25-35%	T	T	
Mupo	5-20%	T	3%	
Trmu	NA	T	1%	
Boer*	10-15%	15%	20%	10-15%
Arist	5-20%	T	2%	
Forbs				
Sphae	1-10%	3%	2%	1-10%
Crypogram	NA	T	1%	
Enfr	1-10%	T	4%	1-10%
Astrag	1-10%	T	T	1-10%
Shrubs				
Gusa	2-10%	10%	27%	
Yuba	1-5%	3%	4%	
Glne	NA	T	T	
Opuntia	1-5%	4%	2%	
Rhus	NA	T	2%	
Atca*	15-25%	T	2%	1-5%
Juos	1-2%	2	T	
Epne	15-25%	T	2%	

Key Area #6, Stony Upland 7-11" pz, Late seral (67% of PNC)

6. Special Status Species

Plants: None

The Parashant Canyon portion of this allotment includes the special status plant Mt Trumbull Beardtongue (*Penstemon distans*). It occurs on the steep north facing limestone derived soils. A study plot was placed in the population and read over a 10 year period. This was a small plot and was only a count plot. In 1987 there were 21 plants in the plot. It dropped to a low of four in 1990. In 1997 there were nine plants in the plot. As the plant grows high up on steep slopes, it is affected mostly by rabbit and other rodent herbivory. There is a much larger plot on Kinney Point, directly east of the allotment. It showed an increase in number of plants from 49 in 1989 to 80 plants in 1997.

7. Wildlife Habitat

The Duncan Tank Allotment lies within the AGFD's Game Management Unit 13B, which is a much larger area and contains a number of grazing allotments. Unit 13B extends east-west from the Nevada state line to the western edge of the Hurricane Rim and extends north-south from the Utah state line to the Colorado River. AGFD counts and manages mule deer throughout the Game Management Unit, rather than on an allotment basis. Population data reflects unit-wide trends. Populations on the allotments may vary from AGFD estimates.

In general, for the last several years the mule deer population has been considered stable to slightly increasing. In 2002, numbers were slightly down, possibly as a result of using ground and fixed-wing air craft for surveys rather than a helicopter. Drought conditions that have persisted in the southwest could have also had an impact on declining mule deer numbers.

8. Riparian/Fisheries

There are no riparian or fisheries habitat on the allotment

9. Wild Horse and Burro Habitat

There is no wild horse and burro habitat on the allotment.

10. Soils and Lithology

The Duncan Tank Allotment has two segments; one is in Parashant Canyon and the other is just southwest of the Mount Trumbull Schoolhouse.

The Parashant Canyon segment has slopes from one to 70%. The canyon is up to 1500 feet deep and is made up of cliffs, escarpments, side canyons, canyon walls, and rock outcrops. The lower portions are made up of fan terraces, stream channel bottoms, torrifluvents, and river wash. Limestone and sandstone dominate the rock type and parent material.

On the north segment the slopes range from one to 70%. Fan terraces, hills, and mesas dominate the landscape, and they are made up of limestone and sandstone.

ECOLOGICAL SITES AND SOILS (623)

North Segment (near the schoolhouse)

08 Barx fine sandy loam, 1 to 5% slopes, (fan terraces), mixed; Loamy Upland, 9" to 13"
Bisoodi-Anasazi family complex, 1 to 8% slopes, (plateaus), limestone and sandstone; Bisoodi-Shallow Loamy, 9" to 13" ppt; Anasazi family-Sandy Loam Upland (calcareous), 9" to 13" ppt

45 Mellenthin-Rock outcrop-Torriorthents complex, 10 to 70% slopes (hills) Kiabab; Mellenthin-Shallow Loamy, 9" to 13"; Torriorthents-Breaks, 9" to 13"

46 Mellenthin-Strych Complex, 4 to 25% slopes, cool, (plateaus, mesas), limestone; Mellenthin-Shallow Loamy, 9" to 13"; Strych-Loamy Upland, 9" to 13"

49 Mellenthin-Tanbark complex, 5 to 50% slopes, dry, (plateau, mesa, hill), SS, gypsite; Mellenthin-Limey Upland, 9" to 13"; Tanbark- Gypsum Hills, 9" to 13"
Radnik loam, 1 to 5% slopes (floodplain) mixed; Loamy Bottom, 9" to 13" ppt

73 Strych very gravelly loam, 2 to 10% slopes (fan) mixed; Loamy Upland, 9" to 13"

PARASHANT CANYON SEGMENT

10 Berzatic fam-RO-Goblin complex, 35 to 70% slopes, (escarpments, cliffs), LS-gyp; Berzatic-Breaks, 7" to 11"; Goblin-Breaks (gypsiferous), 7" to 11"

51 Meriwhitica-Rock outcrop-Strych complex, 35 to 70% slopes, (cliffs, canyons) Callville & Redwall limestones; Meriwhitica-Breaks, 9" to 13"; Strych-Loamy Upland, 9" to 13"

58 Nutter-Gyppocket complex, 2 to 20% slopes, (fan terraces), gyp-alluvium; Gypsum Upland, 7" to 11" ppt

64 Riverwash-Torrifluvents complex, 1 to 3% slopes, (channel, floodplain), mixed; Torrifluvents-Sandy Wash, 9" to 12" ppt

V. Conclusions

A. Land Use Plan Objectives

SRAIP For The Arizona Strip RMP

GZ17 *Allowable use on key forage species is 50 percent on allotments, with rotational grazing systems.*

This objective has been met. Utilization on individual key species exceeded the 50% allowable level fourteen times over all key areas; however, the overall use for all key species is 37%, well below the 50% allowable.

RR-06 *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 on-going 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.

RR-08 *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 allotment engage in hunting, camping, 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.

RR-09 *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.*

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.*

The objective has been met. Departure from soil and hydrologic site descriptions/function (rills, flow patterns, pedestals, bare ground, gullies, wind scour, litter movement and amount, resistance to erosion, soil loss, compaction and infiltration) are none to slight.

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

The allotment was classified in the RMP as category I. This means that the watershed units currently are in satisfactory erosion condition, but are not especially susceptible to wind and water erosion.

Management has been successful in minimizing erosion on this allotment. Departure from soil and hydrologic site descriptions/function (rills, flow patterns, pedestals, bare ground, gullies, wind scour, litter movement and amount, resistance to erosion, soil loss, compaction and infiltration) are none to slight. Therefore the Duncan Tank Allotment will remain classified as a category I.

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.*

Met. And it is done on an on-going basis.

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

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 Parashant HMP. Desired plant community objectives consider the needs of wildlife and their habitat. Objectives for this Allotment have been developed that incorporate wildlife needs.

B. Specific Resource Objectives

1. Duncan Tank Allotment Management Plan being evaluated in this process

Key Area Objectives

- *Maintain galleta grass (Hilaria jamesii) at 15% of the composition in the Brown Pasture.*

This objective has been met. The current composition of galleta grass at Auxiliary Key Area #3 in the Brown Pasture is 25%.

- *In Mule Canyon, maintain cliffrose (Cowania mexicana) at 35% of the composition and improve vigor.*

This objective has not been met. This is an unachievable objective at Key Area #6.

Rationale: This objective was written for Mule Canyon in general and is not specific to Key Area #6. The ecological site at Key Area #6 is classified as a Stony Upland, which will not produce cliffrose at a composition of 35%. It may, however, occur in trace amounts within some soil inclusions. Cliffrose becomes more abundant on the upper reaches of the canyon slopes, but is not recognized as a shrub species of significant composition in the Stony Upland ecological site.

Long term objectives

- *Allocate annual forage production for mule deer at a ratio of 78 acres : one deer. Shrub and browse species should not be over utilized so that nesting birds and protective wildlife cover can be preserved.*

This objective has been met. Utilization levels have been well within the allowable 50% levels.

- *Any new range improvements implemented in Mule Canyon should meet VRM requirements to preserve the scenic quality of the resource.*

This objective has been met and continues to be a part of any new project or improvement maintenance mitigation. The last range improvement was installed in the early 1990s and was maintenance of an existing pipeline.

2. Desired Plant Community (DPC) Objectives developed during this evaluation process

Key Area #5 located in the Back Pasture:

Maintain perennial grass composition between 50-70% through 2030 by:
Maintaining Hija CBW between 10 to 15%
Maintaining Spcr CBW between 3 to 10%
Maintaining Orhy CBW between 5 to 10%
Maintaining Sihy CBW between 5 to 10%
Maintain shrub CBW between 15-50% through 2030.
Maintain forb CBW between 2-10% through 2030.
Maintain tree CBW between 0 to 5% through 2030.

These objectives have been met. The ecological condition is 66% similar to PNC which is Late Seral. Present CBW for the key species is as follows: Hija is 31%, Spcr 4%, Orhy 9%, and Sihy 7%.

By functional group, CBW for tree species is at 1%, CBW for shrubs is at 17 percent, CBW for grasses is at 66% and the CBW for forbs are at 16%.

Key Area #6 located in Mule Canyon:

Maintain perennial grass composition between 50 to 70% through 2030 by:
Maintaining Hija CBW between 5 to 20%
Maintaining Boer CBW between 10 to 15%
Maintaining Spcr CBW between 5 to 20%
Maintain shrub CBW between 15 to 40% through 2030.
Maintain forb CBW between 5 to 15% through 2030.
Maintain tree CBW between 0 to 2% through 2030.

These objectives have been met. The ecological condition is 67% similar to PNC which is Late Seral. . Present CBW for the key species are as follows: Hija is 12%, Boer 20%, and Spcr 7%.

By functional group, CBW for tree species is at a trace %, CBW for shrubs is at 40%, CBW for grasses is at 47% and the CBW for forbs is at 13%.

California Condor Recovery Plan (April, 1996)

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.

Parashaunt Habitat Management Plan

MD-9 Maintain adequate mule deer cover conditions to support 2,200 deer by 1995.

This objective is not being met. Summer range has not been increased. This could only be accomplished through increased precipitation or large scale treatment projects in pinyon-juniper habitat. While fawn survival has approached or exceeded 50 fawns per 100 does in unit 13B, typical fawn to doe ratios are closer to 35. This unit is considered to a low productivity area for mule deer, primarily due to dry conditions and encroachment by pinyon and juniper communities. It is doubtful that the area could ever support 2,200 mule without long term intensive and costly manipulation of the habitat.

NG-4 Ensure that all the components needed to sustain certain populations of nongame species are conserved.

This objective is being met through the Standards and Guidelines assessment process, through development of new desired plant community objectives and interdisciplinary activity plans for wildlife habitat management.

C. Issues relating to Standards for Rangeland Health – None Identified

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:

[**XX**] 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 livestock grazing permit, with current terms and conditions.

B. Re-establish key area #3 in the Brown pasture to a new location more representative of the entire pasture. See section IV(B)(4).

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 — 10/30/06

Monument Manager
Grand Canyon Parashant Nat. Mon.

Date

Duncan Tank Allotment

- Fenced Reservoir
- Trough
- Undeveloped Spring
- Unfenced Reservoir
- Water Storage Tank
- Well
- Wildlife Catchment
- Wildlife Drinker
- Windmill
- Cattleguard
- Corral
- Developed Spring
- Livestock Catchment
- Key Area
- Fence
- Pipeline
- Monument Boundary
- Allotment Boundary
- Wilderness Boundary

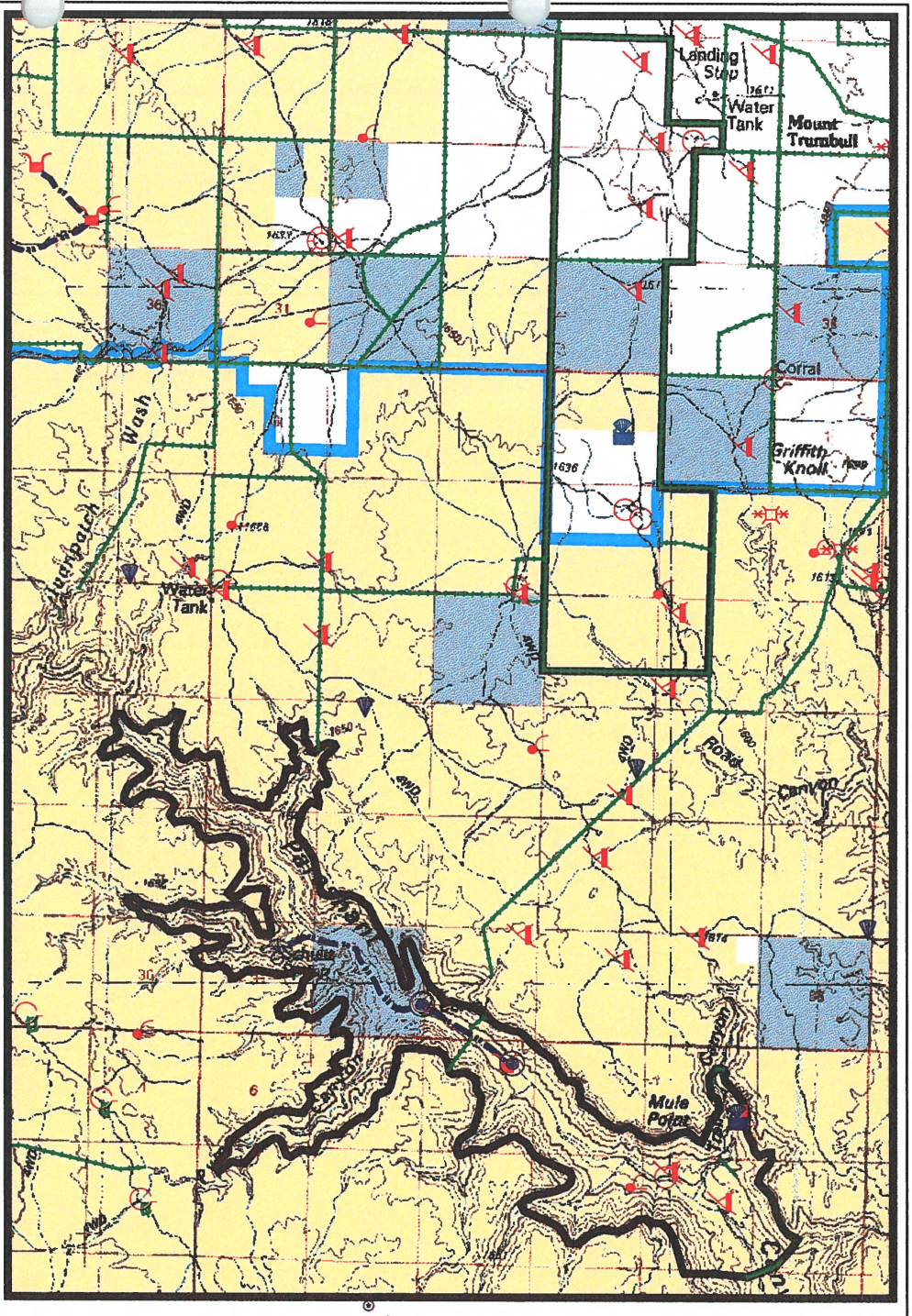
Ownership
- BLM
- Forest Service
- Indian Reservation
- National Park
- Private
- Recreation Area
- State

1 0 1 Miles

1 0 1 Kilometers

N W E S

1:100000





Bureau of Land Management
Arizona Strip Field Office

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
January 6, 2003

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 Rosters

Interdisciplinary Assessment Team

Linda Price	Project Coordinator (BLM)
Mike Small	Wildlife Biologist (BLM)
Larry Gearhart	Wilderness/Recreation Specialist (BLM)
Whit Bunting	Vegetation/Grazing Administration (BLM)
Robert Smith	Soils and 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

Alcorn PRECIPITATION RAIN GAUGE NUMBER: 01 Page 1

Year	Fall	Winter	Spring	Summer	Annual	Fall Average	Winter Average	Spring Average	Summer Average	Annual Average	% Normal Fall	%Normal Winter	%Normal Spring	%Normal Summer	%Normal Annual
1978	1.8	10.0	2.4	2.7	16.8	1.57	3.79	2.27	4.77	12.39	112	264	106	56	136
1979	3.9	5.1	2.8	3.9	15.6	1.57	3.79	2.27	4.77	12.39	246	134	122	81	126
1980	0.4	5.9	2.6	5.5	14.3	1.57	3.79	2.27	4.77	12.39	22	156	115	114	116
1981	0.9	1.7	3.9	7.1	13.5	1.57	3.79	2.27	4.77	12.39	59	45	170	148	109
1982	1.1	4.0	1.9	8.8	15.8	1.57	3.79	2.27	4.77	12.39	72	105	85	185	128
1983	3.1	3.8	2.5	6.9	16.2	1.57	3.79	2.27	4.77	12.39	195	101	108	144	131
1986	2.6	1.1	3.1	6.1	12.9	1.57	3.79	2.27	4.77	12.39	167	29	137	127	104
1987	1.4	2.4	2.8	4.1	10.6	1.57	3.79	2.27	4.77	12.39	88	63	122	86	86
1988	4.1	2.1	3.8	2.6	12.5	1.57	3.79	2.27	4.77	12.39	259	56	167	54	101
1989	0.6	2.7	1.1	2.1	6.6	1.57	3.79	2.27	4.77	12.39	41	71	50	44	53
1990	0.3	1.9	2.0	6.4	10.6	1.57	3.79	2.27	4.77	12.39	19	49	88	135	85
1991	0.5	4.0	1.3	5.3	11.2	1.57	3.79	2.27	4.77	12.39	31	105	59	112	90
1992	0.9	4.8	6.3	3.1	15.1	1.57	3.79	2.27	4.77	12.39	58	125	278	65	121
1993	2.1	9.8	3.4	1.7	17.0	1.57	3.79	2.27	4.77	12.39	134	258	149	37	137
1994	1.8	2.9	2.5	3.3	10.5	1.57	3.79	2.27	4.77	12.39	116	78	110	68	85
1995	2.0	6.2	5.4	3.0	16.5	1.57	3.79	2.27	4.77	12.39	125	163	236	63	133
1996	0.1	3.9	0.9	2.6	7.5	1.57	3.79	2.27	4.77	12.39	8	102	38	55	61
1997	2.1	3.4	2.2	7.1	14.9	1.57	3.79	2.27	4.77	12.39	136	89	99	150	120
1998	1.6	4.3	1.3	10.0	17.3	1.57	3.79	2.27	4.77	12.39	104	114	57	210	139
1999	2.5	1.3	0.8	7.5	12.0	1.57	3.79	2.27	4.77	12.39	158	34	33	156	96
2000		2.8	0.3	3.3	6.3	1.57	3.79	2.27	4.77	12.39		73	11	68	50
2001	2.8	3.9	0.9	5.1	12.8	1.57	3.79	2.27	4.77	12.39	181	103	39	107	103
2002	0.4	1.4		2.8	4.5	1.57	3.79	2.27	4.77	12.39	24	36		58	36
2003	1.5	3.0	1.3	3.7	9.5	1.57	3.79	2.27	4.77	12.39	96	79	56	78	77
2004	0.8	2.6	1.5		4.9	1.57	3.79	2.27	4.77	12.39	52	67	66		39

Bundyville PRECIPITATION RAIN GAUGE NUMBER: 01 Page 1

Year	Fall	Winter	Spring	Summer	Annual	Fall Average	Winter Average	Spring Average	Summer Average	Annual Average	% Normal Fall	%Normal Winter	%Normal Spring	%Normal Summer	%Normal Annual
1988	4.4	1.2	4.8	4.7	15.0	1.48	2.57	2.46	4.12	10.62	296	46	193	114	141
1989	0.3	1.8	1.2	3.4	6.8	1.48	2.57	2.46	4.12	10.62	20	70	50	83	64
1990	1.1	0.9	2.8	5.2	9.9	1.48	2.57	2.46	4.12	10.62	73	33	115	126	93
1991	0.5	3.7	0.4	3.8	8.4	1.48	2.57	2.46	4.12	10.62	30	144	18	92	79
1992	0.7	1.8	5.0	1.1	8.6	1.48	2.57	2.46	4.12	10.62	48	70	203	26	81
1993	1.1	4.7	2.0	4.5	12.3	1.48	2.57	2.46	4.12	10.62	73	183	81	109	116
1994	3.8	2.5	2.2	2.5	11.0	1.48	2.57	2.46	4.12	10.62	254	97	91	61	103
1995		4.0	4.8	4.2	13.0	1.48	2.57	2.46	4.12	10.62		156	196	102	123
1996	0.0	4.6	1.0	3.9	9.6	1.48	2.57	2.46	4.12	10.62	3	180	39	96	90
1997	1.6	2.4	2.2	7.6	13.8	1.48	2.57	2.46	4.12	10.62	108	93	90	185	130
1998	1.0	3.5	3.3	7.5	15.3	1.48	2.57	2.46	4.12	10.62	68	136	134	182	144
1999	2.7	1.4	2.2	7.1	13.3	1.48	2.57	2.46	4.12	10.62	183	53	87	172	125
2000		1.8	1.3		3.1	1.48	2.57	2.46	4.12	10.62		72	53		30
2001	4.3	1.3	3.8	0.9	10.4	1.48	2.57	2.46	4.12	10.62	292	52	153	22	97
2002	1.5	0.6	0.6	3.5	6.2	1.48	2.57	2.46	4.12	10.62	102	24	24	85	59
2003	1.0	3.6	2.3	6.0	12.9	1.48	2.57	2.46	4.12	10.62	70	140	94	146	122
2004	1.2	3.9	1.9		6.9	1.48	2.57	2.46	4.12	10.62	80	150	77		65

Appendix D:

Vegetation Data

ARIZONA STRIP					UTILIZATION STUDY SUMMARY														07/09/04	
ALLOTMENT = DUNCAN TANK				PASTURE = BROWN					KEY AREA NUMBER = 3						Page 1					
Utilization expressed as a percent use for each species as of the particular year read.																				
Cool Season Grasses																				
	1973	1976	1979	1980	1981	1982	1983	1984	1985	1986	1987	1989	1990	1991	1993	1995	1996	1997	1998	1999
ORHY		70	28	30			39	48	24	7			46	43	41	43	50	39	38	41
SIHY				30	45	23	24	37	17	6	30	34	54	50	43	33	48	25	23	38
STIPA							26	37	21	8	32	33								
CSGG																				
WARM SEASON GRASSES																				
HIJA	72	60	24	27	24	26	23	33	35	9	17	34	42	41	37	36	51	36	41	38
SPCR								58	25	42			41						25	41
BOGR		14																		
WSGG																				
BROWSE																				
CELA				61	70	47	44		36	34	54	48	53	49	48	42	45	32		
ATCA										23	38	47	62	63	38	44	55	32		
SSSS																				

ARIZONA STRIP					UTILIZATION STUDY SUMMARY														07/09/04	
ALLOTMENT = DUNCAN TANK				PASTURE = BROWN					KEY AREA NUMBER = 3						Page 2					
Utilization expressed as a percent use for each species as of the particular year read.																				
Cool Season Grasses																				
	2000	2001	2002	2003	2003															
ORHY	42	51	47	35																
SIHY	38	46	40	42	7															
STIPA																				
CSGG																				
WARM SEASON GRASSES																				
HIJA	42	46	46	43	40															
SPCR	31	42	45	40																
BOGR																				
WSGG																				
BROWSE																				
CELA					60															
ATCA					50															
SSSS																				

PACE FREQUENCY TREND ANALYSIS

7/9/04 | ALLOTMENT: DUNCAN TANK | PASTURE: BROWNS | KEY AREA 3 | PAGE NUMBER 1

COVER CATEGORIES	YEARS PLOT WERE READ											TREND INDEX COMPARES DATA FROM THE YEAR READ BACK TO BASE YEAR TO DETERMINE INDEX (a significant change is more than 10%) BASE YEAR = 1982									
	1985	1991	1994	1997	2000	2003	2006	2009	2012	2015	2018	1991	1994	1997	2000	2003	2006	2009	2012	2015	2018
Bare Ground	62	82										32									
Pers Litter	6	1										-83									
Litter	21	9										-57									
Rock	1																				
Basal Cover	10	8										-20									
% Ground Cover	38	18										-53									
BROWSE																					
CELA	1																				
ATCA2	1																				
OTHER BROWS																					
TOTALS	2																				
DESIRABLE GRASSES																					
Cool Season																					
ORHY	5																				
SIHY	24	13										-46									
STIPA	2	3										50									
Other Cool Season Grass																					
TOTALS	31	16										-48									
Warm Season																					
HIJA	49	31										-37									
SPCR	1																				
BOGR	26	30										15									
MUTO2	28	10										-64									
Other Warm Season Grass																					
TOTALS	104	71										-32									
ForageTotals	137	87										-36									
Trend Index	174	105										-40									

PACE FREQUENCY TREND ANALYSIS CONTINUED PAGE NUMBER 2

7/9/04 | ALLOTMENT DUNCAN TANK | PASTURE BROWNS | KEY AREA 3

COVER CATEGORIES	YEARS PLOT WERE READ											TREND INDEX COMPARES DATA FROM THE YEAR READ BACK TO BASE YEAR TO DETERMINE INDEX (a significant change is more than 10%) BASE YEAR = 1985									
	1985	1991	1994	1997	2000	2003	2006	2009	2012	2015	2018	1991	1994	1997	2000	2003	2006	2009	2012	2015	2018
OTHER SHRUBS																					
GUSA2	23	6										-74									
CHVI8	9	3										-67									
ARTR2	21	18										-14									
LYAN	1	3										200									
OTHERSHRUB		2										400									
TOTALS	54	32										-41									
OTHER GRASSES																					
ARLO	5	1										-80									
PPGG																					
TOTALS	5	1										-80									
FORBS																					
SAKA		12										2400									
SPHAE	3	3																			
AAFF																					
AAGG																					
ERIOG	9																				
ASTER		2										400									
TOTALS	14	17										21									

ARIZONA STRIP					UTILIZATION STUDY SUMMARY													07/09/04		
ALLOTMENT = DUNCAN TANK					PASTURE = BACK						KEY AREA NUMBER = 5					Page 1				
Utilization expressed as a percent use for each species as of the particular year read.																				
Cool Season Grasses																				
	1981	1982	1983	1984	1985	1990	1991	1992	1993	1995	1996	1997	1998	1999	2000	2001	2002	2003		
ORHY				52	50	49	47	49	49	49	47	38	48	38	45	45		37		
SIHY	48	36	17	40	30	34	37	31	31	34	52	21	47	46	39	46		41		
CSGG																				
WARM SEASON GRASSES																				
HIJA	37	28	31	21	23	39	36	39	39	51	51	41	45	44	45	35		43		
SPCR				41	44	50	30	45	43	46	48	42	44	41	44	39		38		
BOGR		31	30																	
WSGG																				
BROWSE																				
SSSS																				

PACE FREQUENCY TREND ANALYSIS

7/9/04 | ALLOTMENT: DUNCAN TANK | PASTURE: BACK | KEY AREA 2 | PAGE NUMBER 1

COVER	YEARS PLOT WERE READ											TREND INDEX COMPARES DATA FROM THE YEAR READ BACK TO BASE YEAR TO DETERMINE INDEX (a significant change is more than 10%) BASE YEAR = 1982									
CATEGORIES	1982	1984	1987	1991	1994	1997	2000	2003	2006	2009	2012	1984	1987	1991	1994	1997	2000	2003	2006	2009	2012
Bare Ground	61	61	61	70										15							
Pers Litter	16	8	10	6								-50	-38	-63							
Litter	13	21	22	14								62	69	8							
Rock	5	4	1									-20	-80								
Basal Cover	5	6	6	10								20	20	100							
% Ground Cover	39	39	39	30										-23							
BROWSE																					
OTHER BROWS																					
TOTALS																					
DESIRABLE GRASSES																					
Cool Season																					
ORHY	3	1	2									-67	-33								
SIHY	15	21	16	6								40	7	-60							
STIPA			1	1									200	100							
Other Cool Season Grass																					
TOTALS	18	22	19	7								22	6	-64							
Warm Season																					
HIJA	38	30	37	28								-21	-3	-26							
SPCR	3	8	25	4								167	733	33							
BOGR	7	13	17	18								86	143	157							
Other Warm Season Grass																					
TOTALS	48	51	81	50								6	69	4							

PACE FREQUENCY TREND ANALYSIS CONTINUED PAGE NUMBER 2

7/9/04 | ALLOTMENT DUNCAN TANK | PASTURE BACK | KEY AREA 2

COVER	YEARS PLOT WERE READ											TREND INDEX COMPARES DATA FROM THE YEAR READ BACK TO BASE YEAR TO DETERMINE INDEX (a significant change is more than 10%) BASE YEAR = 1982									
CATEGORIES	1982	1984	1987	1991	1994	1997	2000	2003	2006	2009	2012	1984	1987	1991	1994	1997	2000	2003	2006	2009	2012
OTHER SHRUBS																					
GUSA2	4	6	13	1								50	225	-75							
CHVI8	2	2		2																	
ARTR2	47	64	48	30								36	2	-36							
JUOS			2										400								
OTHERSHRUB																					
TOTALS	53	72	63	33								36	19	-38							
OTHER GRASSES																					
ARLO	2	3	7	4								50	250	100							
PPGG																					
TOTALS	2	3	7	4								50	250	100							
FORBS																					
SPHAE		1	2	1								200	400	200							
AAFF		6		1								1200		200							
AAGG																					
TOTALS		7	2	2								1400	400	400							

ARIZONA STRIP					UTILIZATION STUDY SUMMARY															07/09/04
ALLOTMENT = DUNCAN TANK					PASTURE = MULE CANYON					KEY AREA NUMBER = 6								Page 1		
Utilization expressed as a percent use for each species as of the particular year read.																				
Cool Season Grasses																				
	2004	1989	1990	1991	1992	1996	1998	2000	2001	2002	2003									
CSGG																				
WARM SEASON GRASSES																				
HIJA		28	40	19	35	50	47	45	48	47	32									
SPCR	31	46	38	36	46	52	34	34	45	52	29									
BOER	29	50	51	41	42	41	34	39	54	45	28									
WSGG	30																			
BROWSE																				
ATCA	34	50	50	54	50	54	42	48	57	55	38									
SSSS																				

Appendix E:

Wildlife Data

Game Management Unit (GMU) 13B Mule Deer Data From AGFD (1985 to 2003)

Year	Number of Animals Surveyed	Bucks / 100 does	Fawns / 100 does	Population Estimate
1985	108	30	50	1,000 - 1,500
1986	41	29	18	1,000 - 1,500
1987	63	31	44	1163
1988	---	No Data	No Data	No Data
1989	112	71	31	900
1990	63	68	32	900
1991	85	27	37	900
1992	31	24	59	<1,000
1993	117	126	52	800-1,000
1994	143	69	52	No Estimate
1995	88	183	79	No Estimate
1996	154	87	33	No Estimate
1997	64	77	29	No Estimate
1998	156	43	45	No Estimate
1999	145	51	35	No Estimate
2000	155	49	36	No Estimate
2001	275	34	67	No Estimate
2002	118	46	20	No Estimate
2003	Unknown	29	46	No Estimate

Recent AGFD Game Management Unit 13B Mule Deer Data

	1998	1999	2000	2001	2002
# of Permits	70	75	75	65	65
Hunt Success (%)	68	66	78	55	68
Total Number Surveyed	156*	145*	155*	275*	118
Buck: 100 Does	43	51	49	34	46
Fawns: 100 Does	45	35	36	67	20

*** Indicates Helicopter Survey**