6/23/04

Standards for Rangeland Health and Guidelines for Grazing Administration
Implementation Project: Allotment Assessment
for
Tuweep - 5220

I. Introduction

The Tuweep 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 March 14, 2001, and a field visit on August 29, 2001. In cases where standards were not being met, the group identified which resource uses needed to be addressed, and teams presented recommendations to improve resource conditions.

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

Permittee: Anthony Heaton Family, Limited Partnership

Active Grazing Use:	1,813 AUMs
Suspended Non-use:	1,503 AUMs
Total	**3,316 AUMs**

(Note: an AUM, or Animal Unit Month, is a unit of measurement indicating how much forage is eaten by a cow/calf pair in one month.)

B. Season(s) of Use

180 Cattle from 3/1 to 2/28
2 Horses from 3/1 to 2/28

C. Kind and Class of Livestock

Cow/calf operation.

D. Percent Public Land

83 percent

III. ALLOTMENT PROFILE

A. Description

The Tuweep Allotment is located in Mohave County, Arizona, approximately 50 miles southwest of Fredonia, Arizona. The allotment is accessed via Mt.Trumbull Road off State Highway 389. The majority of the allotment is within the Grand Canyon-Parashant National Monument.

B. Acreage

Non-federal lands are not fenced separate, therefore they run together with BLM

The allotment contains:

- 50,991 acres of federal land
- 3,438 acres of state land
- 2,420 acres of private land

56,577 Total Acreage

C. Objectives

Program guidance decisions as well as specific resource objectives for the Tuweep Allotment are found in the Arizona Strip Resource Management Plan (RMP), and Implementation Plan (IP), Mt. Logan Habitat Management Plan (HMP) and Tuweep Allotment Management Plan (AMP).

1. Land Use Plan Objectives

Vermillion Resource Area Implementation Plan (VRAIP) for the Arizona Strip Resource Management Plan.

GZ-20 Establish utilization averages not to exceed 50% of current years growth of key species.

WS01 Manage vegetation cover towards ecological stability and sound long-term protective soil cover.

WS07 Continue to implement, maintain and monitor Upper Langs Run Watershed Plan under limitations imposed by the Mt. Trumbull RCA designation.

WS20 Conduct vegetative conversions in the Mt. Trumbull RCA to restore watershed conditions.

WS21 Manage watershed areas according to watershed categorizations to achieve identified objectives.

OH-01 Implement the designation of off-highway vehicle use areas for the Vermillion Resource Area as follows.

a. Use of existing roads/trails - 1,078,300 acres (BLM designation: "Limited to Existing Roads and Trails")
b. Use of designated roads/trails - 363,210 acres (BLM designation: "Limited to Designated Roads and Trails")
c. Closed - 133,860 acres (not wilderness, which is closed to vehicular traffic)
d. Open - 803 acres (for further evaluation)

OH-03 Write an Off-Highway Vehicle management plan for the resource area.

RR-01 Consider all applications for special recreation permits within the resource area, subject to the constraints of this plan and the environmental assessment for the proposed use.

RR-02 Camping at any particular location within the resource area is limited to no more than 14 days, unless otherwise authorized.

RR-03 Provide recreation settings where traditional, backcountry, extensive recreation activities such as camping, hunting and sightseeing are possible and the experience opportunities for such activities as defined by the Recreation Opportunity Spectrum are high.

RR-04 Recreation activities will be carried out in such a way as to protect cultural values.

RR-06 Provide visitors to the Vermillion Resource Area with accurate information regarding recreation opportunities, interpretation of natural and human history, and specific rules and regulations pertaining to their use of public lands.

RR-07 Acquire visitor-use data using appropriate methods and maintain files and/or database for use in responding to information requests.

RR-08 Conduct patrols periodically to enforce visitor-use rules and regulations and check compliance.

RR-09 Complete visual contrast rating worksheets on projects proposed in Visual Resource Management Class I, II areas. Emphasize protection of scenic values through a variety of mitigation measures.

RR-10 Update, upgrade, and maintain signs within the resource area.

RR-11 Restore and/or maintain the generally natural, "remote" settings that exist throughout the resource area through mitigation of new projects and implementing restoration projects as necessary.

RR-12 Maintain district transportation plan roads according to transportation plan maintenance schedule.

RR-16 Write a resource area-wide sign plan that will address present and future needs involving road information, interpretation, and public safety, and coordinate the plans with the Arizona Strip visitor map. Generally, signing will be the minimum necessary to provide for public safety and information.

RR-17 Institute visitor limits, regulation, or restriction in the resource area only when monitoring of resource and social conditions indicate a trend toward unacceptable change to desired recreation settings brought about by such use.

RR-19 Designate the Mt. Trumbull area as a Resource Conservation Area and a Special Recreation Management Area with recreation as one of the primary management programs emphasized.

RR-20 Provide recreation settings in the Mt. Trumbull Resource Conservation Area that range from Roaded Natural to Primitive. Recreation opportunities associated with motorized vehicle use such as exploring backcountry roads, vehicle camping, sightseeing, and picnicking are balanced with opportunities associated with non-motorized use such as primitive camping, backpacking, hiking, horseback riding, mountain bike riding, and hunting. The range of settings is briefly described below, from less to more primitive:

- Physical - areas that are generally natural, where resource uses and modifications are evident, to essentially unmodified environments.

- Social - areas where concentration of users is low to moderate and there may be moderate evidence of the sights and sounds of others, to areas where concentration of users is very low and evidence of others is minimal.

- Management - areas where control and restrictions offer a sense of security, some rustic facilities may be provided, and conventional motorized use is allowed, to areas that are almost free of controls and restrictions, no facilities are provided, and motorized use is not allowed.

RR-21 Promote, through various means, conservation of natural and human resource values in the Mt. Trumbull Resource Conservation Area for the purposes of education, scientific study, and recreational opportunities.

RR-22 Write a coordinated, multi-resource activity plan for the Mt. Trumbull Resource Conservation Area, which will satisfy the requirements for a Recreation Area Management Plan.

RR-23 Interpret through various means, the natural and human history of the Mt. Trumbull Resource Conservation Area.

RR-24 Provide signs in the Mt. Trumbull Resource Conservation Area that stress public safety and that inform visitors of BLM programs, geographic locations, and interpret resource values.

RR-25 As visitor use increases in the Mt. Trumbull Resource Conservation Area, consider low-intensity development of facilities to better manage user impacts.

RR-26 Coordinate and emphasize compatible management of the Mt. Trumbull Resource Conservation Area with the management of adjacent areas of the Grand Canyon National Park.

RR-27 Manage the Mt Trumbull Resource Conservation Area as a Visual Resource Management Class II area; changes to the landform, vegetation, or structures should be subtle and not attract attention.

VR-01 Assign Visual Resource Management classes for the resource area as follows:
111,262 acres as Class I
460,217 acres as Class II
333,648 acres as Class III
664,483 acres as Class IV

VR-02 Management of primary access roads will be guided by Visual Resource Management Class II objectives. Changes to the landform, vegetation, or structures along the roads in the foreground or middle ground should be subtle and not attract attention. (These roads with accompanying numbers may include, but are not limited to the following): **Clayhole/Nixon (5), Trumbull (109), Tuweep (115), Craig Ranch (263)**, Black Point (1014), Temple Trail (1001), Antelope Trail (1015), State Highway, 89A, State Highway 389, Buffalo Ranch (1049), Two-Mile (1065), Ryan (FS 422), Winter Road (1025), Gunsight (1048), Hack Canyon, Cane Beds (237), Big Warren (1068), Navajo Trail (30), Robinson (1058), June Tank (1057), Findlay Tank (1010), Sandridge (1055), Pine Tree Pockets (1017).

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 In cooperation with Arizona Game and Fish Department, continue restoration of native wildlife into their historic ranges by supporting and assisting in the releases of native species.

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

WD01 Continue managing the Paria Canyon-Vermilion Cliffs, **Mt. Trumbull/Mt. Logan**, and Cottonwood Point Wilderness areas in accordance with their activity management plans.

2. Specific Resource Objectives

Mt Trumbull Resource Conservation Area Plan

Objective 4 Manage the spectrum of recreational settings in the Resource Conservation Area so that selected indicators of resource and social conditions are within or below the following ranges described in Table 1

Table 1.

Resource Conditions	Natural Setting	Backcountry Setting	Primitive Setting
a. Visitor[1] impacts at five monitoring locations.[2]	Not to exceed 1 highly impacted and 4# moderately impacted campsites.	Not to exceed 3 moderately impacted and two # minimally impacted campsites	Not to exceed 1 moderately impacted and 4 # impacted campsites.
B. Impacts from other uses as evaluated at key observation points.[3]	Not to exceed an overall low visual contrast rating.		Not to exceed an overall low visual contrast rating. Impacts in wilderness must not be noticeable.
Social Conditions			
c. Annual increase in traffic counts tallied.	No more than 5 percent at Toroweep junction and Hurricane Rim sites.	No more than 2 percent at Mt. Logan Road and Death Valley Lake Road sites.	No more than 1 percent at Mt. Trumbull Trail and Mt. Logan Trail sites.
D. Average # of encounters[4] with other groups/day.	No more than 20 during peak visitor use periods.[5]	No more than 10 during peak visitor use periods.	No more than 6 during peak use periods.

Table 1 Footnotes:

1. Visitors are people who are in the area primarily for a recreational purpose, such as hunting or sightseeing.
2. Frequency of monitoring campsites for each setting if once every three years. Impact ratings will be based on monitoring worksheets developed for the RCA, taking into account such factors as number of campfire rings, litter, vegetative damage, camp size, etc.
3. BLM Visual Resource Management contrast rating worksheets, using specific key observation points, will be used as projects are proposed. Key observation points are generally selected by determining where the most people might be in site of the project. Contrast rating will assume that the initial construction phase of any project may not met visual objectives, but that given a reasonable specified time and rehabilitation/mitigation measures, the desired degree of contrast will be met.
4. An "encounter" is any visual or auditory contact with another person or group of persons not part of the observer's group while at a designated monitoring site.
5. "Peak visitor use periods" are the weekend days associated with: Memorial Day, July 4th, July 24th, Labor Day, and the opening of the general season deer hunt.

Objective 5 Enhance visitor experience opportunities with information, interpretation, services, and facilities in order for the visitors to make appropriate choices about participation in recreation activities within the RCA using guidelines described in Table 2.

Table 2.

Management Guidelines	Natural Setting	Backcountry Setting	Primitive Setting
a. Overall management conditions.	Focus on maintaining recreation settings that frequently provide for use confidence and convenience.	Focus on maintaining recreations settings that occasionally provide for user confidence and convenience.	Focus on maintaining recreation settings that rarely provide for user confidence and convenience.
b. Visitor contact with management personnel.	Frequent	Frequent to occasional	Occasional to rare
c. Type, level, and location of visitor information.	Formal, moderate, on-site/off-site	Informal, occasional, off-site	Informal, rare, off-site
d. Signing	Frequent to occasional, generally permanent	Occasional	Rare, temporary
e. Typical road standard	Improved gravel or dirt, frequent maintenance	Dirt, occasionally maintained	Dirt or none, rarely maintained
f. Degree of user facilities development	Moderate to low	Very low to none	None

Mt. Trumbull Habitat Management Plan

1. Increase the carrying capacity of the habitat from the present 2,000 deer yearlong to 4,000 deer yearlong by improving the habitat.
2. Maximize turkey populations through protection and improvement of existing turkey habitat.
3. Increase the productivity of quality forage for wildlife by establishing livestock grazing management systems by 1986.
   a) above 6,000 feet, increase forb densities from a trace to five percent and grasses from five percent to 15 percent.
   b) below 6,000 feet, increase the density of cliffrose, bitterbrush and ceanothus from 10 percent to 20 percent

4. Construct 26 new wildlife waters based on HMP implementation schedule.
5. Manage areas above 6,000 feet elevation and wildlife waters as crucial wildlife habitat.
6. Increase the mule deer production and fawn survival rate from the present five year average of 30 fawns per hundred does to a five year average of 75 fawns per hundred does by 1996.
7. Establish a viable Kaibab squirrel population within all suitable habitat within the ponderosa pine vegetative type.
9. Protect and enhance existing habitat to ensure a continued diversity and abundance of non-game birds and mammals.

Tuweep Allotment Management Plan (1983)

Improve or maintain key species composition and ground cover at each established key area in accordance with the following objectives over a 15-year period after the grazing system is implemented. The attainment of objectives will be monitored through the 200-point pace-frequency transect. Increase or decrease of species will be determined through a percentage, each species has the potential for 100 percent (each species is related to occurrences in a plot, not total plant occurrences). Change in ground cover will also be monitored on a percent basis.

Key Area #1 - Key Species monitored.

- Increase the frequency of western wheatgrass from 1 to 5 percent.
- Increase the frequency of sand dropseed from 1 to 5 percent
- Maintain the frequency of squirreltail at 45 percent
- Maintain the frequency of blue grama at 40 percent.

Key Area #2 - Key Species monitored.

- Increase the frequency of western wheatgrass from 17 to 21 percent.
- Increase the frequency of squirreltail from 4 to 7 percent.
- Decrease the frequency of sagebrush from 63 to 55 percent
- Maintain the frequency of blue grama at 13 percent.

Key Area #3 - Key Species monitored.

- Maintain the frequency of western wheatgrass at 33 percent
- Increase the frequency of blue grama from 10 to 15 percent
- Increase the frequency of squirreltail from 5 to 10 percent

Key Area #5 - Key Species monitored.

- Maintain the frequency of blue grama at 40 percent
- Maintain the frequency of sagebrush at 45 percent
- Increase the frequency of galleta from 35 to 40 percent
- Increase the frequency of squirreltail from 9 to 15 percent

Key Area #6 - Key Species monitored.

- Maintain the frequency of blue grama at 35 percent
- Increase the frequency of galleta from 22 to 30 percent
- Increase the frequency of squirreltail from 3 to 8 percent
- Increase the frequency of sand dropseed from 5 to10 percent.

Key Area #7 - Key Species monitored.

- Increase the frequency of blue grama from 0 to 5 percent
- Increase the frequency of sand dropseed from 0 to 5 percent
- Maintain the frequency of sagebrush at 32 percent.

Key Area #8 - Key Species monitored.

- Increase the frequency of blue grama from 20 to 25 percent
- Increase the frequency of galleta from 21 to 30 percent
- Increase the frequency of squirreltail from 6 to 10 percent
- Increase the frequency of black grama from 0 to 5 percent

Key Area #9 - Key Species monitored.

- Maintain the frequency of blue grama at 75 percent
- Maintain the frequency of squirreltail at 14 percent
- Maintain the frequency of galleta at 13 percent
- Maintain the frequency of sand dropseed at 3 percent
- Maintain the frequency of sagebrush at 30 percent

Key Area #10 - Key Species monitored.

- Increase the frequency of blue grama from 30 to 35 percent
- Increase the frequency of squirreltail from 24 to 30 percent
- Increase the frequency of bitterbrush from 0 to 5 percent.
- Increase the frequency of black grama from 5 to 10 percent

Key Area #11 - Key Species monitored.

- Increase the frequency of fourwing saltbush from 0 to 5 percent
- Increase the frequency of squirreltail from 0 to 5 percent
- Maintain the frequency of sand dropseed at 60 percent.
- Maintain the frequency of galleta at 35 percent

Key Area #12 - Key Species monitored.

- Increase the frequency of bitterbrush from 0 to 5 percent
- Increase the frequency of sand dropseed from 2 to 5 percent
- Increase the frequency of squirreltail from 3 to 5 percent
- Maintain the frequency of crested wheatgrass at 60 percent.

Key Area #13 - Key Species monitored.

- Increase the frequency of sand dropseed from 0 to 5 percent
- Increase the frequency of blue grama from 0 to 5 percent
- Increase the frequency of Kentucky bluegrass from 0 to 5 percent
- Maintain the frequency of squirreltail at 12 percent
- Maintain the frequency of sagebrush at 27 percent

Key Area #14 - Key Species monitored.

- Maintain the frequency of blue grama at 8 percent
- Maintain the frequency of squirreltail at 13 percent
- Maintain the frequency of galleta at 8 percent
- Maintain the frequency of sagebrush at 47 percent.

Key Area #15 - Key Area was established after AMP objectives were written.

Desired Plant Community Objectives developed during this process
DPC objectives are written as a percentage of the entire vegetative community, measured and expressed in composition by weight.

Desired Plant Community (DPC) Key Area #1 (Clay Loam Upland 10-14" pz)

- Maintain the shrub/browse composition between 30-60 percent through 2030.
- Maintain the grass composition between 30-55 percent through 2030.
- Maintain the forb composition between 1-10 percent through 2030.

Desired Plant Community (DPC) Key Area #2 (Clay Loam Upland 10-14" pz)

- Maintain the shrub/browse composition between 30-60 percent through 2030.
- Maintain the grass composition between 30-55 percent through 2030.
- Maintain the forb composition between 1-10 percent through 2030.

Desired Plant Community (DPC) Key Area #3 (Cinder Upland 12-16" pz)

- Maintain the shrub/browse composition between 25-45 percent through 2030.
- Maintain the grass composition between 40-65 percent through 2030.
- Maintain the forb composition between 1-10 percent through 2030.

Desired Plant Community (DPC) Key Area #5 (Loamy Upland 10-14" pz)

- Maintain the shrub/browse composition between 20-35 percent through 2030.
- Maintain the grass composition between 50-70 percent through 2030.
- Maintain the forb composition between 1-10 percent through 2030.

Desired Plant Community (DPC) Key Area #6 (Clay Loam Upland 10-14" pz)

- Maintain the shrub/browse composition between 20-35 percent through 2030.
- Maintain the grass composition between 40-65 percent through 2030.
- Maintain the forb composition between 1-10 percent through 2030.

Desired Plant Community (DPC) Key Area #7 (Clayey Upland 10-14" pz)

- Maintain the shrub/browse composition between 20-40 percent through 2030.
- Maintain the grass composition between 40-65 percent through 2030.
- Maintain the forb composition between 1-10 percent through 2030.

Desired Plant Community (DPC) Key Area #8 (Basalt Upland 10-14" pz)

- Maintain the shrub/browse composition between 35-65 percent through 2030.
- Maintain the grass composition between 30-60 percent through 2030.
- Maintain the forb composition between 1-10 percent through 2030.

Desired Plant Community (DPC) Key Area #9 (Loamy Upland 10-14" pz)

- Maintain the shrub/browse composition between 20-40 percent through 2030.
- Maintain the grass composition between 45-70 percent through 2030.
- Maintain the forb composition between 1-10 percent through 2030.

Desired Plant Community (DPC) Key Area #10 (Clay Loam Upland 10-14" pz)

- Maintain the shrub/browse composition between 25-55 percent through 2030.
- Maintain the grass composition between 30-65 percent through 2030.
- Maintain the forb composition between 1-10 percent through 2030.

Desired Plant Community (DPC) Key Area #12 (Clay Loam Upland 10-14" pz)

- Maintain the shrub/browse composition between 25-60 percent through 2030.
- Maintain the grass composition between 30-65 percent through 2030.
- Maintain the forb composition between 1-10 percent through 2030.

Desired Plant Community (DPC) Key Area #13 (Loamy Terrace 17-20" pz)

- Maintain the trees/shrub/browse composition between 50-70 percent through 2030.
- Maintain the grass composition between 20-45 percent through 2030.
- Maintain the forb composition between 1-10 percent through 2030.

Desired Plant Community (DPC) Key Area #14 (Loamy Upland 10-14" pz)

- Maintain the shrub/browse composition between 25-40 percent through 2030.
- Maintain the grass composition between 50-70 percent through 2030.
- Maintain the forb composition between 0-10 percent through 2030.

Desired Plant Community (DPC) Key Area #15 (Loamy Terrace 17-20" pz)

- Maintain the trees/shrub/browse composition between 50-70 percent through 2030.
- Maintain the grass composition between 20-45 percent through 2030.
- Maintain the forb composition between 1-10 percent through 2030.

D. Key Species

Plant Category	Common Name	Scientific Name
Cool Season Grasses	Bottlebrush squirreltail	Sitanion hystrix
	Western Wheatgrass	Agropyron smithii
	Crested Wheatgrass	Agropyron cristatum
	Russian Wildrye	Elymus cinereus
Warm Season Grasses	Galleta	Hilaria jamesii
	Blue grama	Bouteloua gracilis
	Sand dropseed	Sporobolos cryptandrus
	Black grama	Bouteloua eriopoda
	Side-oats grama	Bouteloua curtipendula
Browse Species	Bitterbrush	Purshia tridentata
	Fourwing Saltbush	Atriplex canescens
	Winterfat	Ceretoides lanata

E. Grazing System

180 Cattle from 3/1 to 2/28 @ 83 percent Public Land is 1793 AUMs
2 Horses from 3/1 to 2/28 @ 83 percent Public Land is 20 AUMs

Due to the varied elevations, the summer-fall system (mountain pastures) is a five-pasture rest rotation grazing system. The winter-spring system (Tuweep valley) is a three-pasture rest rotation system.

F. Other Uses

1. Special Status Species

Listed below are the Threatened and Endangered (T/E) species that may occur within or adjacent to the Tuweep Allotment.

Endangered Species

- California condor (*Gymnogyps californianus*)

Threatened Species

- Bald eagle (*Haliaeetus leucocephalus)* (proposed for de-listing)
- Mexican spotted owl (*Strix occidentalis lucida*)

California condors may occasionally fly over the area from the release site in the Vermilion Cliffs, a distance of over 60 miles. Bald eagles and peregrine falcon (*Falco peregrinus anatum*) (delisted in 1999) may also fly over the area on occasion. No Mexican spotted owls have been observed on this allotment. Juvenile owls may disperse across the Arizona Strip from their nesting areas in cool, deep canyon habitats in other areas.

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

- Ferruginous hawks (*Buteo regalis*)
- Swainson's hawk *(Buteo swainsoni)*
- Spotted bat *(Euderma maculatum)*
- Western small-footed myotis *(Myotis ciliolabrum)*
- Fringed myotis (*Myotis thysanodes*)
- Big free-tailed bats (*Nyctinomops macrotis*)
- Townsend's big-eared bat *(Corynorhinus townsendii)*

Ferruginous and Swainson's hawk are known to use habitat similar to that found on the Tuweep Allotment, though specific sightings have not been recorded for these species.

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 include Townsend's big-eared (*Corynorhinus townsendii*), spotted bats (*Euderma maculatum*), small-footed myotis (*Myotis ciliolabrum*), fringed myotis (*Myotis thysanodes*), and big free-tailed bats (*Nyctinomops macrotis*).

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

2. Wildlife Resources

The Mt. Trumbull area supports a population of mule deer. Introduced populations of Merriam's turkey and Kaibab squirrel are also present on the allotment.

Nongame wildlife found on the allotment is typical of the area, including a variety of small mammals, grassland birds, raptors, and reptiles. The allotment supports an abundant and diverse bird fauna, in part due to the more mesic conditions in the ponderosa pine / oak woodland habitats. All waters within this arid region are important for wildlife.

3. Recreation

The Tuweep Allotment is considered to have recreation values for its geology, scenic view sheds, wilderness, and remoteness and solitude. General recreation activity in this area consists of recreational OHV use, driving for pleasure, sightseeing, horseback riding, hiking, camping and hunting.

Off-Highway Vehicles: The area in this allotment has been designated as: Closed (Wilderness) "Limited to Designated Roads & Trails" and "Limited to Existing Roads & Trails" (See VRAIP Map 11 and Appendix 12).

Recreational Opportunity Spectrum (ROS): Primitive, "Semi-Primitive Non-Motorized" "Semi-Primitive Motorized" and "Roaded Natural" ROS Classes are found in this allotment (ASD-RMP, Map III-21; Appendix 17).

Trails: Two designated or developed recreational trails are found in this allotment, the Temple Trail and the Mt. Trumbull Hiking Trail. The Temple Trail originates in Nixon Flat and travels to the Temple in St. George, Utah. The Mt. Trumbull Hiking Trail starts at Nixon Flat and runs through the Mt. Trumbull wilderness to the peak of Mt. Trumbull. The Dominguez-Escalante Party is presumed to have come through to the north of this allotment, although the party's route is shown on the Arizona Strip's Visitor Map as a historic trail, the exact route is not known and no trail markers are found on the ground in this area.

Recreation sites: Two designated recreation/cultural historic sites are located in this allotment and are close together at Nixon Flat: The prehistoric Uinkaret Pueblo, and a Historical Sawmill site which produced timbers for the construction of the St. George L.D.S. Temple in the late 1800's.

Visual Resource Management (VRM): This allotments area has been rated as "VRM Class 2," "Class 3" and "Class 4."

4. Wilderness

The Mt. Trumbull and Mt. Logan Wilderness are located on parts of this allotment.

5. Wild and Scenic Rivers

There are no Wild and Scenic River resources on this allotment

G. Issues brought out in scoping

1. Issues Relating to Rangeland Health

a. Maintenance of old chainings, seedings and burns(vegetative treatments).
b. Recreation/camping is impacting vegetative cover.
c. Weeds in Section 33.
d. Grassy Flat invaded by sage and locust.
e. Road drainage causes gullies. More water turn-outs are needed on the main road to Trumbull.
f. Riparian values at Nixon Spring.
g. Soil erosion and lack of understory.
h. Vegetative diversity in Section 29.
i. Declining mule deer and pronghorn populations (concern).

2. Issues Not Relating to Rangeland Health and not discussed further in this document.

a. Mt. Trumbull five-year study, now in its sixth year:
The Mt. Trumbull Forest Restoration Study is still on-going and no findings or conclusions have been made yet.

b. Visibility problems from dust on Tuweep Valley Road:
The Tuweep Valley Road has shown an increase in visitor use, although there has been a decrease in logging truck traffic. The increased visitor use coupled with the ongoing drought will produce dust and limit visibility in the area.

c. Public safety concerns on roads with logging traffic, dust on Tuweep Valley Road:
The large logging trucks are no longer driving those roads. However, orange cones and signs were placed in certain areas of concern and drivers are advised too slow down and drive careful.

d. Visual Resource Management, Class I may be too restrictive
There are three VRM classes on the Tuweep allotment that were established during the preparation of the Resource Management Plan (RMP). An RMP amendment would be required to change a classification. The Arizona Strip BLM is currently revising the RMP, and a request to change the classification should be made during that process.

e. Responsibility for public services not provided by BLM (inside the monument) have been thrown upon private individuals:
An overall goal of our RMP is to maintain remoteness on the Arizona Strip. There are no visitor services provided on the Monument and there are currently no plans to provide services in the future. Because of this, when visitors become stranded passers by are often their only sources of assistance. In the majority of the instances the passer by is the livestock permittee. It has always been the responsibility of the visitor to be prepared and travel at their own risk. The Arizona Strip Interpretive Association as well as BLM Public Affairs Officer have made it a priority to keep visitors informed of the travel risks.

f. Aesthetics of major travel routes: Trumbull/Tuweep:
There are two main public access roads that traverse portions of the Tuweep Allotment, one of which passes along the South side of Mt. Trumbull. The other passes along the North and West side of Mt. Trumbull. Several other less used routes access back country areas of the allotment, one provides visitors access from Nixon Administrative Site to the Whitmore overlook which is a locally known scenic overlook. The vistas and diversity of viewsheds are important components of the remote experience provided by this portion of the Arizona Strip.

g. Possible gopher infestation:
Periodically, large numbers of gopher holes and mounds have been observed in the open flat in front of the Nixon Administration Site. The numbers of gophers are not currently causing impacts that preclude the attainment of standards. However, the area will be watched and the situation addressed if impacts appear.

IV. MANAGEMENT EVALUATION

A. Purpose of Evaluation

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 Tuweep 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 Data

1. Actual Livestock Use

Actual livestock use is expressed as a percent of 1,813 AUMs authorized on the grazing permit each year since 1989.

Grazing Year	AUMs Used	%-age AUMs Used	Non-use
99-00	1,170	65%	643
98-99	1,532	85%	281
97-98	1,491	92%	125
96-97	1,496	93%	120
95-96	1,498	93%	118
94-95	1,306	81%	310
93-94	1,238	77%	378
92-93	1,332	83%	275
91-92	1,356	84%	249
90-91	1,332	83%	274
89-90	1,427	89%	189
88-89	1,225	76%	391

2. Precipitation

The Tuweep Allotment falls within two precipitation zones. The higher elevations on Mt. Trumbull and on the west half of the allotment are in the 18.54" ppt. zone and most represented by the Nixon Flats rain gauge. Approximately 14 percent (2.66") comes in the fall, 33 percent (6.08") comes in the winter, 21 percent (3.85") comes in the spring

and 32 percent (5.95")comes in the summer.

The west half of the allotment in Tuweep Valley and Tuckup falls in the 12.5" ppt. zone and most represented by the Tuweep rain gauge. Approximately 12 (1.44") comes in the fall, 30 percent (3.76") comes in the winter, 21 percent (2.61") comes in the spring and 38 percent (4.70") comes in the summer.

The fall precipitation has been above normal in 1991, 1992, 1993 &1998 and below normal all the other years since 1988. The good or above average years were in 1993-94, and 1995 thru 1998. The winter precipitation has been above normal from 1991-1995 and below normal all the other years since 1988. The spring precipitation has been above normal only from 1992, 1995, and 1999 then below the rest of the years. The summer precipitation was above normal every year except 1990, 1992 and 1999. Then below normal all the other years. The overall annual precipitation trend is above normal in 1991-92, 94-95, & 1998-99, with below normal precipitation all the other years since 1988. (see appendices for specific precipitation information).

3. Utilization

Utilization is the proportion or degree of the current year's forage production that is consumed or removed by animals. The Key Species Grazed Class Method was used to collect the data. Utilization was read at the key area.

During the evaluation period, average utilization across all pastures for cool season grasses were 31 percent, ranging between 11 percent and 57 percent. For the warm season grasses the average was 29 percent, ranging from 7 percent to 53 percent. The browse averaged 46 percent and all browse species ranged from 35 percent to 60 percent. Presently no species have been over utilized during this evaluation period (see appendices for specific utilization information).

4. Trend

The vegetation monitoring data is collected at different points in time on the same site (key area), reading and recording these studies every few years and then comparing these back to the original baseline data to detect any change.

Trend monitoring was conducted at nine key areas over the allotment. Trend data was collected using the Pace-frequency method. This method measures the occurrence of frequency of all vegetative species through the use of a plot frame. In addition, point data are collected for ground cover, which include bare ground, litter, rock and live vegetation. A trend up, down or static refers to the direction of change to the forage plant frequency at the key area, which is toward or away from the stated objective (see appendices for specific frequency and trend information).

Pace Frequencies "Trend" summaries for each pasture as shown:

Key Area #1, Nixon Pasture - Clay Loam Upland 14-18" pz

- Key Species index increased in frequency from 38 to 88.
- Live Vegetative Cover is 10 percent
- Based on frequency data trend is **up.**

Key Area #2, Craig Pasture - Clay loam Upland 10-14" pz

- Key Species index decreased in frequency from 63 to 58.
- Live Vegetative Cover is 5 percent
- Based on frequency data trend is **static.**

Key Area #3, White Springs - Cinder Upland 12-16" pz

- Key Species index decreased in frequency from 73 to 25.
- Live Vegetative Cover is 8.5 percent
- Based on frequency data trend is **down.**

Key Area #5, Tuckup Pasture - Loamy Upland 10-14" pz

- Key Species index decreased in frequency from 85 to 82.
- Live Vegetative Cover is 4.5 percent
- Based on frequency data trend is **static.**

Key Area #6, Little Tuweep - Clay Loam Upland 10-14" pz

- Key Species index decreased in frequency from 65 to 50.
- Live Vegetative Cover is 4.5 percent.
- Based on frequency data trend is **down.**

Key Area #7, Tuweep - Clayey Upland 10-14" pz

- Key Species index increased in frequency from 57 to 82.
- Live Vegetative Cover is 6.5 percent.
- Based on frequency data trend is **up.**

Key Area #8, Tuweep - Basalt Upland 10-14" pz

- Key Species index increased in frequency from 51 to 59.
- Live Vegetative Cover is 4.5 percent.
- Based on frequency data trend is **static.**

Key Area #9, Little Tuweep - Loamy Upland 10-14" pz

- Key Species index increased in frequency from 105 to 107.
- Live Vegetative Cover is 6 percent.
- Based on frequency data trend is **static.**

Key Area #10, East Trumbull - Clay Loam Upland Gravelly 10-14" pz

- Key Species index decreased in frequency from 78 to 53.
- Live Vegetative Cover is 4 percent.
- Based on frequency data trend is **down.**

Key Area #12, East Trumbull - Clay Loam Upland Gravelly 10-14" pz

- Key Species index decreased in frequency from 63 to 30.
- Live Vegetative Cover is 3.5 percent.
- Based on frequency data trend is **down.**

Key Area #13, Ponderosa - Loamy Terrace 17-20" pz

- Key Species index increased in frequency from 16 to 25.
- Live Vegetative Cover is 2.5 percent.
- Based on frequency data trend is **static.**

Key Area #14, Tuckup - Shallow Loamy 10-14" pz

- Key Species index increased in frequency from 105 to 110.
- Live Vegetative Cover is 8.5 percent.
- Based on frequency data trend is **static.**

Key Area #15, Ponderosa - Loamy Terrace 17-20" pz

- Key Species index increased in frequency from 25 to 26.
- Live Vegetative Cover is 5.5 percent.
- Based on frequency data trend is **static.**

Key Areas 3, 6, 11, & 12 are primarily old vegetative treatment areas (chainings, railings) that have since invaded and encroached back into a dense sagebrush or pinyon-juniper vegetation type. These areas have not received the needed maintenance or additional treatments to keep them in good condition. The invasive species have crowded out the desirable grasses, shrubs and browse species that were present, thus showing a decrease or downward trend in key species.

5. Ecological Status

Ecological status is defined in terms of different seral stages which are the developmental stages of ecological succession. The following four ecological status classes correspond to percent similarity to the potential natural community and correlate with seral stages ratings in the Ecological Site Guides or indices. The status of a given site is rated in respect to the present state of all plant and soil condition of an ecological site in relation to the potential natural community. (see appendices for specific ecological site information).

Early Seral Stage (0-25 percent)
Mid Seral Stage (26-50 percent)
Late Seral stage (51-75 percent)
Potential Natural Community-PNC (76-100 percent)

Key Area #1 (Nixon) - Clay Loam Upland 10-14" pz

- Ecological Status - Late Seral (67 percent of PNC)
- Data indicates Ecological Status is **upward.**

Key Area #2 (Craig) - Shallow Loamy 10-14" pz

- Ecological Status - Mid Seral (42 percent of PNC)
- Data indicates Ecological Status is **static** toward improving.

Key Area #3 (White Spring) - Cinder Upland 12-16" pz

- Ecological Status - Mid Seral (26 percent of PNC)
- Data indicates Ecological Status is **static**.

Key Area #5 (Tuckup) - Loamy Upland10-14" pz

- Ecological Status - Mid Seral (47 percent of PNC)
- Data indicates Ecological Status is **static** toward improving.

Key Area #6 (Little Tuweep) - Clay Loam Upland 10-14" pz

- Ecological Status - Mid Seral (39 percent of PNC)
- Data indicates Ecological Status is **static**.

Key Area #7 (Tuweep) - Clayey Upland 10-14" pz

- Ecological Status - Mid Seral (34 percent of PNC)
- Data indicates Ecological Status is **static.**

Key Area #8 (Tuweep) - Basalt Upland 10-14" pz

- Ecological Status - Mid to Late Seral (50 percent of PNC)
- Data indicates Ecological Status is **static** toward improving.

Key Area #9 (Little Tuweep) - Loamy Upland 10-14" pz

- Ecological Status - Late Seral (58 percent of PNC)
- Data indicates Ecological Status is **upward.**

Key Area #10 (East Trumbull) - Clay Loam Upland 10-14" pz

- Ecological Status - Mid to Late Seral (46 percent of PNC)
- Data indicates Ecological Status is **static** toward improving.

Key Area #12 (East Trumbull) - Clay Loam Upland 10-14" pz

- Ecological Status - Mid to Late Seral (47 percent of PNC)
- Data indicates Ecological Status is **static** toward improving.

Key Area #13 (Ponderosa) - Loamy Upland Terrace 17-20" pz

- Ecological Status - Mid Seral (45 percent of PNC)
- Data indicates Ecological Status is **static** toward improving.

Key Area #14 (Tuckup) - Loamy Upland 10-14" pz

- Ecological Status - Late Seral (53 percent of PNC)
- Data indicates Ecological Status is **upward**.

Key Area #15 (Ponderosa) - Loamy Upland Terrace 17-20" pz

- Ecological Status - Mid Seral (41 percent of PNC)
- Data indicates Ecological Status is **static** toward improving.

6. Special Status Species

Bald eagles migrate through the Mt. Trumbull area, including the Tuweep Allotment, during the winter months. Bald eagles do not breed or nest in this area. There are no lakes with fish on the Tuweep Allotment, so the area probably holds little significance as bald eagle habitat.

Despite considerable effort over the past ten years, Mexican spotted owls have not been detected in the 12,000-acre ponderosa pine forest at Mt. Trumbull. Staff biologists do not believe that spotted owls nest or breed there nor is the habitat suitable for the species. Nesting spotted owls north of the Colorado River on the Colorado Plateau have only been found in steep walled canyons rather than forested habitats.

Bat populations on the allotment are associated with the ponderosa pine / oak woodland community, aspen stands, and volcanic flow areas. A variety of bats use these areas for roosting and maternity sites. No specific population counts are available for these species.

7. Wildlife Habitat

Mule deer and all big game species populations are monitored annually by the AGFD. Mule deer survey data for the Mt. Trumbull area includes direct counts by sex and age class. The number of mule deer counted in this area varied considerably over the 13 year period from 1989 to 2001, from a low of 31 in 1992 to a high of 170 in 2001 (See appendices for specific information). While there are no published estimates of mule deer numbers specifically for the Tuweep Allotment, the deer herd in GMU 13A is probably less than 2,000 animals. This herd has been stable to increasing over the 13 year period from 1989 - 2001. It should be noted that the number of mule deer counted may not accurately reflect population trends due to variations and other inherent biases in survey techniques. In addition, population numbers do not necessarily reflect habitat conditions. Populations may be high despite poor habitat conditions, or low despite excellent conditions.

Mule deer fawn production estimates are generally not available. However, AGFD researchers confirmed successful reproduction for 11 of 16 (69%) telemetered does last spring (2001). Accounting for twins, this would result in a production estimate of 1.4 fawns/doe, or 140 fawns per 100 does. Fawn survival rates are typically considerably lower due to over-winter mortality. A typical five year average would be about 44

fawns per 100 does (See appendices for specific information).

Mule deer are most likely to be found in open forested areas or on the plains and prairies. They prefer rocky or broken terrain at higher elevations during the summer and seek shelter at lower elevations during the winter. Cover becomes important to mule deer during the winter, although it is less important in areas such as the Arizona Strip where winters are mild with minimal snowfall. Optimal cover proportions for the region include 55 percent for foraging, 20 percent for hiding cover, 10 percent for thermal cover, 10 percent for fawn-rearing cover, and 5 percent for fawn habitat.

Mule deer are primarily browsers, feeding on a wide variety of plant species. They are capable of altering or severely damaging plant communities through over browsing. Mule deer consume leaves, stems, and shoots of woody plants most often during summer and fall, while grasses and forbs compose the bulk of spring diets. Some of the most common foods include: rabbitbrush (*Chrysothamnus* spp.), mountain-mahogany (*Cercocarpus* spp.), snowberry (*Symphoricarpos* spp.), buffaloberry (*Shepherdia* spp.), ceanothus (*Ceanothus* spp.), rose (*Rosa* spp.), serviceberry (*Amelanchier* spp.), sagebrush (*Artemisia* spp.), sumac (*Rhus* spp.), willow (*Salix* spp.), Gambel oak (*Quercus gambellii*), cliffrose (*Purshia mexicana*), mariposa (*Calochortus* spp.), juniper (*Juniperus* spp.), yucca (*Yucca* spp.), euphorbia (Euphorbia spp.), manzanita (Arctostaphylos spp.), milkvetch (*Astragalus* spp.), and dandelion (*Taraxacum officinale*). Grasses include bluegrasses (*Poa* spp.), wheatgrasses (*Agropyron* spp.), and bromes (*Bromus* spp.).

No population data is available either for Merriam's turkey or for Kaibab squirrels for the Mt. Trumbull area. Populations of both species are considered by AGFD to be stable.

The allotment includes limited pronghorn habitat, mainly in Tuweep Valley. AGFD's (1996) "Statewide Evaluation of Pronghorn Habitat in Arizona "showed the overall habitat quality as poor or mapped as poor or unsuitable and not evaluated. Only one section rated as moderate and approximately 2.5 sections as low quality. The Tuweep Valley pronghorn habitat is not contiguous with other pronghorn habitat and is relatively small in size. No pronghorn have been sighted in this area for many years.

8. Riparian/Fisheries Habitat

The Tuweep Allotment includes a very small riparian area at Nixon Springs. The spring site was found to be in proper functioning condition by an interdisciplinary team in 2001. The area is completely fenced and there are no activities authorized by BLM taking place inside the exclosure, including livestock grazing. None others are large enough to support riparian-dependent wildlife communities. There are no fisheries habitat on this allotment.

9. Wild Horse and Burro Habitat

There are no wild horses or burros on this allotment.

10. Geological Resources

a. Lithology

The west half of the allotment consists of basalt capped mountains and hills. The side slopes are Shinarump conglomerate over Moenkopi mudstones or just mudstones. The valley floodplains are clayey alluvium. The east half of the allotment is basalt flows over Kaibab limestone. Tuweep valley is alluvial deposits of silty and gravelly soils.

b. Soils

1. SCS Soil Survey of Mohave County Area 625, Arizona, East of Hurricane Cliffs, 1992.

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
23 Kinan-Hatknoll-Grieta comples, 1 to 5 percent slopes, (fan terraces), limestone, basalt, sandstone; Kinan and Grieta=Loamy Upland, 7" to 11" ppt; Hatknoll=Clay Loam 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
31 Mellenthin-Barx complex, 1 to 15 percent slopes, (hills, fan terraces), limestone, sandstone; Mellenthin=Shallow Loamy, 10" to 14" ppt; Barx=Loamy Upland, 10" to 14" ppt
33 Mellenthin very gravelly loam, 1 to 25 percent slopes, (hills), limestone; Shallow Loamy, 10" to 14" ppt
34 Mellenthin very gravelly loam, 30 to 50 percent slopes, (hills), limestone; Limestone Breaks, 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

41 Moab-Mellenthin complex, 1 to 20 percent slopes, (fan terraces, hills), limestone; Moab= Loamy Upland, 10" to 14" ppt; Mellenthin=Shallow Loamy, 10" to 14" ppt

48 Poley cobbly silty clay loam, 1 to 5 percent slopes, complex, 1 to 15 percent slopes; Showlow= Clay Loam Upland,14" to 18"; Section= Loamy Upland, 14" to 18"

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

53 Royosa-Tonalea complex, 1 to 15 percent slopes, (plateau dunes), sandstone; Sandy Upland (moderately deep) PJ-Woodland, 14" to 18" ppt

57 Showlow-Section; Clay Loam Upland, 10" to14"

58 Showlow-Thimble complex, 1 to 15 percent slopes, (hills, fan terraces), basalt, pyroclastics; Showlow=Clay Loam Upland (PJ-Woodland), 14" to 18" ppt; Thimble=Basalt Upland (Woodland), 14" to 18" ppt

59 Showlow very cobbly clay loam, 1 to 15 percent slopes; Clay Loam Upland, 14" to 18"

60 Showlow very cobbly silty clay loam, 15 to 35 percent slopes; Clay Loam Upland, 14" to 18"

61 Sponiker gravelly loam, 1 to 15 percent slopes; Loamy Upland, 18" to 30?"

63 Torriorthents-RO complex, 30 to 70 percent slopes; Breaks, 10" to 14"

66 Whiskey silt loam, 1 to 4 percent slopes; Loamy Upland, 14" to 18"

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

72 Yumtheska very gravelly loam, 4 to 20 percent slopes; Shallow Loamy, 14" to 18"

73 Yumtheska very gravelly loam, 30 to 50 percent slopes; Limestone Hills, 14" to 18"

2. Recent field reconnaissance to locate possible problem areas via onsite soil profile property's determinations showed the following:

   Lack of understory in some areas of PJ has resulted in erosion. Sagebrush dominance on some flood plains is poor ground cover. Some areas in Tuweep Valley are dominated by annuals. See Section III.G.1. and IV.C.1.

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

1. Issues relating to Rangeland Health

a. Maintenance of old vegetative treatments.

Vegetative treatments included in the Mt. Trumbull Resource Conservation Area Plan (RCA) and AMP that were completed in the 1960-70's, are now returning to sagebrush and pinyon/juniper.

Maintaining the vegetation diversity of those old treatment areas is desirable for all resource values and is reflected in the newly established DPC objectives. These land treatments are growing older with more woody and decadent invasive species and conditions have declined with desirable species due to lack of maintenance.

b. Recreation/camping is impacting vegetative cover.

This impact is representative of other recreation sites and trail heads and access points and is necessary. These impacts are not excessive. VRAIP RR-25: "As visitor use increases in the Mt. Trumbull RCA, consider low-intensity development of facilities to better manage user impacts". New trail head facilities have been considered for the Mt. Trumbull Trailhead but the process is still in the planning stages and nothing final has been determined for the area at this time.

c. Weeds in Section 33.

Scotch Thistle, a noxious weed species, does exist in small patches throughout the allotment. There have been efforts over the last 5 years to treat these areas, although the weeds have not been eradicated, they have been reduced, both in size and number of plants. The ongoing disturbance of the forest ecosystem restoration project, may cause new infestations or expansion of existing ones.

d. Grassy Flat invaded by sage and locust.

The DPC objective for this area on Mt. Trumbull is to reduce the composition of sagebrush and locust from 65 percent to 10-30 percent. And increase the grass, forbs and browse composition from 30 percent to 40-80 percent.

e. Road drainage causes gullies. More water turn outs are needed on the main road to Trumbull.

More culverts and water turn-outs to promote better drainage are necessary. The BLM and Mohave County road crews are presently upgrading this road with a cinder and gravel road base and making more water turn-outs and using culverts as needed to remedy the problem.

f. Riparian values at Nixon Spring.

Nixon Spring produces a small riparian area less than 1 acre on the side hill near the top of Mt. Trumbull. This site contains riparian plant species such as upland carex and a few willows. The water is collected and piped down off the mountain to be used for livestock water and for human consumption at the BLM administrative site. It was found to be in properly functioning condition by an interdisciplinary team in 2001. It is completely fenced and there are no activities authorized by BLM taking place inside the fenced area.

g. Soil erosion and lack of under story.

Some of this allotment is dominated with big sagebrush (*Artemisia tridentata wyomingensis).* The big sagebrush is invading and crowding out the grass, shrubs and forbs. Therefore, the soils are not being stabilized or held in place causing much of the soil to wash away and the under story species to disappear more and more. A brush management plan is in place that would help reduce Wyoming big sagebrush in those plant communities helping obtain our DPC objectives, thus reducing competition, releasing more nutrients and moisture to the grass, forbs and shrubs remaining. We have found great results with previously treated areas such as the desired vegetative cover being restored, controlled erosion, reduce sediment and improve water quality, thus maintaining or enhancing rangeland health and wildlife habitat. Some of these areas have not been grazed for 10 years or longer and it was determined that this problem is not attributable to current livestock grazing practices.

h. Vegetative diversity in Section 29.

With the invasion of sagebrush and Pinyon/juniper we are losing vegetative diversity (as discussed above). However, this is not a problem in section 29. There is a good under story of grasses and forbs with few trees and shrubs present, however, maintenance will be necessary in the next 10-15 years.

i. Declining mule deer and pronghorn populations

Mule deer populations in the early 1960s in this Game Management Unit (13A) were probably in excess of 2,500 animals. At that time, a variety of predator control measures were in effect to protect livestock that allowed mule deer numbers to build up in excess of the carrying capacity of the habitat. Many of those predator control methods were banned in the late 1960s and early 1970s. Mule deer populations took several precipitous declines, leading the AGFD to restrict hunting in the mid-1980s. Since that time, mule deer numbers have been gradually increasing. Fawn production and survival suggest this is a low productivity area for mule deer.

Mule deer populations have declined significantly throughout the Inter-mountain West since the 1950's and 60's. Reasons for this decline are not well known or understood. Possible causes include: climate change; increased predators (mountain lions, coyotes); lack of predator control; disease; changes in vegetation (advanced seral stages, decline of forbs and/or browse); loss of nutritional value; changes in plant utilization; over hunting (legal and illegal); elimination of sheep grazing; disruption of natural fire regimes; and habitat loss (fragmentation, alteration).

"Statewide Evaluation of Pronghorn Habitat in Arizona "showed the overall habitat quality as poor or mapped as poor or unsuitable and not evaluated. Only one section rated as moderate and approximately 2.5 sections as low quality. The Tuweep Valley pronghorn habitat is not contiguous with other pronghorn habitat and is relatively small in size. No pronghorn have been sighted in this area for many years.

V. Conclusions

A. Pertaining to Objectives
Land Use Plan Objectives

Vermillion Resource Area Implementation Plan for the Arizona Strip Resource Management Plan.

GZ-20 *Establish utilization levels not to exceed 50 percent average of current years growth of key species.*

This has been met. Utilization averages on current year's growth are 31 percent on cool season grasses, 29 percent on warm season grasses and 46 percent on browse.

WS01 *Manage vegetation cover towards ecological stability and sound long-term protective soil cover.*

This has not been met, but is on-going. Much work has been done to date. Due to the size of the allotment, the variety of ecological sites and soils, and a shortage of funding and personnel, it will take many more years to complete the needed work.

WS07 *Continue to implement, maintain and monitor Upper Langs Run Watershed Plan under limitations imposed by the Mt. Trumbull RCA designation.*

This is being met and is on-going. The plan needs to be amended, expanded, and continued where erosion is occurring and where watershed function should be restored in selected pinyon-juniper stands, drainages, and

meadows using vegetative conversions and erosion/sedimentation control structures.

WS20 *Conduct vegetative conversions in the Mt. Trumbull RCA to restore watershed conditions.*

This is being met by the on-going Ponderosa pine restoration. Future work is being planned in pinyon-juniper areas, drainages, and meadows.

WS21 *Manage watershed areas according to watershed categorizations to achieve identified objectives.*

This has not been met, but much restoration work has been done and more is being planned. This allotment was categorized as a IV in the RMP which means the watershed units are in unsatisfactory erosion condition and the soils would be responsive to treatment. Some areas of PJ dominated soils still have sheet and rill erosion. Some drainage's have head cutting and gully erosion. Therefore, the allotment stays as a Class IV and watershed planning and project work will continue.

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 is done as part of the NEPA process on an on-going basis. However, regarding the question of whether or not all livestock waters, as well as other water sources, in this allotment are safe and available for wildlife use, a complex answer is required.
This allotment is unique in that grazing permit recently sold and active livestock grazing does not currently occur. The water rights at Nixon and Coyote Springs have been acquired by the Grand Canyon Trust (GCT). The livestock troughs on the pipelines emanating from Nixon and Coyote Springs are believed currently dry (as of August 4, 2003). It is unclear if GCT will maintain and operate these pipelines for wildlife. Other livestock water sources in this allotment consist of earthen reservoirs without severely restrictive fences and present no access concerns for wildlife. In addition, there are also six wildlife catchments in this allotment that were designed for wildlife use and these also should present no access concerns.

WL06 *In cooperation with Arizona Game and Fish Department, continue restoration of native wildlife into their historic ranges by supporting and assisting in the releases of native species.*

No restoration efforts of native wildlife into their historic ranges are currently planned in this allotment. No current need to do so has been identified. Mule deer from Utah were released to supplement the existing population in the Mt.

Trumbull portion of the Tuweep Allotment in 1989, and BLM personnel did assist with this release. BLM continues to support restoration of native wildlife where needed and this objective is being met. However, it should also be noted that wild turkeys and Kaibab squirrels were introduced to the area by the Forest Service prior to the land being transferred to BLM, and that neither the wild turkeys (1961) or Kaibab squirrels (1972) are native species.

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

This objective is being met. However, existing habitat management plans are outdated. BLM intends to produce a wildlife habitat management plan for the Grand Canyon - Parashant National Monument by 2005. The new plan will provide specific management prescriptions for achieving site-specific wildlife objectives in the Mt. Trumbull area. Desired plant community objectives for each allotment will be incorporated into the plan.

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 is being met. Ecological site inventories have been completed for many allotments within the Mt. Trumbull area. Results of the inventory for the Tuweep Allotment are included in this allotment assessment. The integration of results of ecological site inventories will increase as planning documents (such as habitat management plans) are revised.

OH01 Implement the designation of off-highway vehicle use areas for the Vermillion Resource Area as follows.

a. Use of existing roads/trails - 1,078,300 acres (BLM designation: "Limited to Existing Roads and Trails")
b. Use of designated roads/trails - 363,210 acres (BLM designation: "Limited to Designated Roads and Trails")
c. Closed - 133,860 acres (not wilderness, which is closed to vehicular traffic)
d. Open - 803 acres (for further evaluation)

This objective has been met. See page 15.

OH03 Write an Off-Highway Vehicle management plan for the resource area.

This objective has not been met. No OHV activity plan has been written for the area.

RR01 *Consider all applications for special recreation permits within the resource area, subject to the constraints of this plan and the environmental assessment for the proposed use.*

This objective is being met: As new requests for Special Recreation use permits are received they are evaluated and reviewed for consistency with this objective and processed accordingly.

RR02 *Camping at any particular location within the resource area is limited to no more than 14 days, unless otherwise authorized.*

This objective is being met. There have been no known violations of this objective on this allotment.

RR03 *Provide recreation settings where traditional, backcountry, extensive recreation activities such as camping, hunting and sightseeing are possible and the experience opportunities for such activities as defined by the Recreation Opportunity Spectrum are high.*

This objective is being met: Opportunities are available for high quality back country camping, and sightseeing are easily available throughout this allotment for those willing to take the less traveled way and back country paths.

RR04 *Recreation activities will be carried out in such a way as to protect cultural values.*

District rangers and Site Stewards monitor visitor activities in this area while monitoring known cultural sites. Disturbing activities are investigated by rangers.

RR06 *Provide visitors to the Vermillion Resource Area with accurate information regarding recreation opportunities, interpretation of natural and human history, and specific rules and regulations pertaining to their use of public lands.*

This objective is being met: This type of information is provided to thousands of visitors yearly in the information center of the Arizona Strip/St. George Field offices and through personal contacts with resource specialists in those offices.

RR07 *Acquire visitor-use data using appropriate methods and maintain files and/or database for use in responding to information requests.*

This objective is being met: There is a traffic counter system spread across the district to determine traffic patterns and numbers, and resource specialist observations are recorded in the National Recreation Information Management System (RMIS) for the field office.

RR08 Conduct patrols periodically to enforce visitor-use rules and regulations and check compliance.

This objective is being met: Field office Law Enforcement Officers (BLM Rangers) do routine patrols across the district to monitor activities, and other resource specialists make routine observations and reports as they do their work in the field.

RR09 Complete visual contrast rating worksheets on projects proposed in Visual Resource Management Class I, II areas. Emphasize protection of scenic values through a variety of mitigation measures.

This objective is being met: Field Office NEPA policy requires analysis of VRM values for any surface disturbing activities and mitigating measures be prescribed to protect those values during the *NEPA* process for projects causing surface disturbances.

RR10 Update, upgrade and maintain signs within the resource area.

This objective is being met: Signs are monitored and replaced on a routine basis due to vandalism, attrition and new information.

RR11 Restore and/or maintain the generally natural, "remote" settings that exist throughout the resource area through mitigation of new projects and implementing restoration projects as necessary.

This objective is being met: This objective is a routine process that occurs on surface disturbing projects and especially after large wildfires or prescribed fire.

RR12 Maintain district transportation plan roads according to transportation plan maintenance schedule.

This objective is being met: The Field Office's Operations section and an interdisciplinary roads team schedule routine and emergency maintenance each year according to the transportation plan and special needs.

RR16 Write a resource area-wide sign plan that will address present and future needs involving road information, interpretation, and public safety, and coordinate the plans with the Arizona Strip visitor map. Generally, signing will be the minimum necessary to provide for public safety and information.

This objective has been met.

RR17 Institute visitor limits, regulation, or restriction in the resource area only when monitoring of resource and social conditions indicate a trend toward unacceptable change to desired recreation settings brought about by such use.

This objective is being met: Monitoring of the area's resources and social conditions haven't produced results which would indicate a need for special regulations or restriction of visitor's activities.

RR19 Designate the Mt. Trumbull area as a Resource Conservation Area and a Special Recreation Management Area with recreation as one of the primary management programs emphasized.

This objective has been met.

RR20 Provide recreation settings in the Mt. Trumbull Resource Conservation Area that range from Roaded Natural to Primitive. Recreation opportunities associated with motorized vehicle use such as exploring back country roads, vehicle camping, sightseeing, and picnicking are balanced with opportunities associated with non-motorized use such as primitive camping, backpacking, hiking, horseback riding, mountain bike riding, and hunting. The range of settings is briefly described below, from less to more primitive:

Physical - areas that are generally natural, where resource uses and modifications are evident, to essentially unmodified environments.

Social - areas where concentration of users is low to moderate and there may be moderate evidence of the sights and sounds of others, to areas where concentration of users is very low and evidence of others is minimal.

Management - areas where control and restrictions offer a sense of security, some rustic facilities may be provided, and conventional motorized use is allowed, to areas that are almost free of controls and restrictions, no facilities are provided, and motorized use is not allowed.

This objective is being met.

RR21 Promote, through various means, conservation of natural and human resource values in the Mt. Trumbull Resource Conservation Area for the purposes of education, scientific study, and recreational opportunities.

This process is a continuing and on going process and the objective is being met.

RR22 Write a coordinated, multi-resource activity plan for the Mt. Trumbull Resource Conservation Area, which will satisfy the requirements for a Recreation Area Management Plan.

This objective has been met with the Mt. Trumbull Resource Conservation Area Plan, July 1995.

RR23 Interpret through various means, the natural and human history of the Mt. Trumbull Resource Conservation Area.

This objective is being met at the Lumber Mill, Uinkaret Pueblo sites located in the Nixon Flat area and the Temple trail which originates in the same area.

RR24 Provide signs in the Mt. Trumbull Resource Conservation Area that stress public safety and that inform visitors of BLM programs, geographic locations, and interpret resource values.

This objective has not been fully implemented.

RR25 As visitor use increases in the Mt. Trumbull Resource Conservation Area, consider low-intensity development of facilities to better manage user impacts.

Some planning has been done towards a possible new site development for the Mt. Trumbull Trail Trailhead, but the planning has not been finalized and nothing has been done on the ground for it.

RR26 Coordinate and emphasize compatible management of the Mt. Trumbull Resource Conservation Area with the management of adjacent areas of the Grand Canyon National Park.

This objective is being met. This is an ongoing process that is never finished.

RR27 Manage the Mt Trumbull Resource Conservation Area as a Visual Resource Management Class II area; changes to the land form, vegetation, or structures should be subtle and not attract attention.

This objective is a long term process and the current forest restoration process may be impacting the aesthetics of the area on a short-term basis but the end product should result in a more pleasant and scenic background.

VR01 Assign Visual Resource Management classes for the resource area as follows:

111,262 acres as Class I
460,217 acres as Class II
333,648 acres as Class III
664,483 acres as Class IV

This objective is being met. This allotment contains areas classified as II, III, and IV.

VR02 Management of primary access roads will be guided by Visual Resource Management Class II objectives. Changes to the land form, vegetation, or structures along the roads in the foreground or middle ground should be subtle and not attract attention. (These roads with accompanying numbers may include, but are not limited to the following): Clayhole/Nixon (5), Trumbull (109), Tuweep (115), Craig Ranch (263), Black Point (1014), Temple Trail (1001), Antelope Trail (1015), State Highway, 89A, State Highway 389, Buffalo Ranch (1049), Two-Mile (1065), Ryan (FS 422), Winter Road (1025), Gunsight (1048), Hack Canyon, Cane Beds (237), Big Warren (1068), Navajo Trail (30), Robinson (1058), June Tank (1057), Findlay Tank (1010), Sandridge (1055), Pine Tree Pockets (1017).

This objective is being met.

WD01 Continue managing the Paria Canyon-Vermilion Cliffs, Mt. Trumbull/Mt. Logan, and Cottonwood Point Wilderness areas in accordance with their activity management plans.

This objective is being met.

2. Specific Resource Objectives

Mt Trumbull Resource Conservation Area Plan

Objective 4 *Manage the spectrum of recreational settings in the Resource Conservation Area so that selected indicators of resource and social conditions are within or below the following ranges described in Table1*

Table 1.

Resource Conditions	Natural Setting	Back country Setting	Primitive Setting
a. Visitor[1] impacts at five monitoring locations.[2]	Not to exceed 1 highly impacted and 4# moderately impacted campsites.	Not to exceed 3 moderately impacted and two # minimally impacted campsites	Not to exceed 1 moderately impacted and 4 # impacted campsites.
B. Impacts from other uses as evaluated at key observation points.[3]	Not to exceed an overall low visual contrast rating.		Not to exceed an overall low visual contrast rating. Impacts in wilderness must not be noticeable.
Social Conditions			
c. Annual increase in traffic counts tallied.	No more than 5 percent at Toroweep junction and Hurricane Rim sites.	No more than 2 percent at Mt. Logan Road and Death Valley Lake Road sites.	No more than 1 percent at Mt. Trumbull Trail and Mt. Logan Trail sites.
D. Average # of encounters[4] with other groups/day.	No more than 20 during peak visitor use periods.[5]	No more than 10 during peak visitor use periods.	No more than 6 during peak use periods.

Table 1 Footnotes:

1. Visitors are people who are in the area primarily for a recreational purpose, such as hunting or sightseeing.
2. Frequency of monitoring campsites for each setting if once every three years. Impact ratings will be based on monitoring worksheets developed for the RCA, taking into account such factors as number of campfire rings, litter, vegetative damage, camp size, etc.
3. BLM Visual Resource Management contrast rating worksheets, using specific key observation points, will be used as projects are proposed. Key observation points are generally selected by determining where the most people might be in site of the project. Contrast rating will assume that the initial construction phase of any project may not met visual objectives, but that given a reasonable specified time and rehabilitation/mitigation measures, the desired degree of contrast will be met.
4. An "encounter" is any visual or auditory contact with another person or group of persons not part of the observer's group while at a designated monitoring site.
5. "Peak visitor use periods" are the weekend days associated with: Memorial Day, July 4th, July 24th, Labor Day, and the opening of the general season deer hunt.

This objective is an on going management process and is currently being met.

Objective 5 *Enhance visitor experience opportunities with information, interpretation, services, and facilities in order for the visitors to make appropriate choices about participation in recreation activities within the RCA using guidelines described in Table 2.*

Table 2.

Management Guidelines	Natural Setting	Back country Setting	Primitive Setting
a. Overall management conditions.	Focus on maintaining recreation settings that frequently provide for use confidence and convenience.	Focus on maintaining recreations settings that occasionally provide for user confidence and convenience.	Focus on maintaining recreation settings that rarely provide for user confidence and convenience.
b. Visitor contact with management personnel.	Frequent	Frequent to occasional	Occasional to rare
c. Type, level, and location of visitor information.	Formal, moderate, on-site/off-site	Informal, occasional, off-site	Informal, rare, off-site
d. Signing	Frequent to occasional, generally permanent	Occasional	Rare, temporary
e. Typical road standard	Improved gravel or dirt, frequent maintenance	Dirt, occasionally maintained	Dirt or none, rarely maintained
f. Degree of user facilities development	Moderate to low	Very low to none	None

This objective is an on going management process and is currently being met.

Mt. Trumbull Habitat Management Plan Objectives

1. *Increase the carrying capacity of the habitat from the present 2,000 deer yearlong to 4,000 deer yearlong by improving the habitat.*

It is not clear whether this objective has been or is being met. Recent estimates by the Arizona Game and Fish Department put the mule deer population below 2,000 deer in GMU 13A. However, the BLM does not routinely measure habitat carrying capacity. A number of actions were implemented specifically to achieve this objective, including construction of wildlife waters and completion of several different vegetative treatment projects. Implementation of the actions proposed in the habitat management plan may have increased the carrying capacity for mule deer, but the deer populations have not responded. Conversely, the actions taken may have failed to increase the carrying capacity. Non-habitat related factors, such as predation, may be limiting the deer numbers more than habitat related factors. Staff biologists currently believe that a carrying capacity of even 2,000 mule deer yearlong is unrealistically high, but the deer population today is significantly less than it was in this area forty years ago. The limited availability of summer range habitat in the Mt. Trumbull area is more restrictive for mule deer than is the condition of the habitat. Monitoring data presented above indicates that all key areas monitored are in mid to high seral stage with stable to increasing trend. While these data indicate improving range conditions, mule deer would likely benefit from earlier seral stages. This objective will be revised in the next planning effort.

2. *Maximize turkey populations through protection and improvement of existing turkey habitat.*

This objective has been met. A stable population of Merriam's turkey exists in the Mt. Trumbull area. Turkeys are occasionally observed on the Tuweep Allotment.

1. *Increase the productivity of quality forage for wildlife by establishing livestock grazing management systems by 1986.*

This objective has been met. AMP was established in 1982.

a) *above 6,000 feet, increase forb densities from a trace to five percent and grasses from five percent to 15 percent.*

Unknown, not monitored. Plant density, which is the number of individuals per unit area, is not measured. Density also should not be expressed as a percentage, so this HMP objective needs to be re-written. However, seven-year old pace frequency data from the range program is available. Frequency is the qualitative expression of the presence or absence of individuals of a species in a population: i.e., the ratio between the number of sample units that contain a

species and the total number of sample units.

Two key areas in this allotment are above 6,000 feet in elevation, #13 and #15.

Key area #13 was last read in 1996 (base year is 1982) and forb frequency went from an initial 6% in 1982 to 37% in 1996, a 511% increase, as indicated in the pace frequency trend analysis. Cool season grasses started at 12% (1982) and were last read at 21%, a 72% increase. Warm season grasses decreased from 2% to 1% in the same 14 year period. Live vegetative cover has increased from 1% to 3%.

Key area #15 was also last read in 1996. Forb frequency increased from 23% to 86% over 14 years. Cool season grass frequency tripled from 3% to 9%. Warm season grasses went from 1% to 8%. Live vegetative cover has increased from 3% to 5%.

In parts of the Tuweep Allotment above 6,000 feet in elevation (MSL), small diameter ponderosa pine trees form dense thickets that are not used for feeding by most wildlife species because the production per acre of forbs, browse, and grass is very low. The Mt. Trumbull Ponderosa Pine Restoration Project is partially aimed at increasing forest floor production by opening up the dense stands of Ponderosa pine. This project will eventually treat approximately 3500 areas, half of which is found in the Tuweep Allotment. It should also be noted that availability of forbs is primarily dependent upon precipitation. Management actions to increase forb production are relatively ineffective in years with low precipitation.

b) *below 6,000 feet, increase the density of cliffrose, bitterbrush and ceanothus from 10 percent to 20 percent*

Unknown, not monitored. Available monitoring data suggest this objective is not being met. Shrubs listed in the frequency data for the key areas are broom snakeweed, big sagebrush, prickly pear, pinyon, juniper, and wolfberry, etc.

Field observations indicate below 6000 feet in elevation, densities of cliffrose, bitterbrush, and ceanothus are low, though these none of these plants were specified as key or indicator species in the monitoring plots. Bitter brush has not been a primary component of the habitat on this allotment for the last two decades. Cliffrose and ceanothus are present in a few specific areas, but are not widespread. Distribution and abundance of these three species is expected to increase slightly in the treated areas within ponderosa pine habitat.

4. *Construct 26 new wildlife waters based on HMP implementation schedule.*

This objective was met. All 26 wildlife waters were constructed. However, mule deer populations did not increase dramatically as expected. The objective (action) conveys the assumption that water was considered a limiting factor for mule deer population expansion.

5. *Manage areas above 6,000 feet elevation and wildlife waters as crucial wildlife habitat.*

This is objective is being met on a continuing basis. The designation of wilderness in 1984 also assists in protecting much of the lands above 6,000 feet in elevation in the Trumbull area from development.

6. *Increase the mule deer production and fawn survival rate from the present five year average of 30 fawns per hundred does to a five year average of 75 fawns per hundred does by 1996.*

This objective has not being met. Arizona Game and Fish Department researchers confirmed successful reproduction for 11 of 16 (69%) telemetered does during 2001. Accounting for twins, this would result in a production estimate of 1.4 fawns/doe, or 140 fawns per 100 does. Fawn survival rates are typically considerably lower due to over-winter mortality. A typical five year average fawn survival would be about 44 fawns per 100 does (See appendices for specific information). Failure to meet this objective does not necessarily indicate unhealthy range conditions. Range health standards were acceptable for all key areas. This objective will be revised during the next planning cycle to include a distinction between fawn production and fawn survival.

7. *Establish a viable Kaibab squirrel population within all suitable habitat within the ponderosa pine vegetative type.*

This objective has been met. Kaibab squirrels were introduced to the area in 1972. Populations appear to be stable at present.

9. *Protect and enhance existing habitat to ensure a continued diversity and abundance of non-game birds and mammals.*

This is objective is being met on a continuing basis. Protection is accomplished through using the NEPA process analysis on all federal proposed actions and identifying adverse impacts in order that they can be avoided or mitigated. Additional protection is accomplished primarily because this allotment falls within the Grand Canyon-Parashant National Monument and actions within the Monument must follow the Interim Policy Guidance for New National Monuments. Also, because the of the National Monument status, the allotment has two BLM and two NPS law enforcement rangers and this increased law

enforcement presence serves to protect both wildlife and habitat. And finally, AGFD has a full-time wildlife manager for Unit 13A, plus a supervisor and four other wildlife mangers on the Arizona Strip, who are devoted to wildlife law enforcement.

Wildfire is perhaps the largest threat to the existing habitat and non-game animals. BLM maintains (in FY 2003) a staff of 49 firefighters trained and ready to suppress wildfire in the Trumbull area.

Habitat enhancement is being currently accomplished with ponderosa pine restoration efforts. This is a joint effort involving BLM, AGFD, and Northern Arizona University.

As stated under wildlife objective WL02 discussion, because of a change in ownership and elimination of livestock grazing, at least for the short-term, the Nixon and Coyote Springs pipelines may not be functional and there may be no water troughs with water in them. BLM policy is that if there is water in the troughs, they must be equipped with small animal escape ramps to prevent drowning. Both AGFD and BLM biologists believe it would be best to continue to operate and maintain the pipelines to provide water for wildlife, but the new owner (GCT) has not yet decided to do so (August 5, 2003).

Tuweep Allotment Management Plan (1983)

Key Area #1

- *Increase the frequency of western wheatgrass from 1 to 5 percent.*
  Western Wheatgrass remained at 1 percent.
- *Increase the frequency of sand dropseed from 1 to 5 percent*
  Sand dropseed remained at 1 percent
- *Maintain the frequency of squirreltail at 45 percent*
  Squirreltail remained at 45 percent
- *Maintain the frequency of blue grama at 40 percent.*
  Blue grama increased to 44 percent

Key Area #2

- *Increase the frequency of western wheatgrass from 17 to 21 percent.*
  Western Wheatgrass decreased to 3 percent.
- *Increase the frequency of squirreltail from 4 to 7 percent.*
  Squirreltail increased to 25 percent.
- *Decrease the frequency of sagebrush from 63 to 55 percent*
  Big sagebrush increased to 73 percent
- *Maintain blue grama at 13 percent.*
  Blue grama increased to 25 percent.

Key Area #3

- *Maintain the frequency of western wheatgrass at 33 percent*
  Western wheatgrass decreased to 5 percent
- *Increase the frequency of blue grama from 10 to 15 percent*
  Blue grama decreased to 3 percent.
- *Increase the frequency of squirreltail from 5 to 10 percent*
  Squirreltail increased to 15 percent.
- *Maintain Sagebrush at 25 to 30 percent.*
  Sagebrush increased from 25 to 46 percent.

Key Area #5

- *Maintain the frequency of blue grama at 40 percent*
  Blue grama maintained at 40 percent
- *Maintain the frequency of sagebrush at 45 percent*
  Big sagebrush increased to 60 percent.
- *Increase the frequency of galleta from 35 to 40 percent*
  Galleta maintained at 35 percent
- *Increase the frequency of squirreltail from 9 to15 percent*
  Squirreltail increased to 12 percent.

Key Area #6

- *Maintain the frequency of blue grama at 35 percent*
  Blue grama decreased to 20 percent
- *Increase the frequency of galleta from 22 to 30 percent*
  Galleta increased to 24 percent.
- *Increase the frequency of squirreltail from 3 to 8 percent*
  Squirreltail increased to 5 percent.
- *Increase the frequency of sand dropseed from 5 to10 percent.*
  Sand dropseed decreased to 2 percent

Key Area #7

- *Increase the frequency of blue grama from 0 to 5 percent*
  Blue grama increased to 4 percent
- *Increase the frequency of galleta from 0 to 5 percent*
  Galleta increased to 2 percent.
- *Increase the frequency of sand dropseed from 0 to 5 percent*
  Sand dropseed increased to 15 percent
- *Maintain the frequency of sagebrush at 32 percent.*
  Big sagebrush increased to 38 percent.

Key Area #8

- *Increase the frequency of blue grama from 20 to 25 percent*
  Blue grama increased to 26 percent
- *Increase the frequency of galleta from 21 to 30 percent*
  Galleta decreased to 16 percent
- *Increase the frequency of squirreltail from 6 to 10 percent*
  Squirreltail increased to 15 percent
- *Increase the frequency of black grama from 0 to 5 percent*
  Black grama increased to 2 percent

Key Area #9

- *Maintain the frequency of blue grama at 75 percent*
  Blue grama increased to 84 percent
- *Maintain the frequency of squirreltail at 14 percent*
  Squirreltail increased to 16 percent
- *Maintain the frequency of galleta at 13 percent*
  Galleta decreased to 7 percent
- *Maintain the frequency of sand dropseed at 3 percent*
  Sand dropseed remained at 3 percent
- *Maintain the frequency of sagebrush at 30 percent*
  Big sagebrush decreased to 19 percent.
- This area was treated with tebuthiuron in 1996.

Key Area #10

- *Increase the frequency of blue grama from 30 to 35 percent*
  Blue grama increased to 39 percent
- *Increase the frequency of squirreltail from 24 to 30 percent*
  Squirreltail decreased to 10 percent
- *Increase the frequency of bitterbrush from 0 to 5 percent.*
  Bitterbrush increased to 2 percent
- *Increase side-oats grama from 0 to 5 percent*
  Side-oats grama increased to 4 percent.

Key Area #11

- *Increase the frequency of fourwing saltbush from 0 to 5 percent*
  Fourwing saltbush increased to 2 percent.
- *Increase the frequency of squirreltail from 0 to 5 percent*
  Squirreltail increased to 2 percent
- *Maintain the frequency of sand dropseed at 60 percent.*
  Sand dropseed increased to 71 percent
- *Maintain the frequency of galleta at 35 percent*
  Galleta decreased to 20 percent

Key Area #12

- *Increase the frequency of bitterbrush from 0 to 5 percent*
  Bitterbrush increased to 2 percent
- *Increase the frequency of sand dropseed from 2 to 5 percent*
  Sand dropseed decreased to 1 percent
- *Increase the frequency of squirreltail from 3 to 5 percent*
  Squirreltail increased to 8 percent
- *Maintain the frequency of crested wheatgrass at 60 percent.*
  Crested wheatgrass decreased to 20 percent.
- *Maintain sagebrush at 20 percent.*
  Sagebrush increased from 20 to 50 percent.

Key Area #13

- *Increase the frequency of blue grama from 0 to 5 percent*
  Blue grama increased to 2 percent
- *Increase the frequency of Kentucky bluegrass from 0 to 5 percent*
  Kentucky bluegrass increased to 1 percent
- *Maintain the frequency of squirreltail at 12 percent*
  Squirreltail increased to 21 percent
- *Maintain the frequency of sagebrush at 27 percent*
  Big sagebrush decreased to 23 percent

Key Area #14

- *Maintain the frequency of blue grama at 80 percent*
  Blue grama increased to 89 percent.
- *Maintain the frequency of squirreltail at 13 percent*
  Squirreltail decreased to 11 percent
- *Maintain the frequency of galleta at 8 percent*
  Galleta increased to 9 percent
- *Maintain the frequency of sagebrush at 47 percent.*
  Big sagebrush increased to 56 percent.

Key Area#15- Objectives to be evaluated were never identified for this key area.

Desired Plant Community Objectives developed during this process
DPC objectives are written as a percentage of the entire vegetative community, measured and expressed in composition by weight.

Desired Plant Community (DPC) Key Area #1 (Clay Loam Upland 10-14" pz)

- *Maintain the shrub/browse composition between 30-60 percent through 2030.*
- *Maintain the grass composition between 30-55 percent through 2030.*
- *Maintain the forb composition between 1-10 percent through 2030.*

DPC Objectives were met. The percent Composition of Shrub/browse species is 41%, the Grass species is 52% and the Forbs composition is 7%.

Desired Plant Community (DPC) Key Area #2 (Clay Loam Upland 10-14" pz) ARTR

- *Maintain the shrub/browse composition between 30-60 percent through 2030.*
- *Maintain the grass composition between 30-55 percent through 2030.*
- *Maintain the forb composition between 1-10 percent through 2030.*

DPC Objectives were not met. The percent composition of Shrub/browse species is 79%, the Grass species is 14% and the Forbs are 7%.

Desired Plant Community (DPC) Key Area #3 (Cinder Upland 12-16" pz)

- *Maintain the shrub/browse composition between 25-45 percent through 2030*
- *Maintain the grass composition between 40-65 percent through 2030*
- *Maintain the forb composition between 1-10 percent through 2030*

DPC Objectives were met. The percent Composition of Shrub/browse species is 46%, the Grass species are 53% and the Forbs are 1%.

Desired Plant Community (DPC) Key Area #5 (Loamy Upland 10-14" pz)

- *Maintain the shrub/browse composition between 20-40 percent through 2030*
- *Maintain the grass composition between 40-70 percent through 2030*
- *Maintain the forb composition between 1-10 percent through 2030*

DPC Objectives were not met. The percent Composition of Shrub/browse species is 60%, the Grass species are 37% and the Forbs are 3%.

Desired Plant Community (DPC) Key Area #6 (Clay Loam Upland 10-14" pz)

- *Maintain the shrub/browse composition between 30-60 percent through 2030*
- *Maintain the grass composition between 30-55 percent through 2030*
- *Maintain the forb composition between 1-10 percent through 2030*

DPC Objectives were met. The percent Composition of Shrub/browse species is 60%, the Grass species are 37% and the Forbs are 3%.

Desired Plant Community (DPC) Key Area #7 (Clayey Upland 10-14" pz)

- *Maintain the shrub/browse composition between 20-40 percent through 2030*
- *Maintain the grass composition between 40-65 percent through 2030*
- *Maintain the forb composition between 1-10 percent through 2030*

DPC Objectives were met. The percent Composition of Shrub/browse species is 30%, the Grass species are 60% and the Forbs are 10%.

Desired Plant Community (DPC) Key Area #8 (Basalt Upland 10-14" pz)

- *Maintain the shrub/browse composition between 35-65 percent through 2030*
- *Maintain the grass composition between 30-60 percent through 2030*
- *Maintain the forb composition between 1-10 percent through 2030*

DPC Objectives were met. The percent Composition of Shrub/browse species is 65% the Grass species is 30% and the Forbs composition is 5%.

Desired Plant Community (DPC) Key Area #9 (Loamy Upland 10-14" pz)

- *Maintain the shrub/browse composition between 20-40 percent through 2030*
- *Maintain the grass composition between 40-70 percent through 2030*
- *Maintain the forb composition between 1-10 percent through 2030*

DPC Objectives were met or exceeded. The percent Composition of Shrub/browse species is 20%, the Grass species is 78% and the Forbs composition is 2%.

Desired Plant Community (DPC) Key Area #10 (Clay Loam Upland 10-14" pz)

- *Maintain the shrub/browse composition between 30-60 percent through 2030*
- *Maintain the grass composition between 30-55 percent through 2030*
- *Maintain the forb composition between 1-10 percent through 2030*

DPC Objectives were met. The percent Composition of Shrub/browse species is 58%, the Grass species are 40% and the Forbs are 2%.

Desired Plant Community (DPC) Key Area #12 (Clay Loam Upland 10-14" pz)

- *Maintain the shrub/browse composition between 30-60 percent through 2030*
- *Maintain the grass composition between 30-55 percent through 2030*
- *Maintain the forb composition between 1-10 percent through 2030*

DPC Objectives were met. The percent Composition of Shrub/browse species is 58%, the Grass species is 30% and the Forbs composition is 2%.

Desired Plant Community (DPC) Key Area #13 (Loamy Terrace 17-20" pz)

- *Maintain the trees/shrub/browse composition between 50-70 percent through 2030*
- *Maintain the grass composition between 15-40 percent through 2030*
- *Maintain the forb composition between 1-10 percent through 2030*

DPC Objectives were met. The percent Composition of Trees/Shrub/browse species is 70%, the Grass species are 15% and the Forbs are 15%.

Desired Plant Community (DPC) Key Area #14 (Loamy Upland 10-14" pz)

- *Maintain the shrub/browse composition between 20-45 percent through 2030*
- *Maintain the grass composition between 40-70 percent through 2030*
- *Maintain the forb composition between 1-10 percent through 2030*

DPC Objectives were met. The percent Composition of Shrub/browse species is 45%, the Grass species is 53% and the Forbs composition is 2%.

Desired Plant Community (DPC) Key Area #15 (Loamy Terrace 17-20" pz)

- *Maintain the trees/shrub/browse composition between 50-70 percent through 2030*
- *Maintain the grass composition between 15-40 percent through 2030*
- *Maintain the forb composition between 1-10 percent through 2030*

The DPC objectives were met. The percent Composition of Trees/Shrub/browse species is 67%, the Grass species is 15% and the Forbs composition is 18%.

B. Pertaining to Issues

1. Issues relating to Rangeland Health

a. Maintenance of old vegetation treatments.

White Springs, East Trumbull and North and South Toroweap are treatment areas that are declining in vegetative diversity. Maintenance of the treatments is necessary to restore the vegetative diversity and move toward meeting the watershed and DPC objectives.

b. Recreation/camping is impacting vegetative cover.

As with other acceptable impacts, these sites will be watched and reassessed if they appear to be reaching the limits of acceptable change.

c. Weeds in Section 33.

Ongoing weed inventories are intended to identify new invasions, and ongoing treatment efforts are reducing the size of known sites.

d. Grassy Flat invaded by sage and locust.

This has not been met. The DPC objective for this area on Mt. Trumbull shows composition of sagebrush and locust at 65 percent and needs to be reduced to 10-30 percent. This area is one identified for treatment.

e. Road drainage causes gullies. More water turn-outs are needed on the main road to Trumbull.

The BLM and Mohave County road crews are presently upgrading this road with a cinder and gravel road base and making more ditches, and using culverts as needed to remedy the problem areas.

f. Riparian values at Nixon Spring.

Because the site was found to be properly functioning in 2001, management has not changed since that time, and considering it's relative inaccessibility, the site is considered to be meeting Standard #2.

g. Soil erosion and lack of under story.

These areas have been identified for treatment in order to meet watershed and DPC objectives.

h. Vegetative diversity in Section 29.

There appears to be good under-story with few trees and shrubs present in this area, however, treatment may be necessary in the next 10-15 years.

i. Declining mule deer and pronghorn populations.

The existing mule deer population is not declining, but stable. Pronghorn which were present in Tuweep Valley disappeared a few years ago. The Tuweep pronghorn habitat is limited in size and not contiguous with other pronghorn habitat. See section IV.B.7.

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:

[ ] Meet all applicable standards for rangeland health

[XX] 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 current ten year grazing permit with existing terms and conditions.

B. Inventory for cultural resources to document sites on the allotment and plan for mitigation as required.

C. Continue treatment of Scotch Thistle and other noxious weed species on the allotment.

D. Implement Range Improvement projects as needed and as outlined in the management plans.

E. Continue collecting study data and document the vegetative trends and utilization.

F. Maintain existing range improvement projects (i.e. water developments, pipelines, fences, livestock handling facilities, vegetation land treatments). Those responsible for fenceline maintenance will be required to repair their portions prior to turnouts.

G. Attain DPC objectives by controlling sagebrush where feasible, complete land treatment projects in critical watershed sites or where watershed values can be significantly improved.

H. Mt. Trumbull RCA includes many on-going projects for this allotment.

1. Continue seeding the restoration units (Approximately 120 Ac./yr.).
2. Maintenance of existing land treatments/seedings (i.e. burning and spike). Includes White Spring, East Trumbull, North and South Toroweap as identified in the Grand Canyon-Parashant National Monument planning.
3. Other Pinyon Juniper/Big Sagebrush land treatments are scheduled in each of the pastures. This includes burning, spike and seeding as part of forest ecosystem restoration.

I. This allotment is in the process of being transferred to a different permittee. It may be used by livestock as a grass bank allotment for those as deemed necessary by the new permittee and the BLM, under a planned grazing system approach.
The Tuckup pasture will be split out and retained by the current permittee and used as a separate grazing allotment from November 1 to May 31.

J. The Arizona Strip Field Office is currently revising the RMP. This current effort will result in three stand alone RMPs, one for each National Monument and one for the remaining BLM lands. Any proposals in those plans that would alter the terms and conditions of this permit will be analyzed at that time.

AUTHORIZED OFFICER CONCURRENCE:

__X__ I concur with the conclusions and recommendations as written.

_____ I do not concur.

_____ I concur, with the following modifications:

Ronald Dalton 6/23/04 _____

Field Manager Date
Arizona Strip Field Office

Appendix A

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." These checklists are reprinted on the pages following the Guidelines for Standard 3.

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

Interdisciplinary Assessment Team

Linda Price	Project Coordinator (BLM)
Michael Herder	Wildlife Biologist (BLM)
Larry Gearhart	Wilderness/Recreation Specialist (BLM)
Kevin Schoppmann	Vegetation/Grazing Administration (BLM)
Bob Smith	Soils and Hazmat (BLM)
John Simms	Wildlife Manager (Arizona Game and Fish Department)
Art Meen	Soils and Vegetation (Natural Resource Conservation Service)
Rob Grumbles	Vegetation and Social Economics (Mohave County Extension Service)
Vernon Parent	Vegetation and Social Economics (Washington County Extension Service)

Rangeland Resource Team

Commodity Interests

Bill Gubler,
Grazing
Rancher, St. George, UT

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

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

Al Rivas,
Public-at-large
Retired, St. George, UT

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

Kent McComb,
Public-at-Large
Retired, St. George, UT

Appendix C:

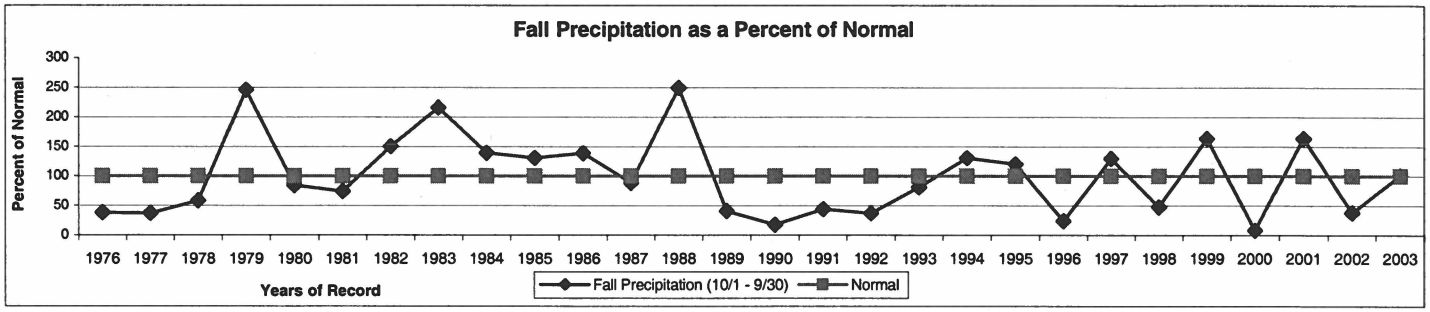
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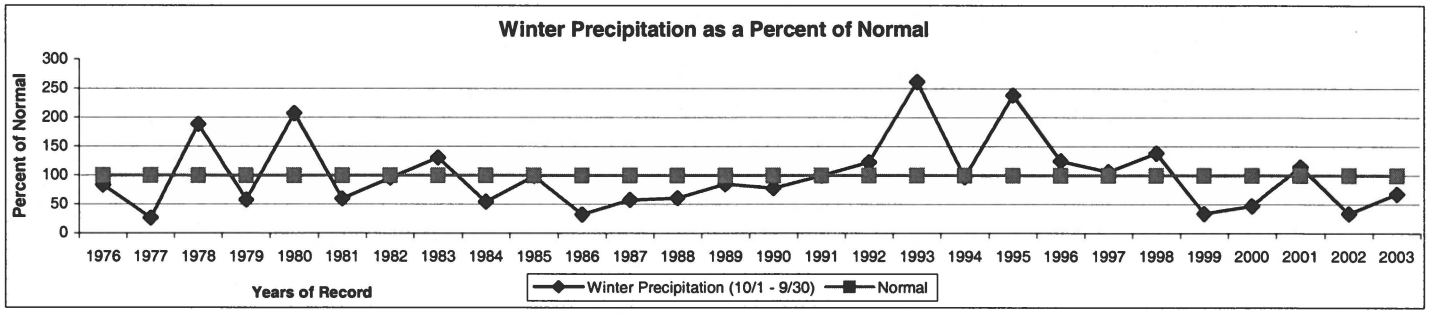
Historical Precipitation Report

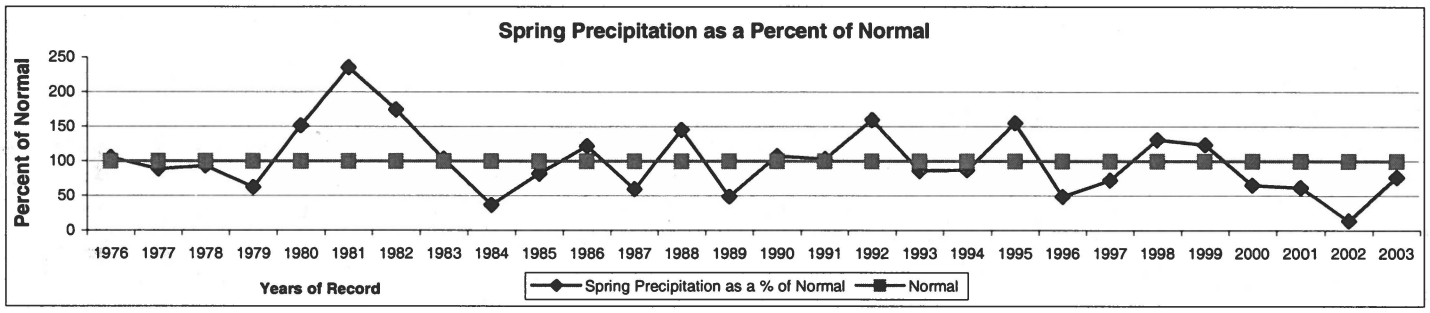
Field Office 100 Nixon Spring **Precipitation Rain** **Rain Gauge**
07

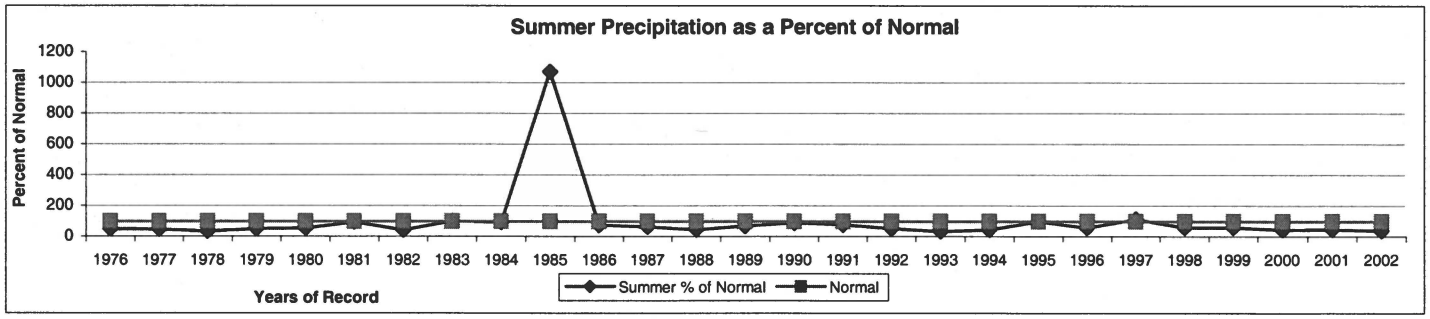
	Seasonal Precipitation					Annual Average					Percent of Normal				
Year	Fall	Winter	Spring	Summer	Annual	Fall	Winter	Spring	Summer	Annual	Fall	Winter	Spring	Summer	Annual
1976	1.00	4.90	3.83	4.57	14.30	2.60	5.88	3.63	9.24	21.36	38%	83%	105%	49%	67%
1977	0.98	1.56	3.23	4.22	9.99	2.60	5.88	3.63	9.24	21.36	38%	27%	89%	46%	47%
1978	1.52	11.08	3.38	3.12	19.10	2.60	5.88	3.63	9.24	21.36	58%	188%	93%	34%	89%
1979	6.40	3.40	2.27	4.61	16.68	2.60	5.88	3.63	9.24	21.36	246%	58%	62%	50%	78%
1980	2.20	12.19	5.50	5.03	24.92	2.60	5.88	3.63	9.24	21.36	84%	207%	151%	54%	117%
1981	1.94	3.50	8.54	8.79	22.77	2.60	5.88	3.63	9.24	21.36	75%	59%	235%	95%	107%
1982	3.91	5.62	6.34	3.86	19.73	2.60	5.88	3.63	9.24	21.36	150%	96%	175%	42%	92%
1983	5.61	7.70	3.75	9.32	26.38	2.60	5.88	3.63	9.24	21.36	215%	131%	103%	101%	123%
1984	3.62	3.18	1.34	8.61	16.75	2.60	5.88	3.63	9.24	21.36	139%	54%	37%	93%	78%
1985	3.40	5.78	2.98	99.00	111.1	2.60	5.88	3.63	9.24	21.36	131%	98%	82%	1071	520%
1986	3.61	1.91	4.42	6.91	16.85	2.60	5.88	3.63	9.24	21.36	139%	32%	122%	75%	79%
1987	2.30	3.40	2.17	5.88	13.75	2.60	5.88	3.63	9.24	21.36	88%	58%	60%	64%	64%
1988	6.50	3.59	5.27	4.13	19.49	2.60	5.88	3.63	9.24	21.36	250%	61%	145%	45%	91%
1989	1.07	5.00	1.77	6.41	14.25	2.60	5.88	3.63	9.24	21.36	41%	85%	49%	69%	67%
1990	0.47	4.58	3.90	8.30	17.25	2.60	5.88	3.63	9.24	21.36	18%	78%	107%	90%	81%
1991	1.15	5.85	3.75	7.04	17.79	2.60	5.88	3.63	9.24	21.36	44%	99%	103%	76%	83%
1992	0.97	7.20	5.80	4.83	18.80	2.60	5.88	3.63	9.24	21.36	37%	122%	160%	52%	88%
1993	2.12	15.38	3.12	3.25	23.87	2.60	5.88	3.63	9.24	21.36	81%	261%	86%	35%	112%
1994	3.40	5.68	3.17	4.07	16.32	2.60	5.88	3.63	9.24	21.36	131%	97%	87%	44%	76%
1995	3.13	14.00	5.63	9.13	31.89	2.60	5.88	3.63	9.24	21.36	120%	238%	155%	99%	149%
1996	0.63	7.35	1.77	5.25	15.00	2.60	5.88	3.63	9.24	21.36	24%	125%	49%	57%	70%
1997	3.38	6.25	2.63	10.50	22.76	2.60	5.88	3.63	9.24	21.36	130%	106%	72%	114%	107%
1998	1.25	8.13	4.75	5.37	19.50	2.60	5.88	3.63	9.24	21.36	48%	138%	131%	58%	91%
1999	4.25	2.00	4.50	5.50	16.25	2.60	5.88	3.63	9.24	21.36	163%	34%	124%	60%	76%
2000	0.22	2.78	2.38	4.12	9.50	2.60	5.88	3.63	9.24	21.36	8%	47%	66%	45%	44%
2001	4.25	6.75	2.25	4.25	17.50	2.60	5.88	3.63	9.24	21.36	163%	115%	62%	46%	82%
2002	1.00	2.00	0.50	3.50	7.00	2.60	5.88	3.63	9.24	21.36	38%	34%	14%	38%	33%
2003	2.63	4.00	2.79			2.60	5.88	3.63	9.24	21.36	101%	68%	77%		

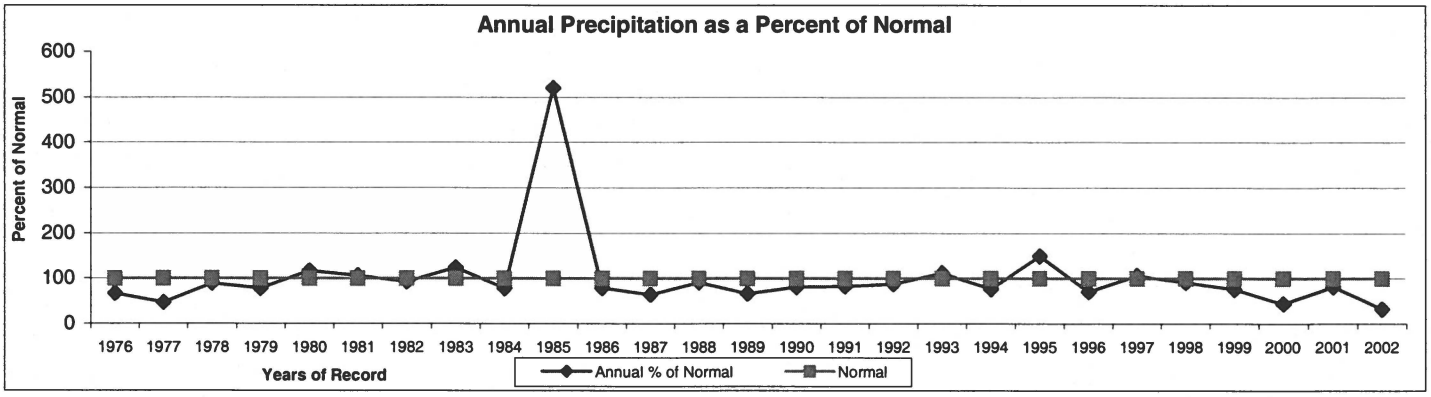
Nixon Spring PRECIPITATION RAIN GAUGE NUMBER: 07



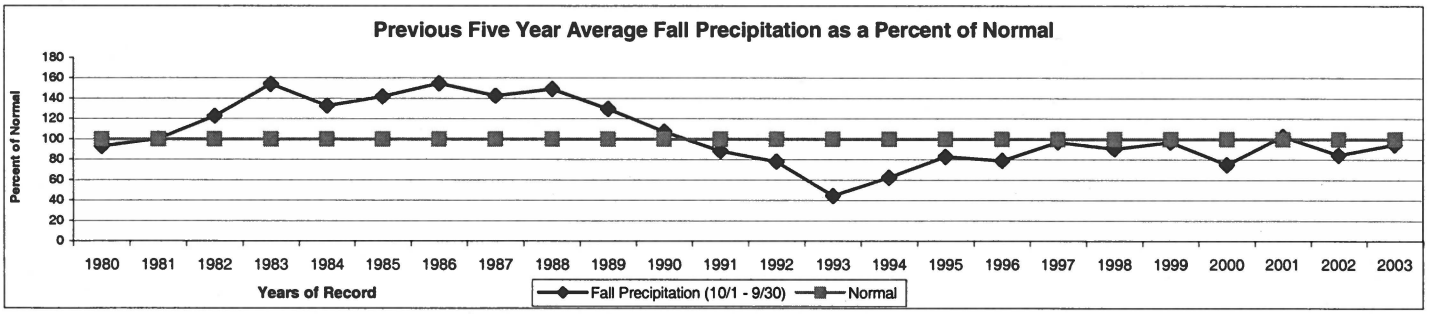


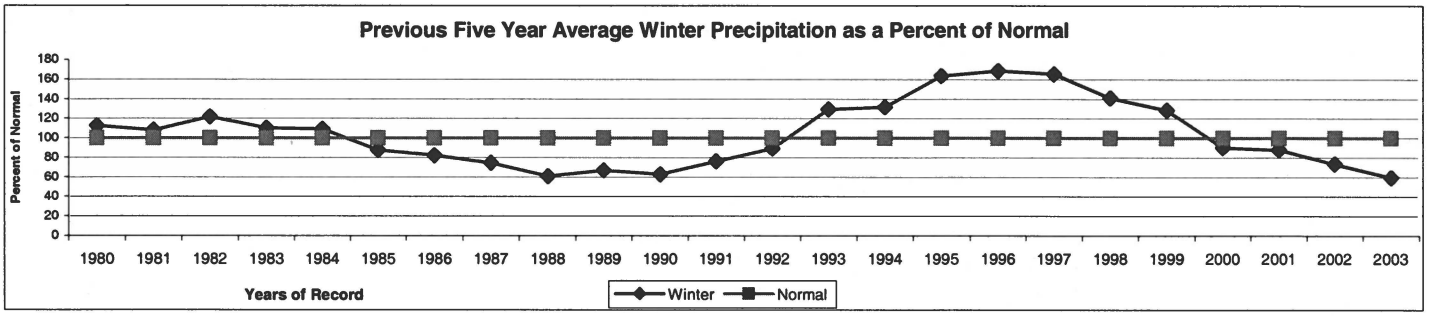


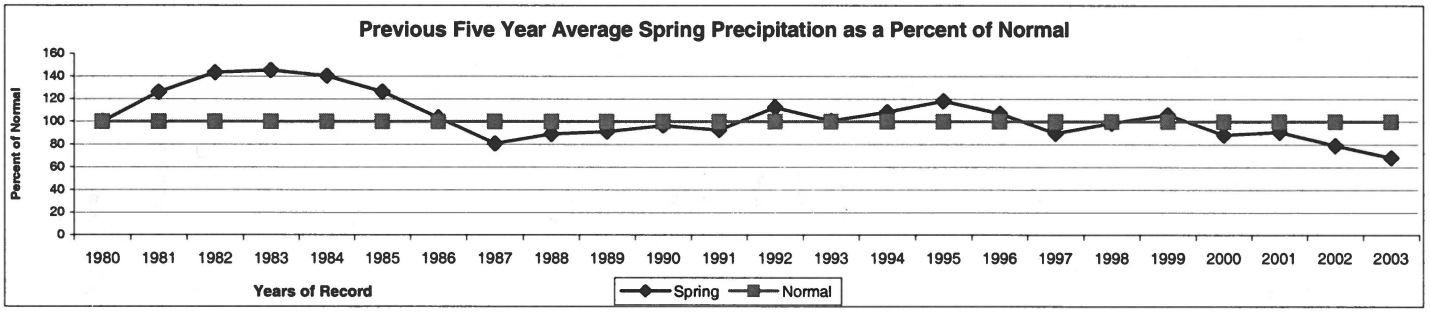


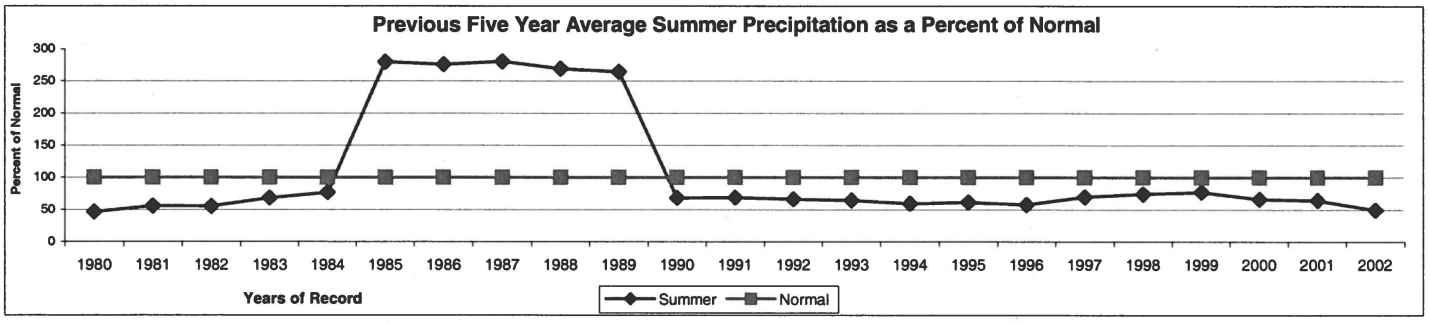


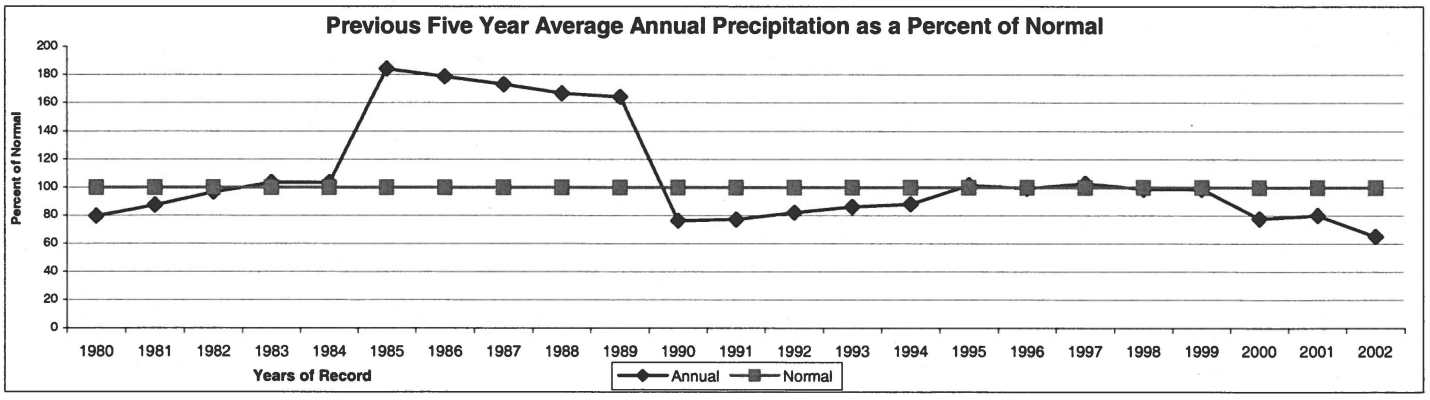
Nixon Spring PRECIPITATION RAIN GAUGE NUMBER: 07



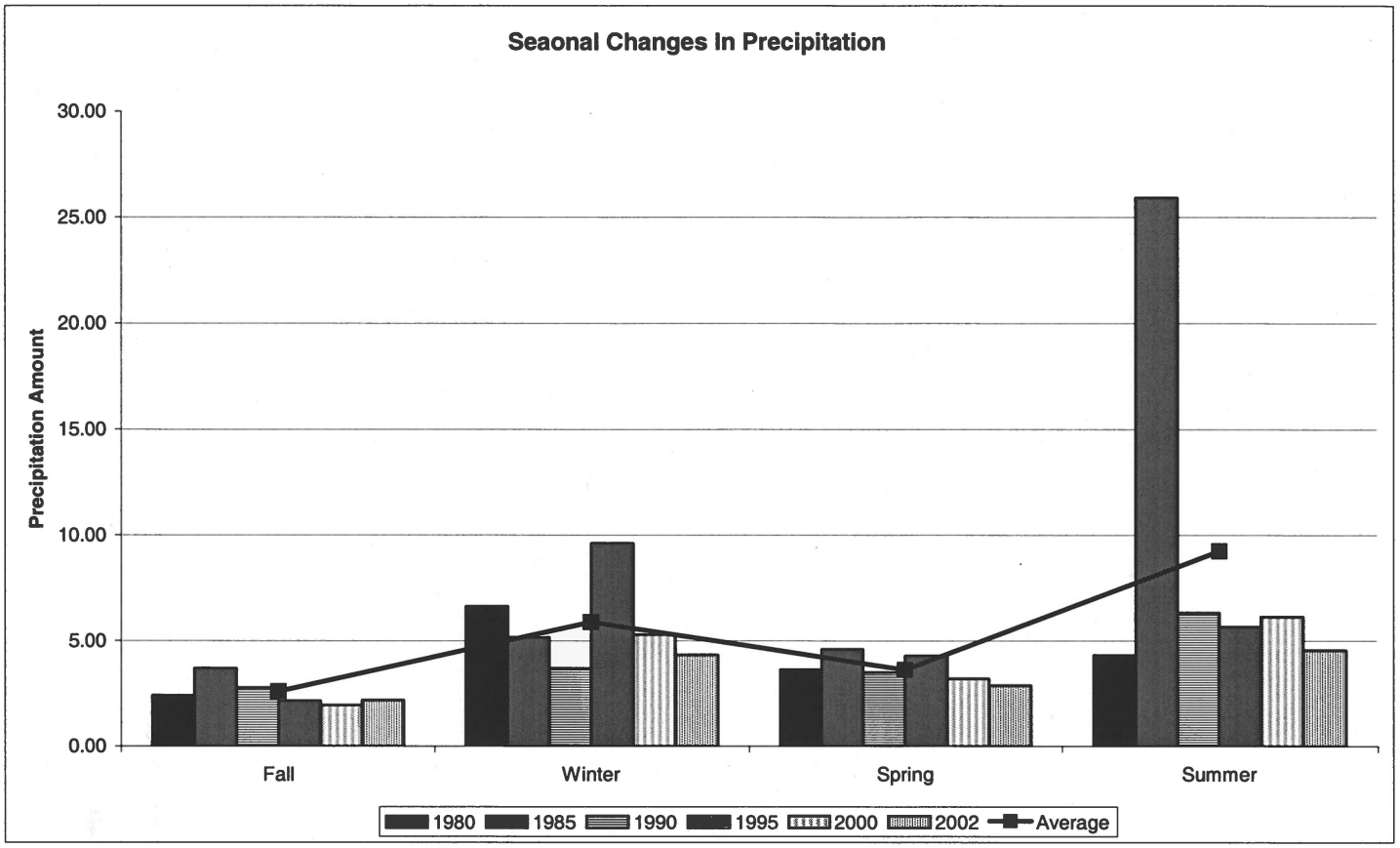








Nixon Spring PRECIPITATION RAIN GAUGE NUMBER: 07



Percent of Normal Precipitation for each season.

Fall	Winter	Spring	Summer
12%	28%	17%	43%

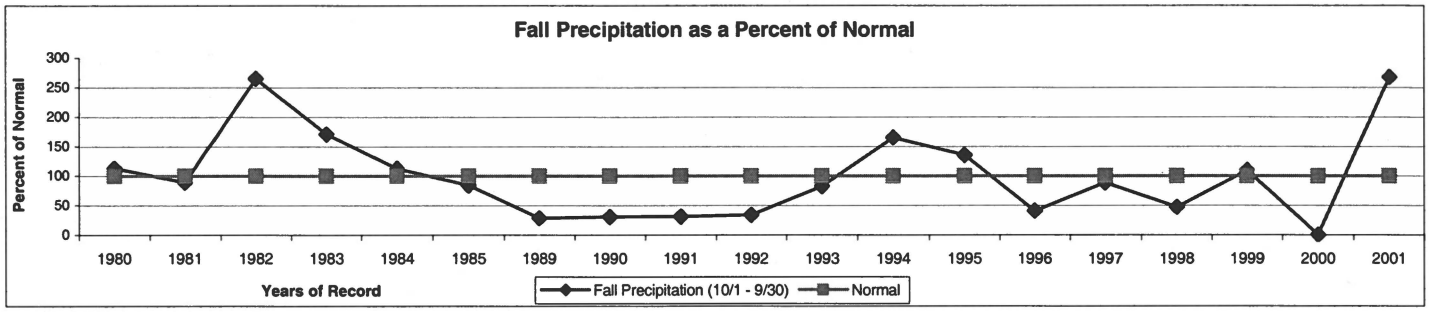
Historical Precipitation Report

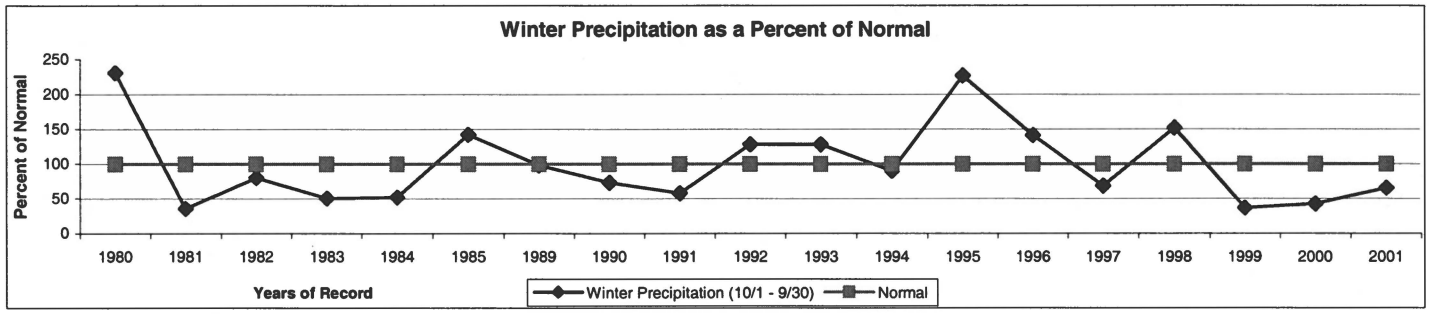
Field Office 888 **Tuweep Precipitation Rain** **Rain Gauge 06**

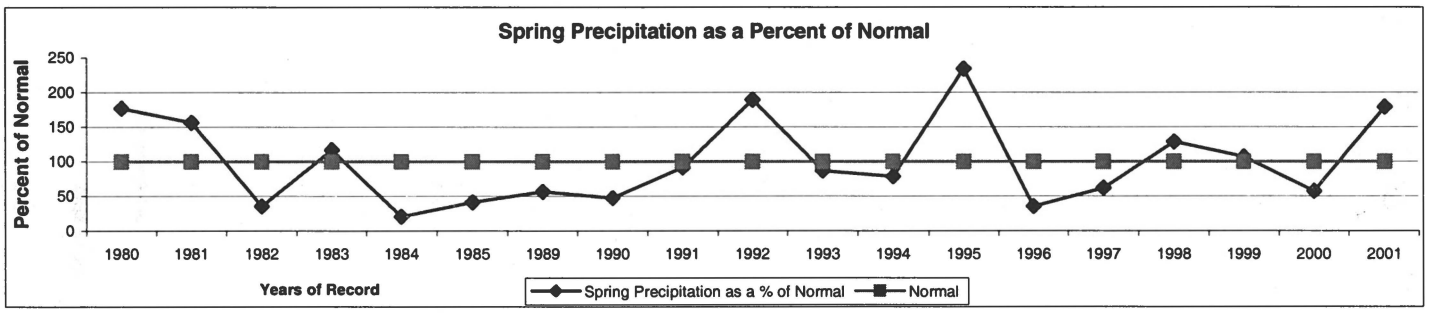
Seasonal Precipitation **Annual Average** **Percent of Normal**

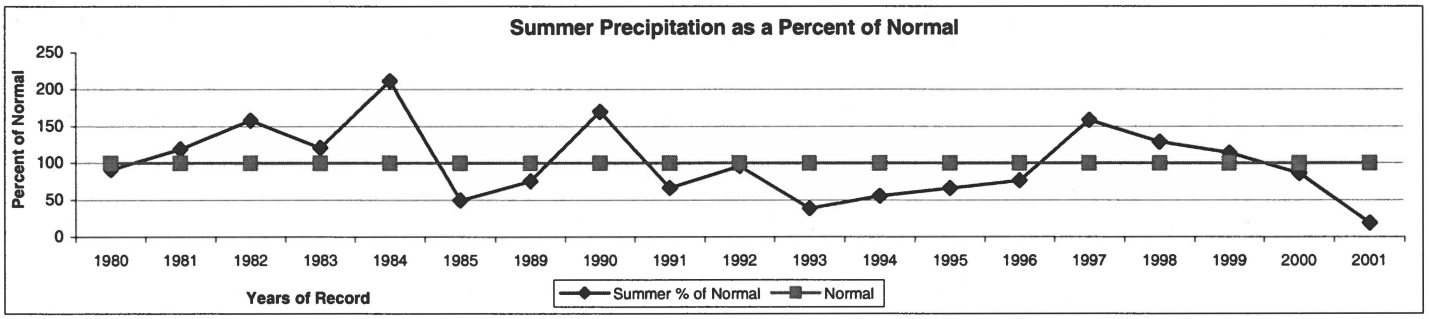
Year	Fall	Winter	Spring	Summer	Annual	Fall	Winter	Spring	Summer	Annual	Fall	Winter	Spring	Summer	Annual
1980	1.80	8.24	4.73	4.06	18.83	1.59	3.57	2.67	4.45	12.27	114%	231%	177%	91%	153%
1981	1.42	1.28	4.18	5.29	12.17	1.59	3.57	2.67	4.45	12.27	90%	36%	157%	119%	99%
1982	4.20	2.86	0.94	7.01	15.01	1.59	3.57	2.67	4.45	12.27	265%	80%	35%	158%	122%
1983	2.71	1.81	3.12	5.37	13.01	1.59	3.57	2.67	4.45	12.27	171%	51%	117%	121%	106%
1984	1.79	1.86	0.55	9.39	13.59	1.59	3.57	2.67	4.45	12.27	113%	52%	21%	211%	111%
1985	1.34	5.07	1.10	2.21	9.72	1.59	3.57	2.67	4.45	12.27	85%	142%	41%	50%	79%
1989	0.46	3.51	1.51	3.37	8.85	1.59	3.57	2.67	4.45	12.27	29%	98%	57%	76%	72%
1990	0.49	2.60	1.27	7.54	11.90	1.59	3.57	2.67	4.45	12.27	31%	73%	48%	170%	97%
1991	0.50	2.07	2.44	2.95	7.96	1.59	3.57	2.67	4.45	12.27	32%	58%	91%	66%	65%
1992	0.54	4.58	5.05	4.27	14.44	1.59	3.57	2.67	4.45	12.27	34%	128%	189%	96%	118%
1993	1.31	4.58	2.32	1.72	9.93	1.59	3.57	2.67	4.45	12.27	83%	128%	87%	39%	81%
1994	2.62	3.22	2.09	2.47	10.40	1.59	3.57	2.67	4.45	12.27	165%	90%	78%	56%	85%
1995	2.15	8.10	6.24	2.94	19.43	1.59	3.57	2.67	4.45	12.27	136%	227%	234%	66%	158%
1996	0.65	5.04	0.95	3.41	10.05	1.59	3.57	2.67	4.45	12.27	41%	141%	36%	77%	82%
1997	1.40	2.44	1.65	7.03	12.52	1.59	3.57	2.67	4.45	12.27	88%	68%	62%	158%	102%
1998	0.75	5.43	3.43	5.72	15.33	1.59	3.57	2.67	4.45	12.27	47%	152%	128%	129%	125%
1999	1.74	1.31	2.86	5.07	10.98	1.59	3.57	2.67	4.45	12.27	110%	37%	107%	114%	89%
2000	0.01	1.52	1.53	3.83	6.89	1.59	3.57	2.67	4.45	12.27	1%	43%	57%	86%	56%
2001	4.24	2.33	4.77	0.84	12.18	1.59	3.57	2.67	4.45	12.27	267%	65%	179%	19%	99%

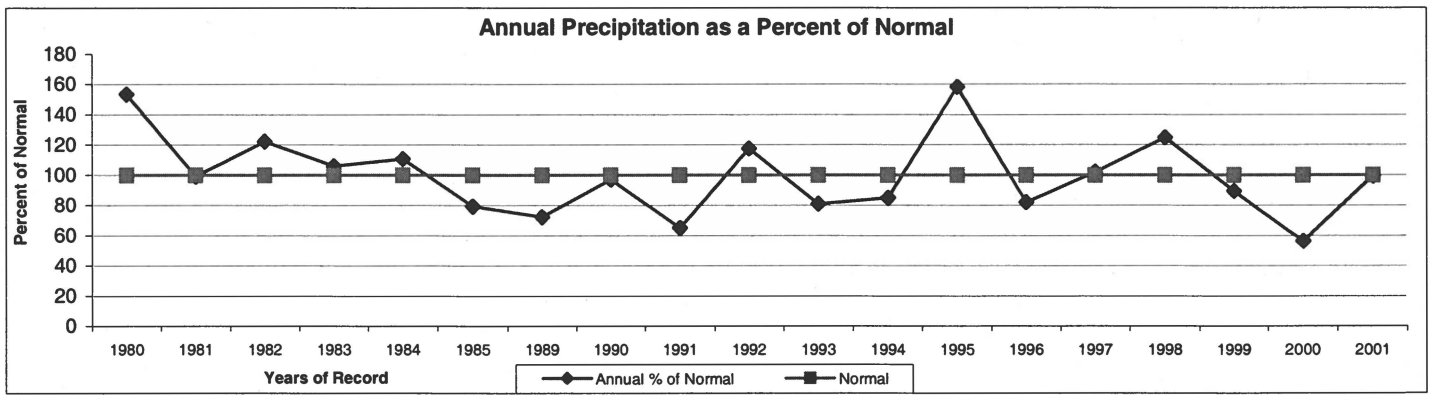
Tuweep Precipitation rain gauge number 06





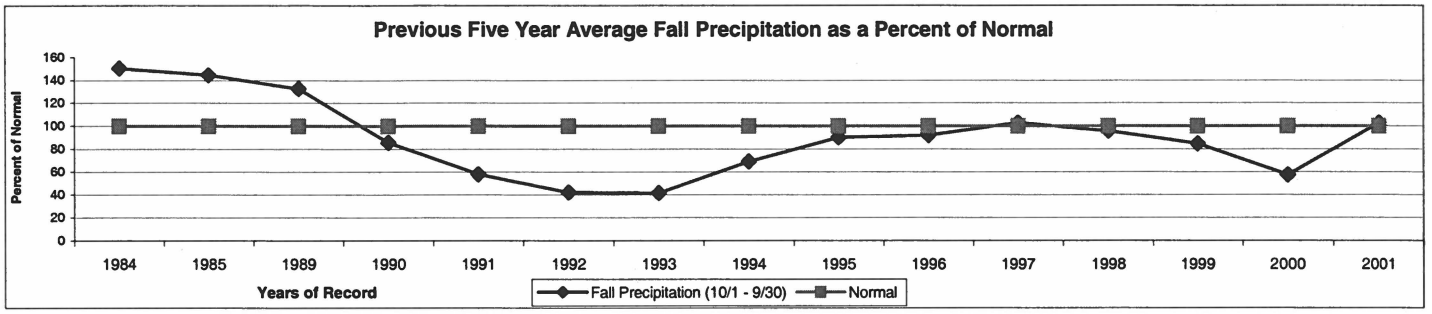


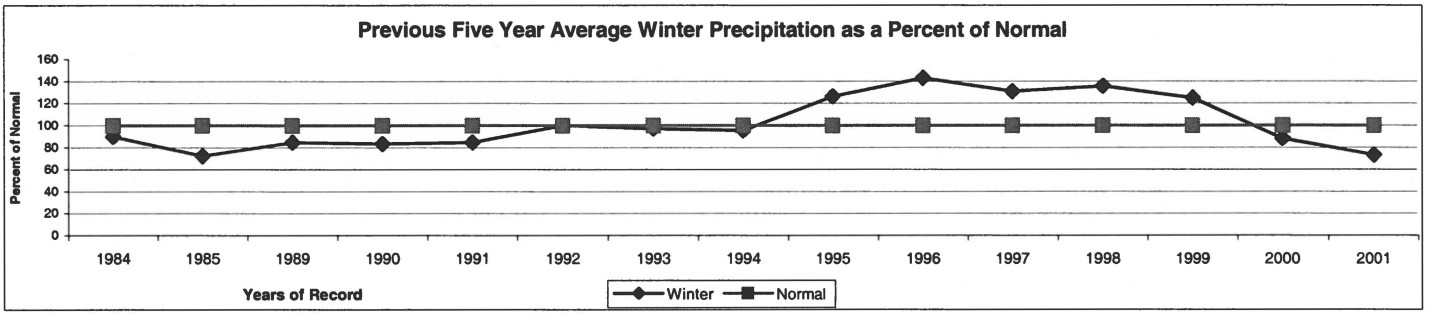


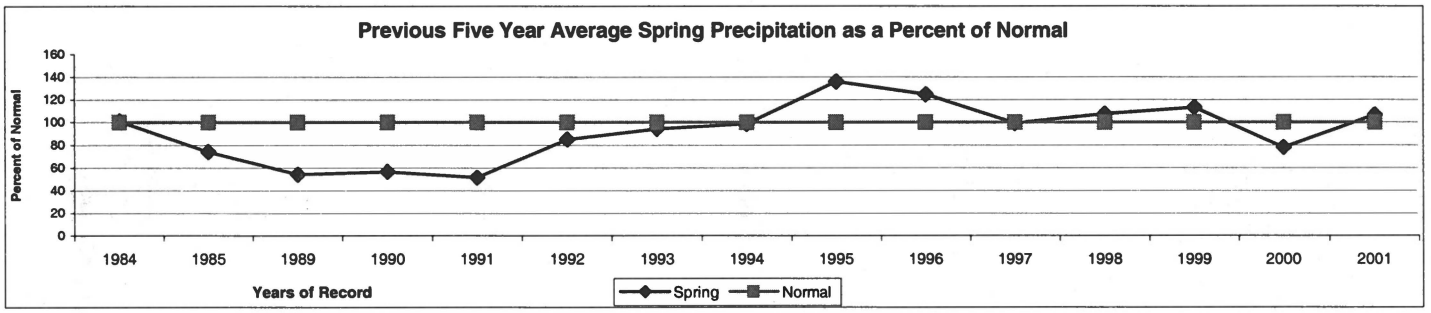


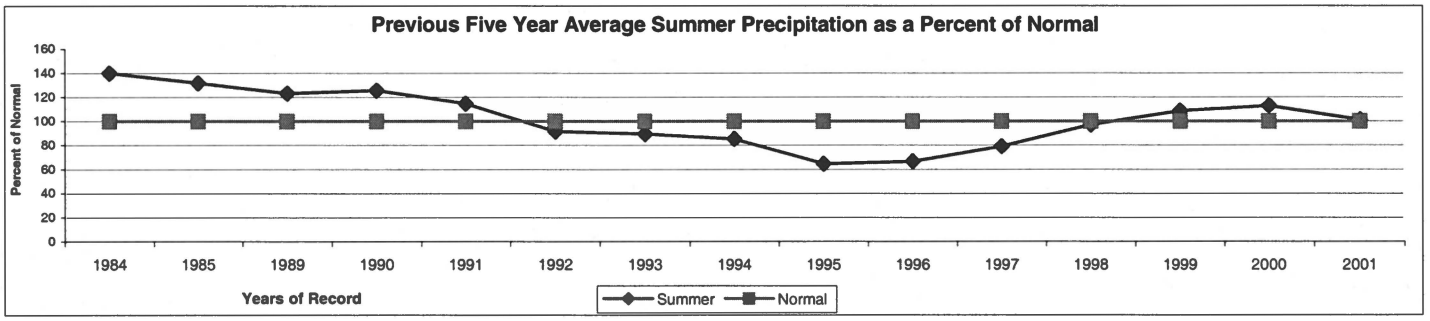
Appendices: page 8

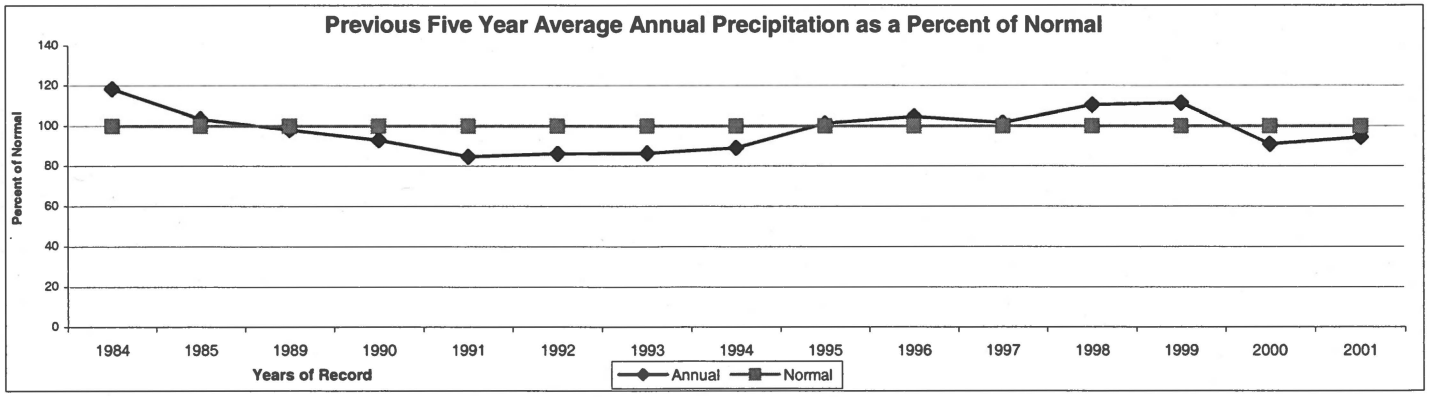
Tuweep Precipitation Rain Gauge Number 06

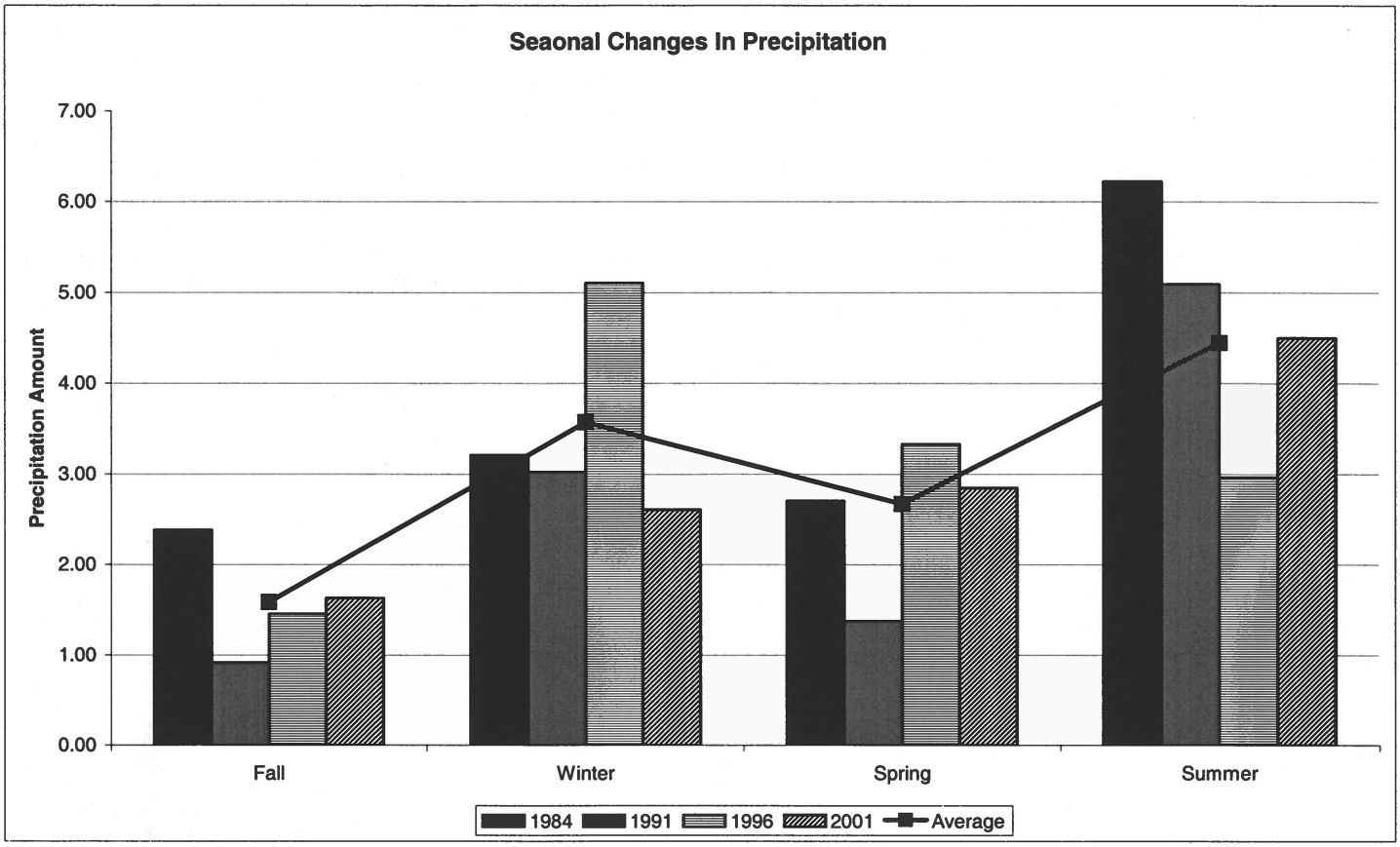












Percent of Normal Precipitation for each season.

Fall	Winter	Spring	Summer
13%	29%	22%	36%

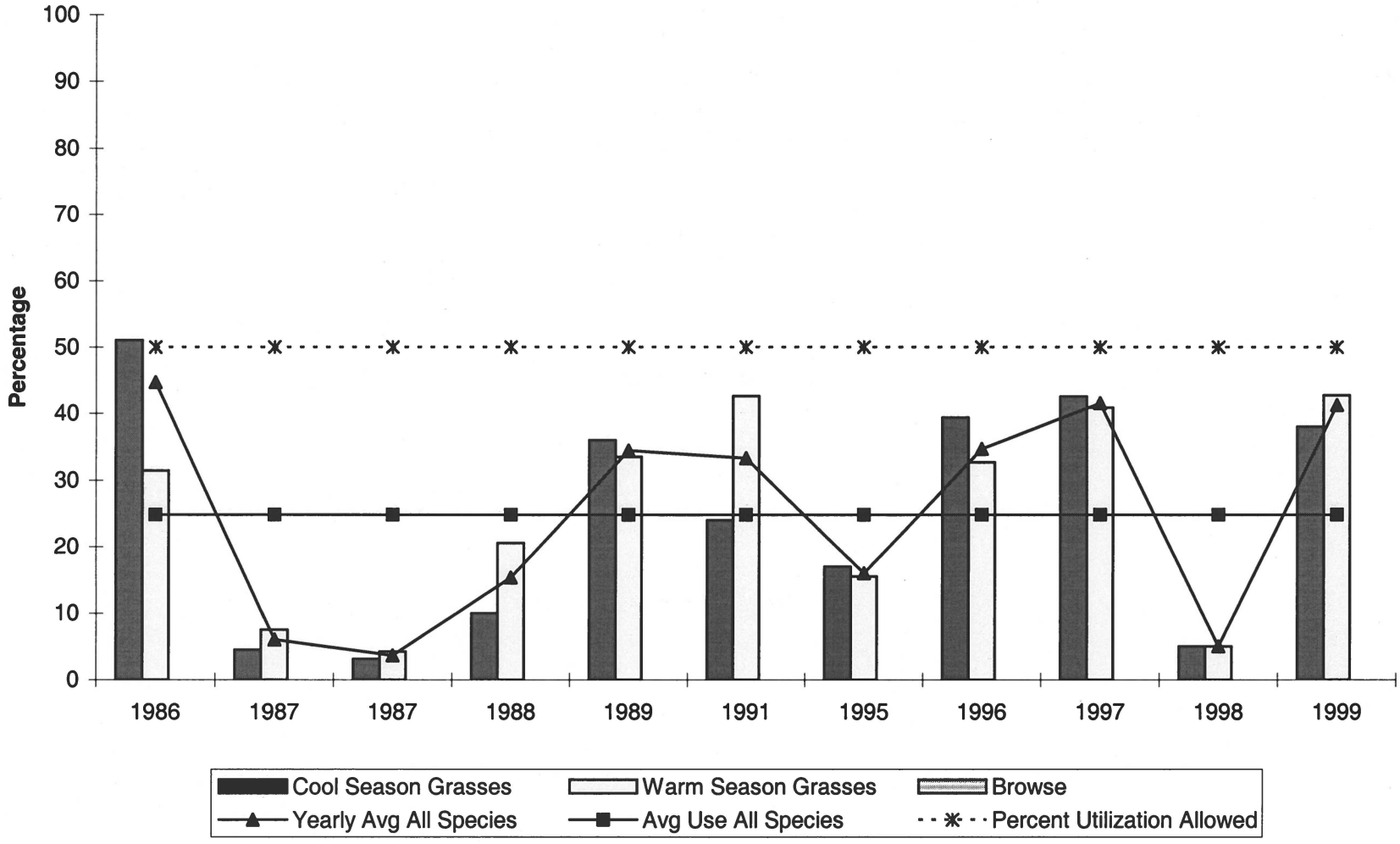
Appendix D:

Vegetation Data

ARIZONA STRIP						UTILIZATION STUDY SUMMARY															
ALLOTMENT = TUWEEP				PASTURE = NIXON				KEY AREA NUMBER = 1				Page 1								07/10/03	
Utilization expressed as a percent use for each species as of the particular year read.																					
Cool Season Grasses																					
	1986	1987	1987	1988	1989	1991	1995	1996	1997	1998	1999										AVG
SIHY	42	5	3	10	36	24	17	39	43	5	38										20
AGROPY	53																				53
CSGG																					
AVERAGE	51	5	3	10	36	24	17	39	43	5	38										24
WARM SEASON GRASSES																					
SPCR	40						16	27	50	5	42										23
BOGR	30	8	4	21	34	43	15	38	40	5	43										26
WSGG																					
AVERAGE	31	8	4	21	34	43	16	33	41	5	43										25
BROWSE																					
SSSS																					
AVERAGE																					
AVG ALL SPEC	45	6	4	15	34	33	16	35	42	5	41										25

Allotment: TUWEEP **Pasture: NIXON** **Key Area: 1**

Utilization by Plant Category



PACE FREQUENCY TREND ANALYSIS

6/2/03		ALLOTMENT: TUWEEP		PASTURE: NIXON		KEY AREA 1	PAGE NUMBER 1

COVER CATEGORIES	YEARS PLOT WERE READ										
	1982	1986	1989	1996	1998	1999	2002	2005	2008	2011	2014
Bare Ground	64	43	46	48	34	44					
Pers Litter	18	11	13	10	14	8					
Litter	17	38	35	31	42	38					
Rock		1		0							
Live Vegetation	2	6	7	10	10	10					
% Ground Cover	36	57	54	52	66	56					
BROWSE											
OTHER BROWS											
TOTALS											
DESIRABLE GRASSES											
Cool Season											
SIHY	43	45	57	44							
AGSM	1	2	2	0							
Other Cool Season Grass											
TOTALS	43	48	58	44							
Warm Season											
SPCR	1	3	1	0							
BOGR	39	45	55	44							
Other Warm Season Grass											
TOTALS	40	48	56	44							

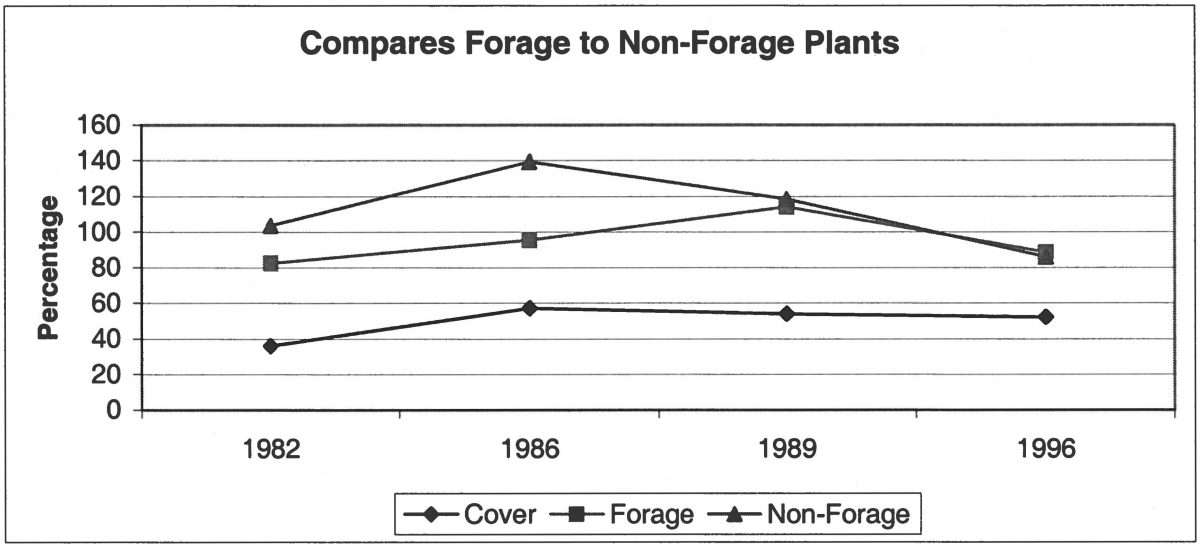
TREND INDEX

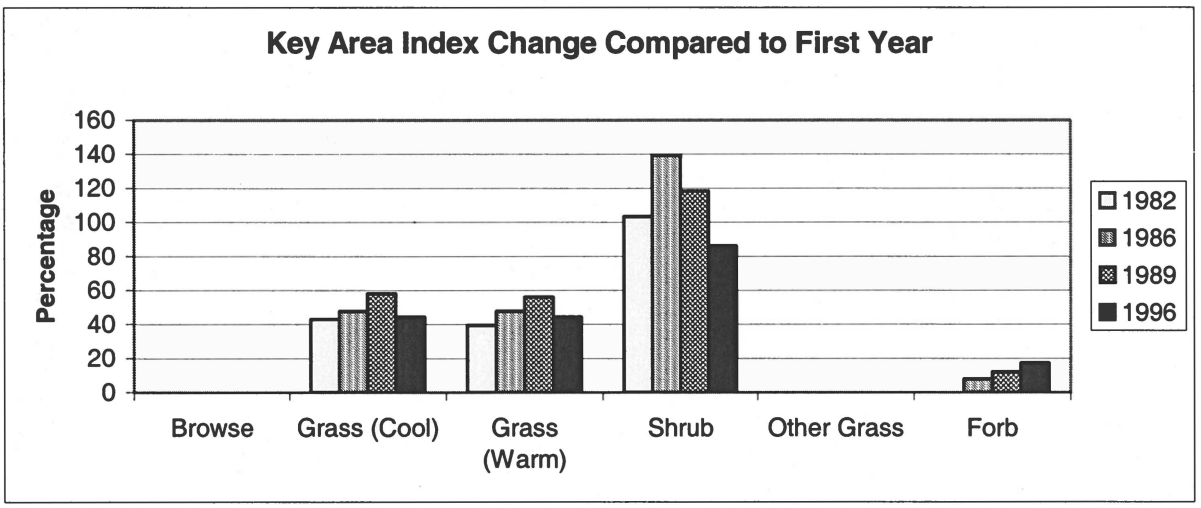
COMPARES DATA FROM THE YEAR READ BACK TO BASE YEAR TO DETERMINE INDEX
(a significant change is more than 10%) BASE YEAR = 1982

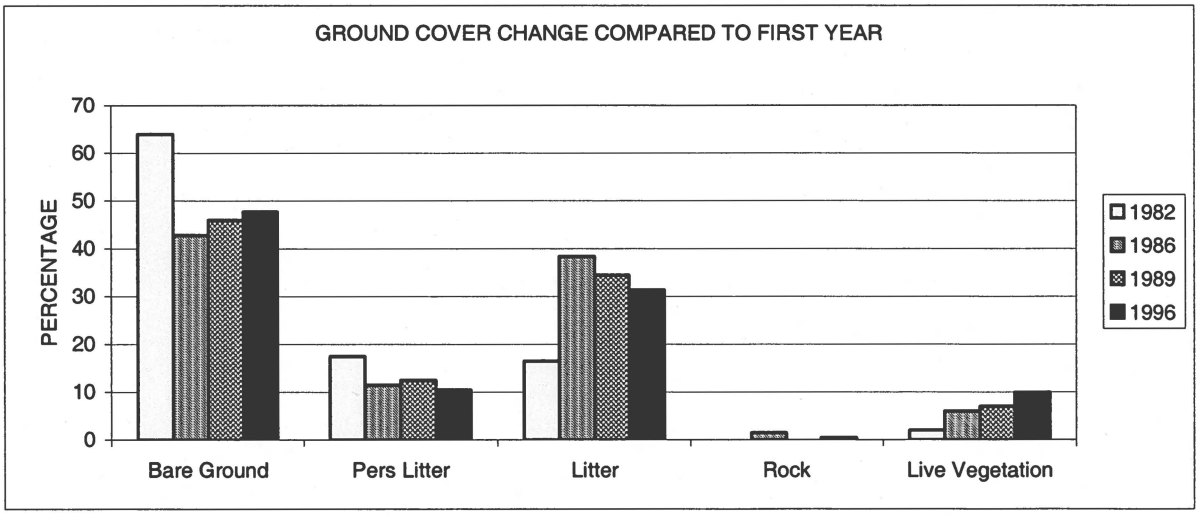
COVER CATEGORIES	1986	1989	1996	1998	1999	2002	2005	2008	2011	2014
Bare Ground	-33	-28	-25	-47	-31					
Pers Litter	-35	-29	-40	-20	-54					
Litter	132	109	90	155	130					
Rock	299		100							
Live Vegetation	199	250	398	400	400					
% Ground Cover	59	50	45	83	56					
BROWSE										
OTHER BROWS										
TOTALS										
DESIRABLE GRASSES										
Cool Season										
SIHY	7	33	3							
AGSM	398	200	0							
Other Cool Season Grass										
TOTALS	11	35	3							
Warm Season										
SPCR	497	100	0							
BOGR	15	41	12							
Other Warm Season Grass										
TOTALS	21	42	12							

6/2/03	ALLOTMENT TUWEEP						PASTURE NIXON					KEY AREA 1									
												TREND INDEX									
												COMPARES DATA FROM THE YEAR READ BACK TO BASE YEAR TO DETERMINE INDEX									
COVER	YEARS PLOT WERE READ											(a significant change is more than 10%) BASE YEAR = 1982									
CATEGORIES	1982	1986	1989	1996	1998	1999	2002	2005	2008	2011	2014	1986	1989	1996	1998	1999	2002	2005	2008	2011	2014
OTHER SHRUBS																					
GUSA2	42	76	53	26								80	25	-38							
ARTR2	61	63	65	60								4	6	-1							
OPUNT	1	0	1									0									
PIED			1										200								
OTHERSHRUB																					
TOTALS	104	139	119	86								35	14	-17							
OTHER GRASSES																					
PPGG																					
TOTALS																					
FORBS																					
ASTRA				0										100							
SPHAE		1	1									199	200								
AAFF				9										1791							
AAGG																					
ERIOG			2	1									400	199							
PPFF		3	5	6								697	900	1294							
SENEC				0										100							
ASTER		3	5									697	900								
TOTALS		8	12	17								1592	2400	3483							

Allotment: TUWEEP **Pasture: NIXON** **Key Area: 1**



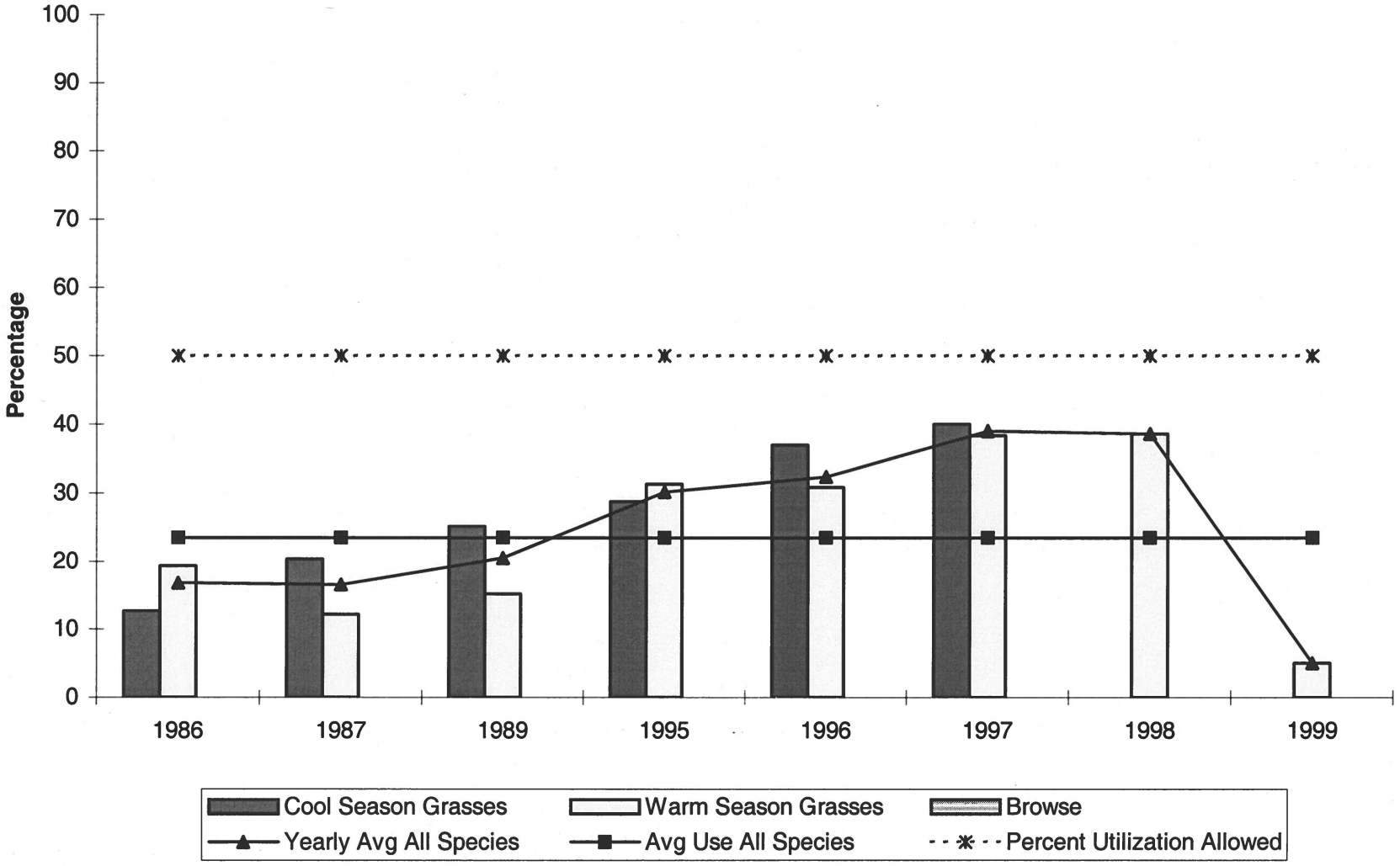




ARIZONA STRIP					UTILIZATION STUDY SUMMARY																
ALLOTMENT = TUWEEP					PASTURE = CRAIG						KEY AREA NUMBER = 2				Page 1						07/10/03
Utilization expressed as a percent use for each species as of the particular year read.																					
Cool Season Grasses																					
	1986	1987	1989	1995	1996	1997	1998	1999													AVG
ORHY		22	29																		23
SIHY	13	19	23	29	37	40															25
CSGG																					
AVERAGE	13	20	25	29	37	40															25
WARM SEASON GRASSES																					
HIJA							37	5													21
SPCR		29	21	34	30	42	41	5													27
BOGR	19	9	10	31	31	38	38	5													21
WSGG																					
AVERAGE	19	12	15	31	31	38	39	5													23
BROWSE																					
SSSS																					
AVERAGE																					
AVG ALL SPEC	17	17	20	30	32	39	39	5													23

Allotment: TUWEEP **Pasture: CRAIG** **Key Area: 2**

Utilization by Plant Category



PACE FREQUENCY TREND ANALYSIS

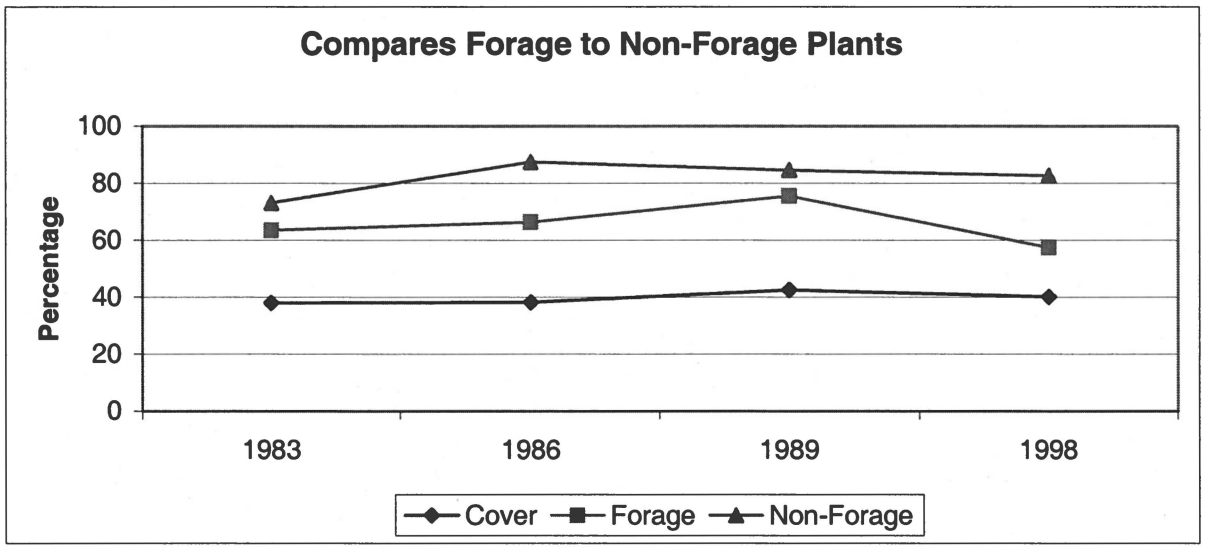
6/2/03		ALLOTMENT: TUWEEP		PASTURE: CRAIG		KEY AREA 2	PAGE NUMBER 1

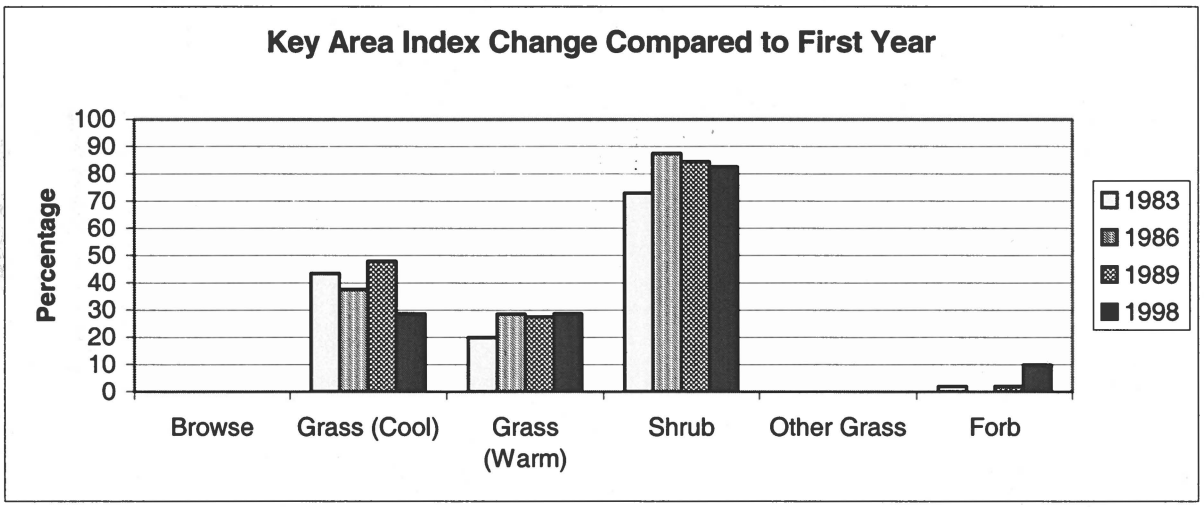
TREND INDEX

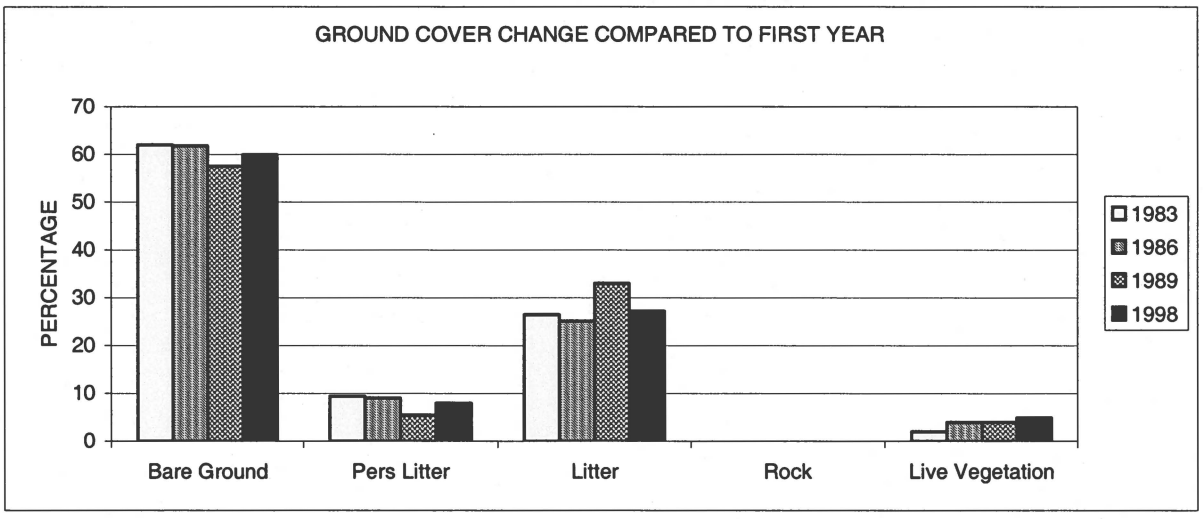
COVER CATEGORIES	YEARS PLOT WERE READ											COMPARES DATA FROM THE YEAR READ BACK TO BASE YEAR TO DETERMINE INDEX (a significant change is more than 10%) BASE YEAR = 1982									
	1983	1986	1989	1998	2001	2004	2007	2010	2013	2016	2019	1986	1989	1998	2001	2004	2007	2010	2013	2016	2019
Bare Ground	62	62	58	60								0	-7	-3							
Pers Litter	10	9	6	8								-5	-42	-17							
Litter	27	25	33	27								-5	25	3							
Rock																					
Live Vegetation	2	4	4	5								101	100	148							
% Ground Cover	38	38	43	40								1	12	6							
BROWSE																					
OTHER BROWS																					
TOTALS																					
DESIRABLE GRASSES																					
Cool Season																					
ORHY		1	1	1								101	100	198							
SIHY	42	34	45	25								-20	7	-41							
AGSM	2	4	3	3								135	67	98							
Other Cool Season Grass																					
TOTALS	44	38	48	29								-13	10	-34							
Warm Season																					
SPCR	4	5	5	4								26	13	-1							
BOGR	16	24	23	25								48	44	55							
Other Warm Season Grass																					
TOTALS	20	29	28	29								43	38	44							

6/2/03	ALLOTMENT TUWEEP						PASTURE CRAIG					KEY AREA 2									
												TREND INDEX									
												COMPARES DATA FROM THE YEAR READ BACK TO BASE YEAR TO DETERMINE INDEX									
COVER	YEARS PLOT WERE READ											(a significant change is more than 10%) BASE YEAR = 1983									
CATEGORIES	1983	1986	1989	1998	2001	2004	2007	2010	2013	2016	2019	1986	1989	1998	2001	2004	2007	2010	2013	2016	2019
OTHER SHRUBS																					
GUSA2	3	11	8	6								269	150	115							
ARTR2	70	76	76	75								9	9	7							
OPUNT				0										99							
JUOS			1	0									200	99							
OTHERSHRUB																					
TOTALS	73	87	85	83								20	16	13							
OTHER GRASSES																					
PPGG																					
TOTALS																					
FORBS																					
SPHAE	2		1	1									-50	-50							
AAFF				2										495							
AAGG																					
PENST			1	0									200	99							
ERIGERON				0										99							
PPFF				0										99							
SPURGE				5										990							
TOTALS	2		2	10										395							

Allotment: TUWEEP **Pasture: CRAIG** **Key Area: 2**

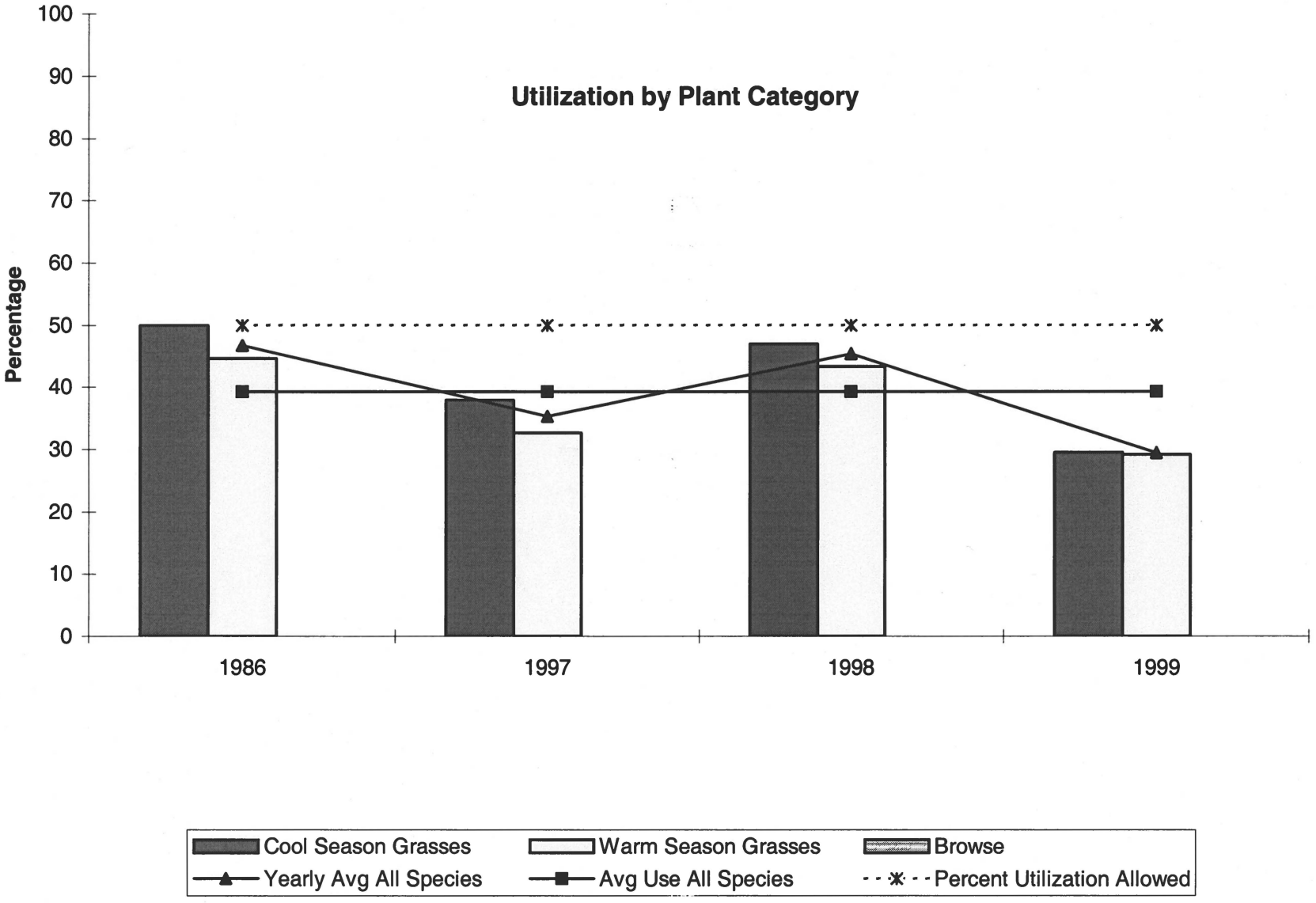






ARIZONA STRIP												UTILIZATION STUDY SUMMARY										
ALLOTMENT = TUWEEP					PASTURE = WHITE SPRINGS						KEY AREA NUMBER = 3				Page 1						07/10/03	
Utilization expressed as a percent use for each species as of the particular year read.																						
Cool Season Grasses																						
	1986	1997	1998	1999																		AVG
ORHY	57	40	50	29																		38
SIHY	20	34	42	34																		34
AGCR	65	38	50	29																		44
CSGG																						
AVERAGE	50	38	47	30																		40
WARM SEASON GRASSES																						
SPCR	39	37	45	30																		38
BOGR	48	29	42	29																		39
WSGG																						
AVERAGE	45	33	43	29																		38
BROWSE																						
SSSS																						
AVERAGE																						
AVG ALL SPEC	47	35	45	29																		39

Allotment: TUWEEP **Pasture: WHITE SPRINGS** **Key Area: 3**



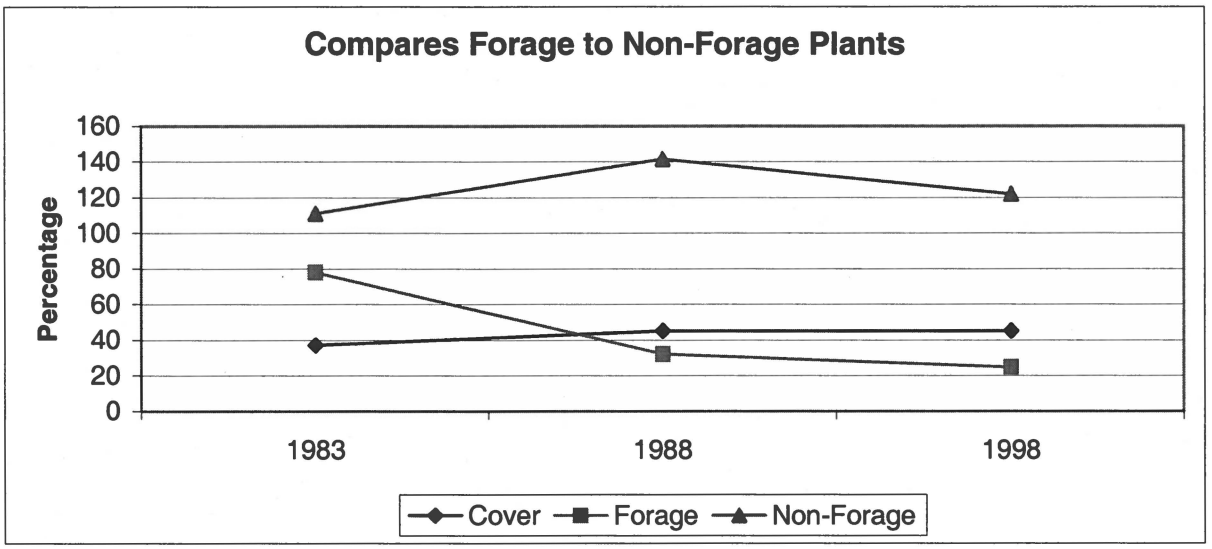
PACE FREQUENCY TREND ANALYSIS

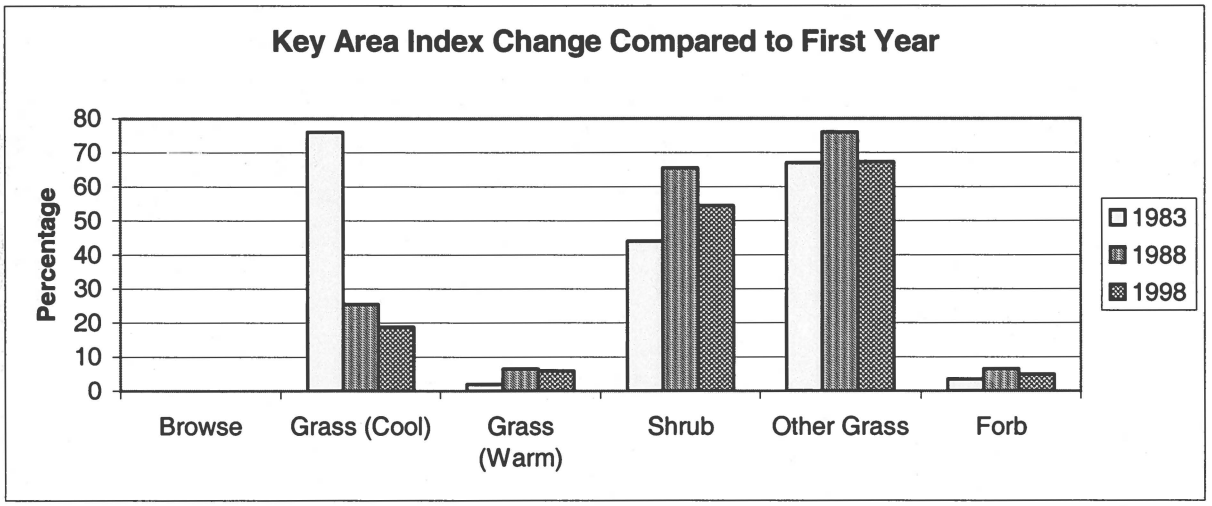
6/2/03		ALLOTMENT: TUWEEP		PASTURE: WHITE SPRINGS		KEY AREA 3		PAGE NUMBER 1		

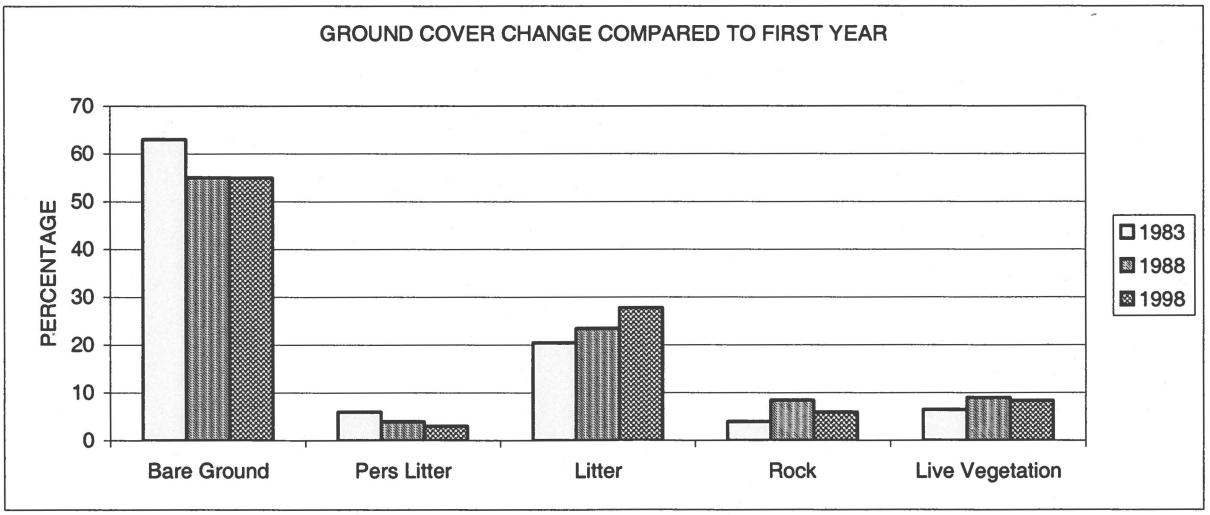
COVER CATEGORIES	YEARS PLOT WERE READ											TREND INDEX: COMPARES DATA FROM THE YEAR READ BACK TO BASE YEAR TO DETERMINE INDEX (a significant change is more than 10%) BASE YEAR = 1982									
	1983	1988	1998	2001	2004	2007	2010	2013	2016	2019	2022	1988	1998	2001	2004	2007	2010	2013	2016	2019	2022
Bare Ground	63	55	55									-13	-13								
Pers Litter	6	4	3									-33	-50								
Litter	21	24	28									15	35								
Rock	4	9	6									113	49								
Live Vegetation	7	9	8									38	29								
% Ground Cover	37	45	45									22	22								
BROWSE																					
OTHER BROWS																					
TOTALS																					
DESIRABLE GRASSES																					
Cool Season																					
ORHY	2	3	0									100	-67								
SIHY	8	15	14									100	91								
AGCR	67	8	4									-89	-94								
Other Cool Season Grass																					
TOTALS	76	26	19									-66	-75								
Warm Season																					
SPCR	2	1	3									-75	73								
BOGR		6	2									1200	495								
Other Warm Season Grass																					
TOTALS	2	7	6									225	197								

6/2/03	ALLOTMENT TUWEEP						PASTURE WHITE SPRINGS						KEY AREA 3									
													TREND INDEX									
													COMPARES DATA FROM THE YEAR READ BACK TO BASE YEAR TO DETERMINE INDEX									
COVER	YEARS PLOT WERE READ												(a significant change is more than 10%) BASE YEAR = 1983									
CATEGORIES	1983	1988	1998	2001	2004	2007	2010	2013	2016	2019	2022		1988	1998	2001	2004	2007	2010	2013	2016	2019	2022
OTHER SHRUBS																						
GUSA2	18	33	8										83	-56								
ARTR2	25	29	46										14	84								
OPUNT	1	1	0											-50								
CHNA		2											400									
JUOS		1											200									
OTHERSHRUB																						
TOTALS	44	66	54										49	24								
OTHER GRASSES																						
ARIST	67	76											13									
ARLO			67											13465								
PPGG																						
TOTALS	67	76	67										13	0								
FORBS																						
SPHAE	3	6	1										83	-50								
AAFF			0											99								
AAGG																						
ERIOG	1	1											100									
PENST			0											99								
ERIGERON			1											297								
PPFF			1											198								
ERCI6																						
TOTALS	4	7	5										86	41								

Allotment: TUWEEP **Pasture: WHITE SPRINGS** **Key Area: 3**



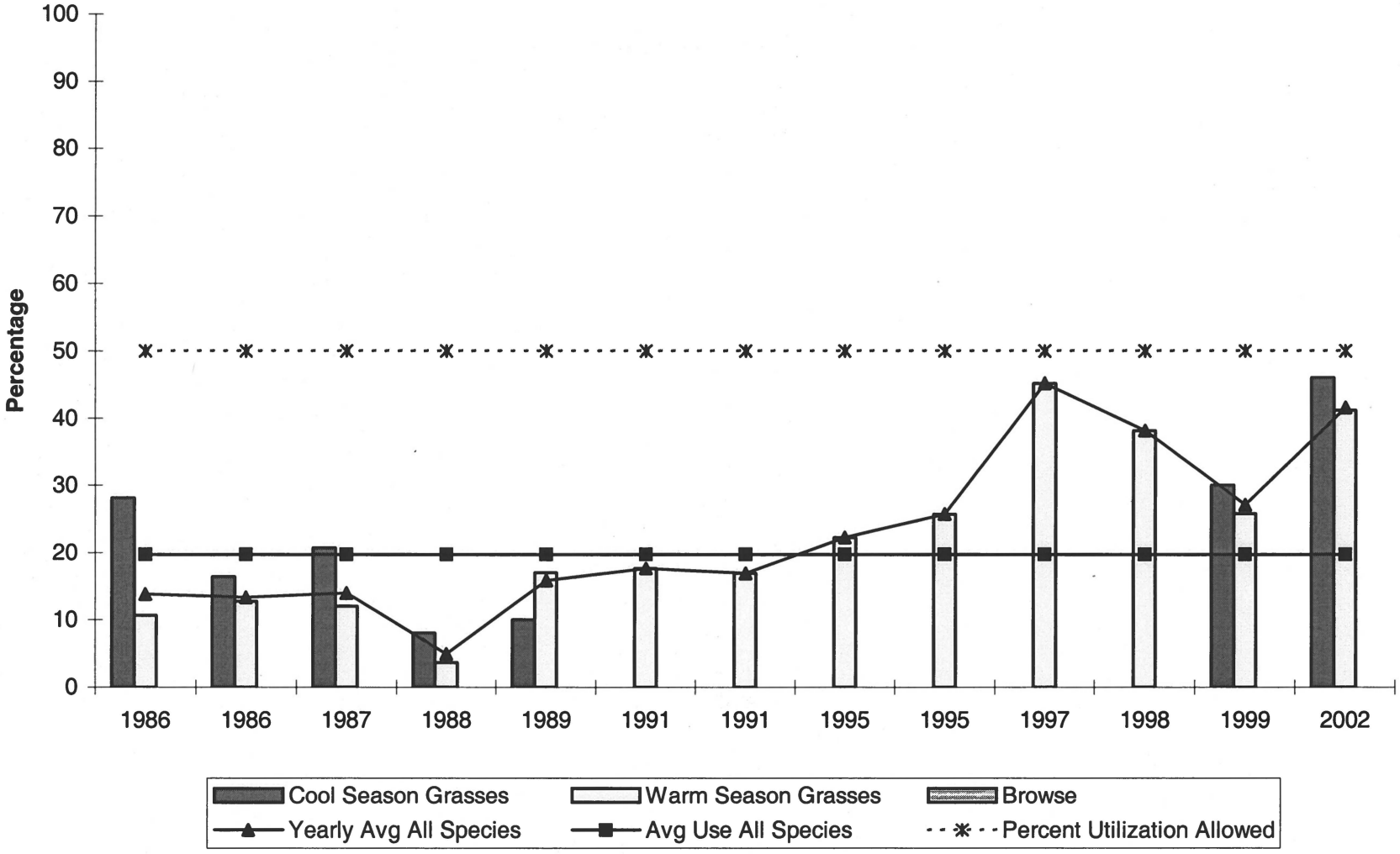




ARIZONA STRIP						UTILIZATION STUDY SUMMARY															
ALLOTMENT = TUWEEP					PASTURE = TUCKUP						KEY AREA NUMBER = 5			Page 1						07/10/03	
Utilization expressed as a percent use for each species as of the particular year read.																					
Cool Season Grasses																					
	1986	1986	1987	1988	1989	1991	1991	1995	1995	1997	1998	1999	2002								AVG
SIHY	28	16	21	8	10							30	46								20
CSGG																					
AVERAGE	28	16	21	8	10							30	46								20
WARM SEASON GRASSES																					
HIJA	10	14	11	5	16	13	18	21	25	47	37	23	44								19
BOGR	12	12	13	3	18	22	16	23	27	44	39	30	39								20
WSGG																					
AVERAGE	11	13	12	4	17	18	17	22	26	45	38	26	41								20
BROWSE																					
SSSS																					
AVERAGE																					
AVG ALL SPEC	14	13	14	5	16	18	17	22	26	45	38	27	42								20

Allotment: TUWEEP **Pasture: TUCKUP** **Key Area: 5**

Utilization by Plant Category



PACE FREQUENCY TREND ANALYSIS

6/2/03		ALLOTMENT: TUWEEP		PASTURE: TUCKUP		KEY AREA 5	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									
	1981	1986	1989	1998	2001	2004	2007	2010	2013	2016	2019	1986	1989	1998	2001	2004	2007	2010	2013	2016	2019
Bare Ground	60	55	50	52								-8	-16	-13							
Pers Litter	12	12	8	8									-34	-30							
Litter	20	28	36	33								41	84	68							
Rock	1	3	3	2								400	497	398							
Live Vegetation	9	3	3	4								-65	-65	-47							
% Ground Cover	41	45	50	48								11	23	19							
BROWSE																					
OTHER BROWS																					
TOTALS																					
DESIRABLE GRASSES																					
Cool Season																					
ORHY				0										100							
SIHY	9	12	13	11								41	52	35							
Other Cool Season Grass																					
TOTALS	9	12	13	12								41	52	40							
Warm Season																					
HIJA	35	31	30	33								-11	-15	-6							
SPCR		2	1	0								300	199	100							
BOGR	42	32	26	36								-23	-36	-12							
MUPO2				0										100							
Other Warm Season Grass																					
TOTALS	77	65	57	70								-16	-25	-8							

6/2/03	ALLOTMENT TUWEEP						PASTURE TUCKUP					KEY AREA 5									
												TREND INDEX									
												COMPARES DATA FROM THE YEAR READ BACK TO BASE YEAR TO DETERMINE INDEX									
COVER	YEARS PLOT WERE READ											(a significant change is more than 10%) BASE YEAR = 1981									
CATEGORIES	1981	1986	1989	1998	2001	2004	2007	2010	2013	2016	2019	1986	1989	1998	2001	2004	2007	2010	2013	2016	2019
OTHER SHRUBS																					
GUSA2	2	5	5	2								150	149	0							
ARTR2	45	56	59	60								26	33	35							
OPUNT				0										100							
LYCIU	2																				
OTHERSHRUB																					
TOTALS	49	61	64	63								26	32	29							
OTHER GRASSES																					
PPGG																					
TOTALS																					
FORBS																					
SPHAE	1																				
AAFF	4			1										-63							
AAGG																					
PENST		1										200									
PPFF			0										100								
SPURGE			1	1									299	199							
PHACE				1										299							
TOTALS	5	1	2	4								-78	-56	-12							

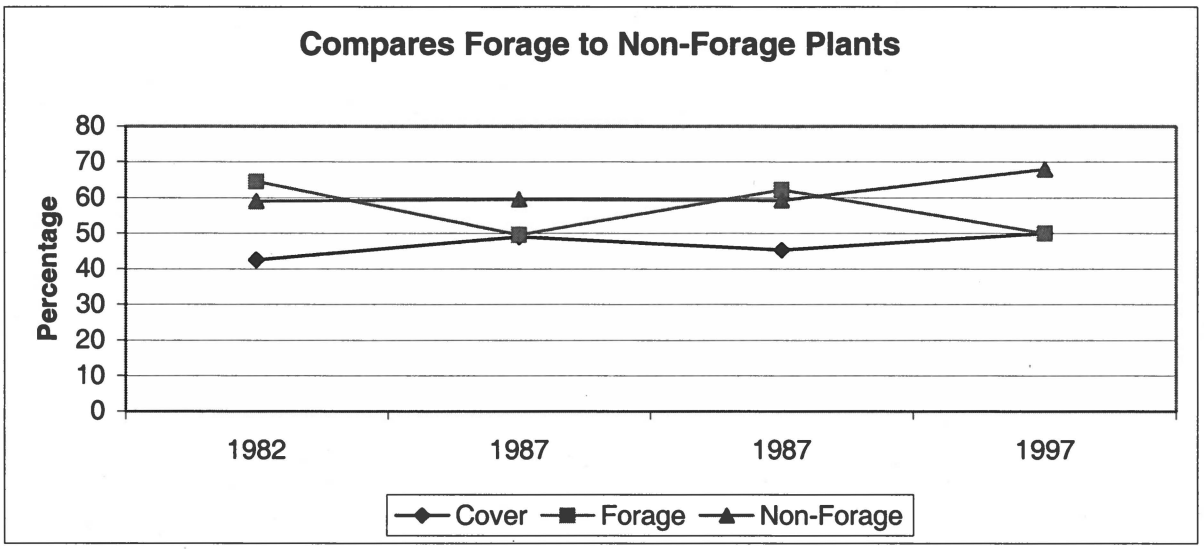
PACE FREQUENCY TREND ANALYSIS

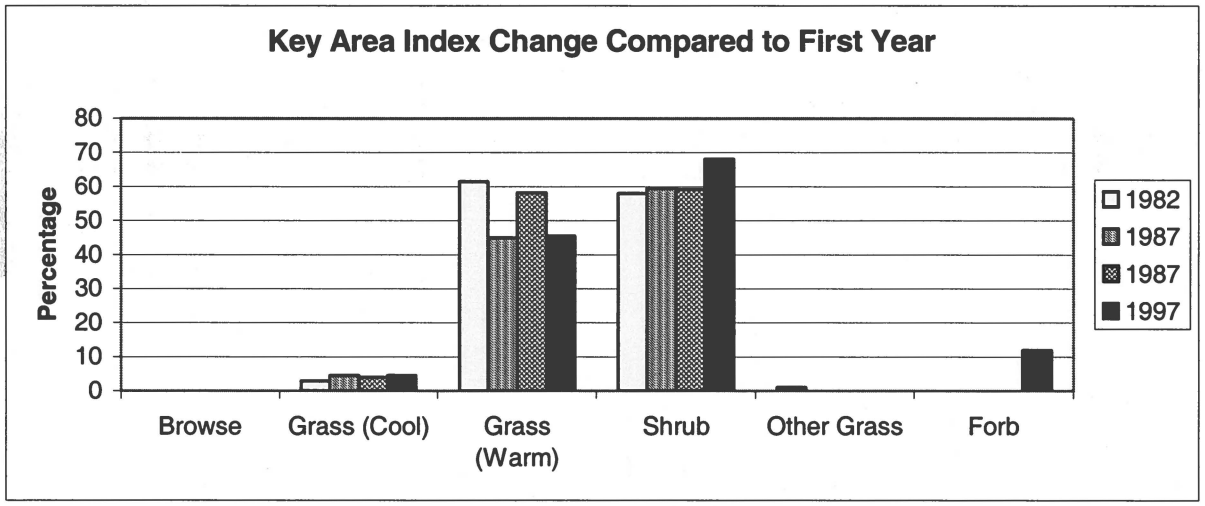
6/2/03		ALLOTMENT: TUWEEP		PASTURE: LITTLE TUWEEP		KEY AREA 6	PAGE NUMBER 1

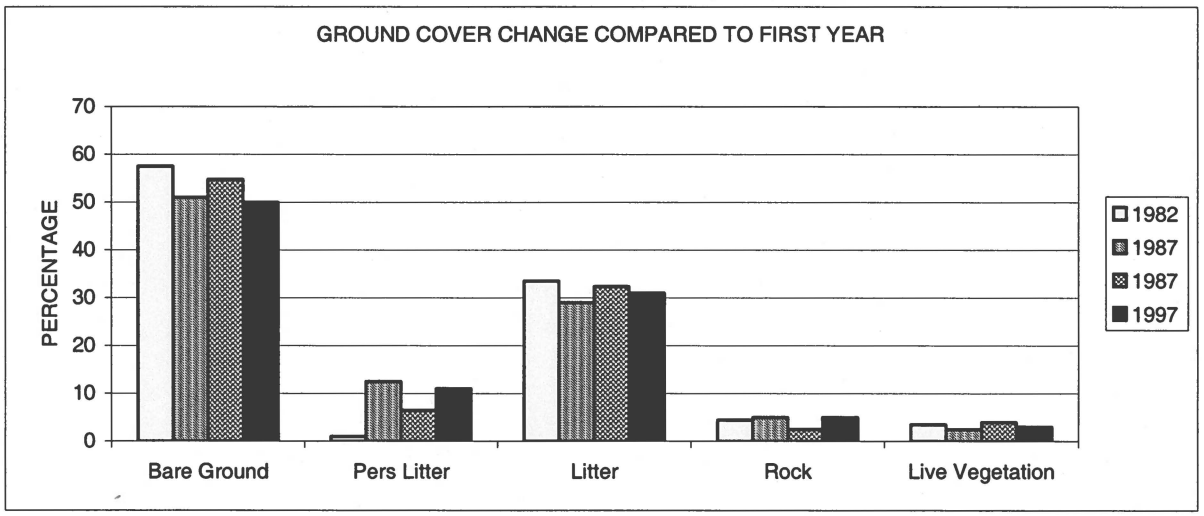
COVER	YEARS PLOT WERE READ											TREND INDEX COMPARES DATA FROM THE YEAR READ BACK TO BASE YEAR TO DETERMINE INDEX (a significant change is more than 10%) BASE YEAR = 1982									
CATEGORIES	1982	1987	1987	1997	2000	2003	2006	2009	2012	2015	2018	1987	1987	1997	2000	2003	2006	2009	2012	2015	2018
Bare Ground	58	51	55	50								-11	-5	-13							
Pers Litter	1	13	6	11								1150	547	1000							
Litter	34	29	32	31								-13	-3	-7							
Rock	5	5	2	5								11	-45	11							
Live Vegetation	4	3	4	3								-29	14	-14							
% Ground Cover	43	49	45	50								15	7	18							
BROWSE																					
OTHER BROWS																					
TOTALS																					
DESIRABLE GRASSES																					
Cool Season																					
SIHY	3	5	4	5								50	33	50							
Other Cool Season Grass																					
TOTALS	3	5	4	5								50	33	50							
Warm Season																					
HIJA	22	21	22	24								-2	2	9							
SPCR	5	1	1	2								-80	-80	-60							
BOGR	35	23	35	20								-34	1	-43							
Other Warm Season Grass																					
TOTALS	62	45	58	46								-27	-5	-26							

6/2/03	ALLOTMENT TUWEEP						PASTURE LITTLE TUWEEP						KEY AREA 6								
													TREND INDEX								
													COMPARES DATA FROM THE YEAR READ BACK TO BASE YEAR TO DETERMINE INDEX								
COVER	YEARS PLOT WERE READ												(a significant change is more than 10%) BASE YEAR = 1982								
CATEGORIES	1982	1987	1987	1997	2000	2003	2006	2009	2012	2015	2018		1987	1987	1997	2000	2003	2006	2009	2012	2015	2018
OTHER SHRUBS																						
GUSA2		1	0	1									200	100	100							
ARTR2	57	57	58	66									1	3	16							
OPUNT	2	1	0	1									-67	-67	-67							
YUCCA		1											100									
JUOS		1											100									
PIED				1											100							
OTHERSHRUB				1											200							
TOTALS	58	60	59	68									3	2	17							
OTHER GRASSES																						
PPGG	1																					
TOTALS	1																					
FORBS																						
AAFF				2											300							
AAGG				11											2100							
TOTALS				12											2400							

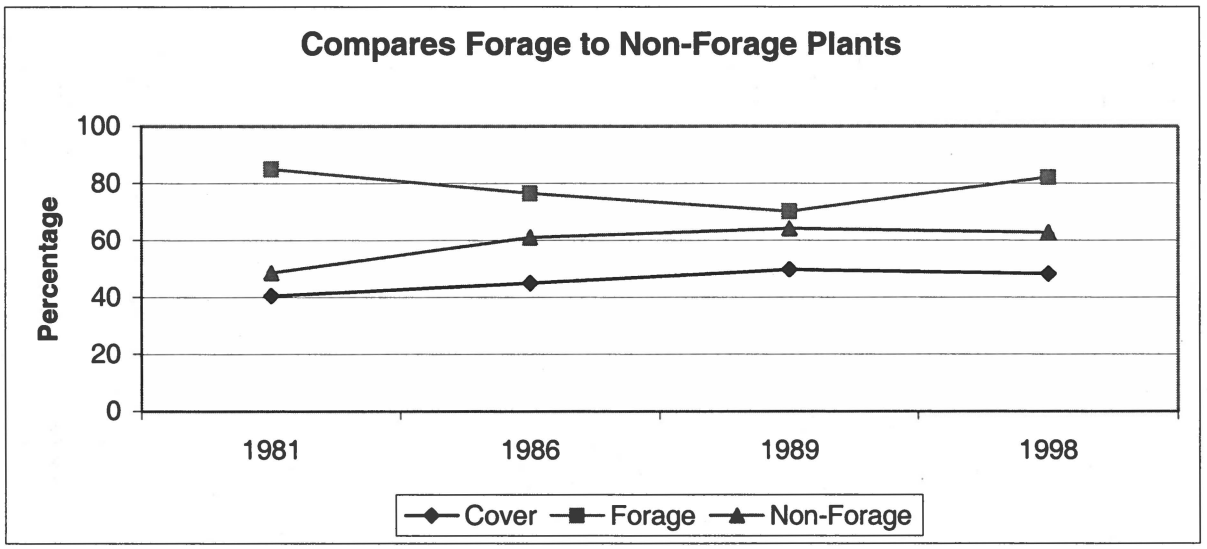
Allotment: TUWEEP **Pasture: LITTLE TUWEEP** **Key Area: 6**

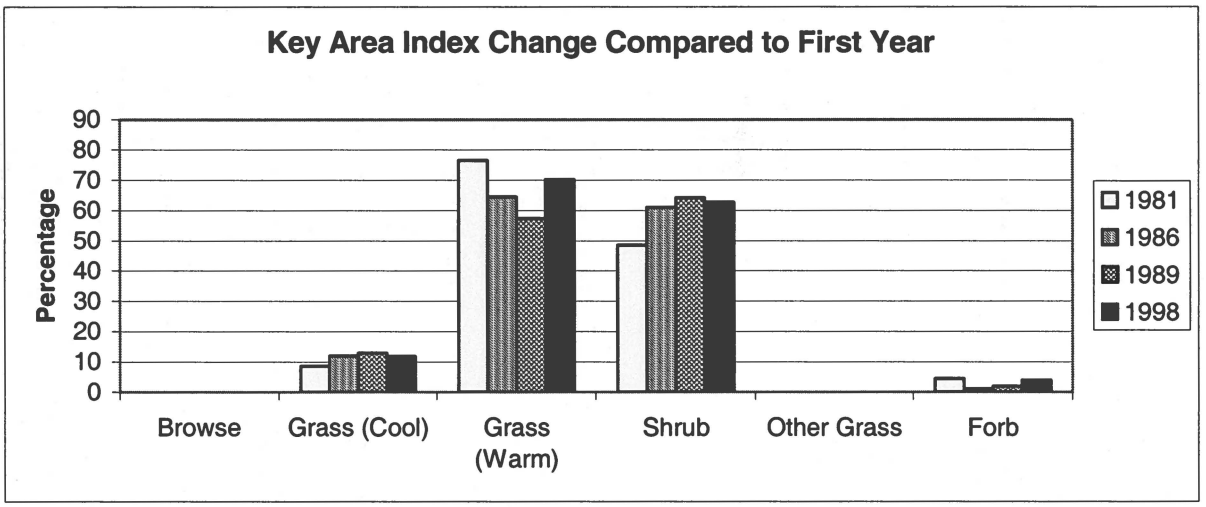


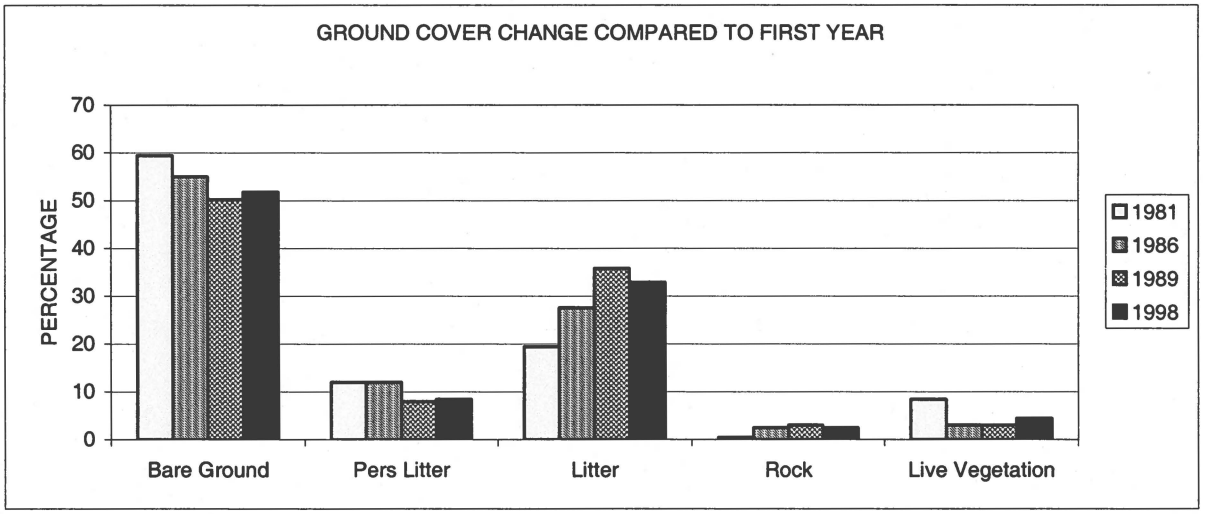




Allotment: TUWEEP **Pasture: TUCKUP** **Key Area: 5**



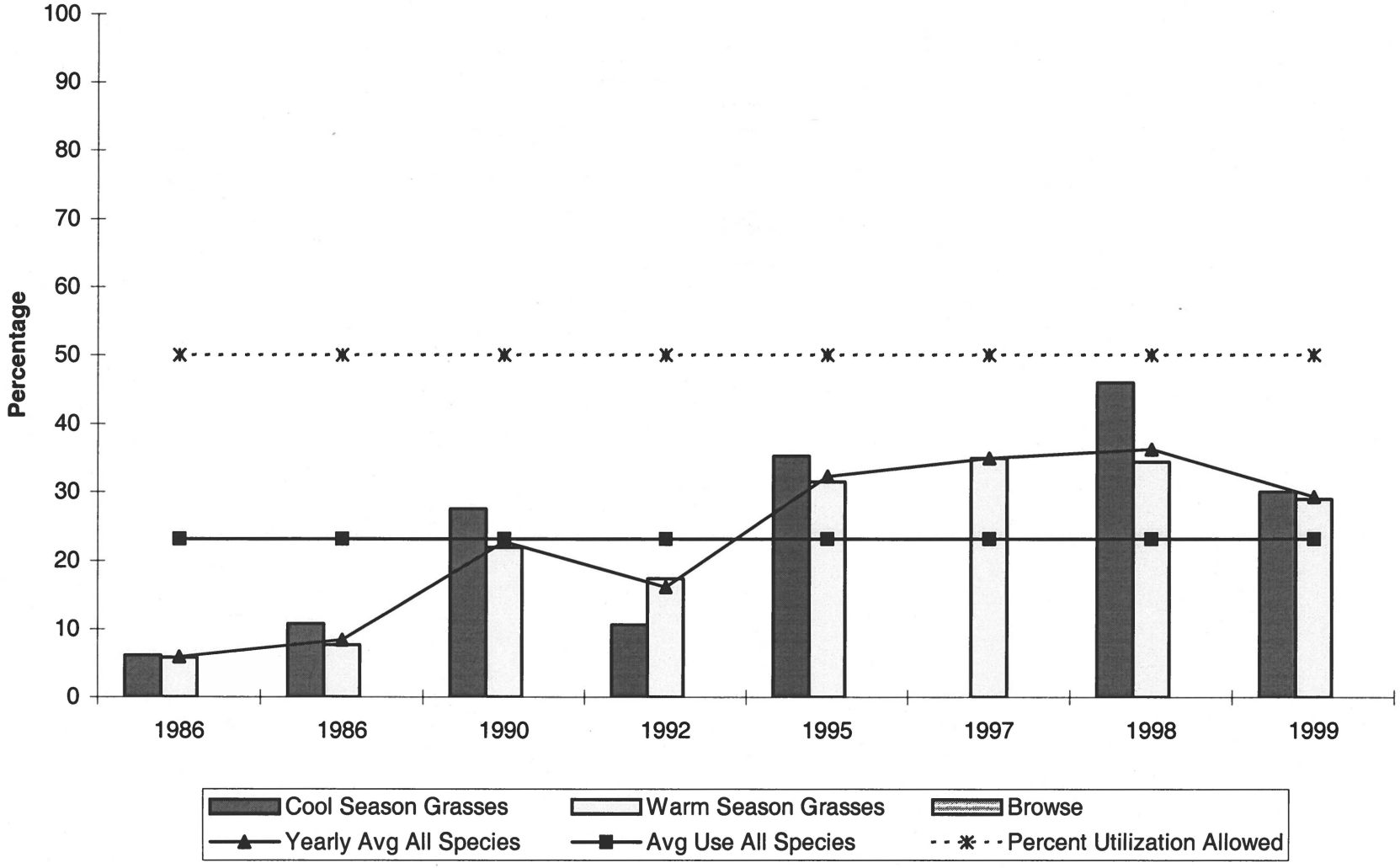




ARIZONA STRIP					UTILIZATION STUDY SUMMARY																
ALLOTMENT = TUWEEP					PASTURE = LITTLE TUWEEP				KEY AREA NUMBER = 6				Page 1								07/10/03
Utilization expressed as a percent use for each species as of the particular year read.																					
Cool Season Grasses																					
	1986	1986	1990	1992	1995	1997	1998	1999													AVG
SIHY	6	11	28	11	35		46	30													24
CSGG																					
AVERAGE	6	11	28	11	35		46	30													24
WARM SEASON GRASSES																					
HIJA	6	8	22	10	28	37	33	32													21
SPCR	8		30	35	38		40														31
BOGR	5		18	14	32	33	35	26													23
WSGG																					
AVERAGE	6	8	22	17	32	35	34	29													23
BROWSE																					
SSSS																					
AVERAGE																					
AVG ALL SPEC	6	8	23	16	32	35	36	29													23

Allotment: TUWEEP **Pasture: LITTLE TUWEEP** **Key Area: 6**

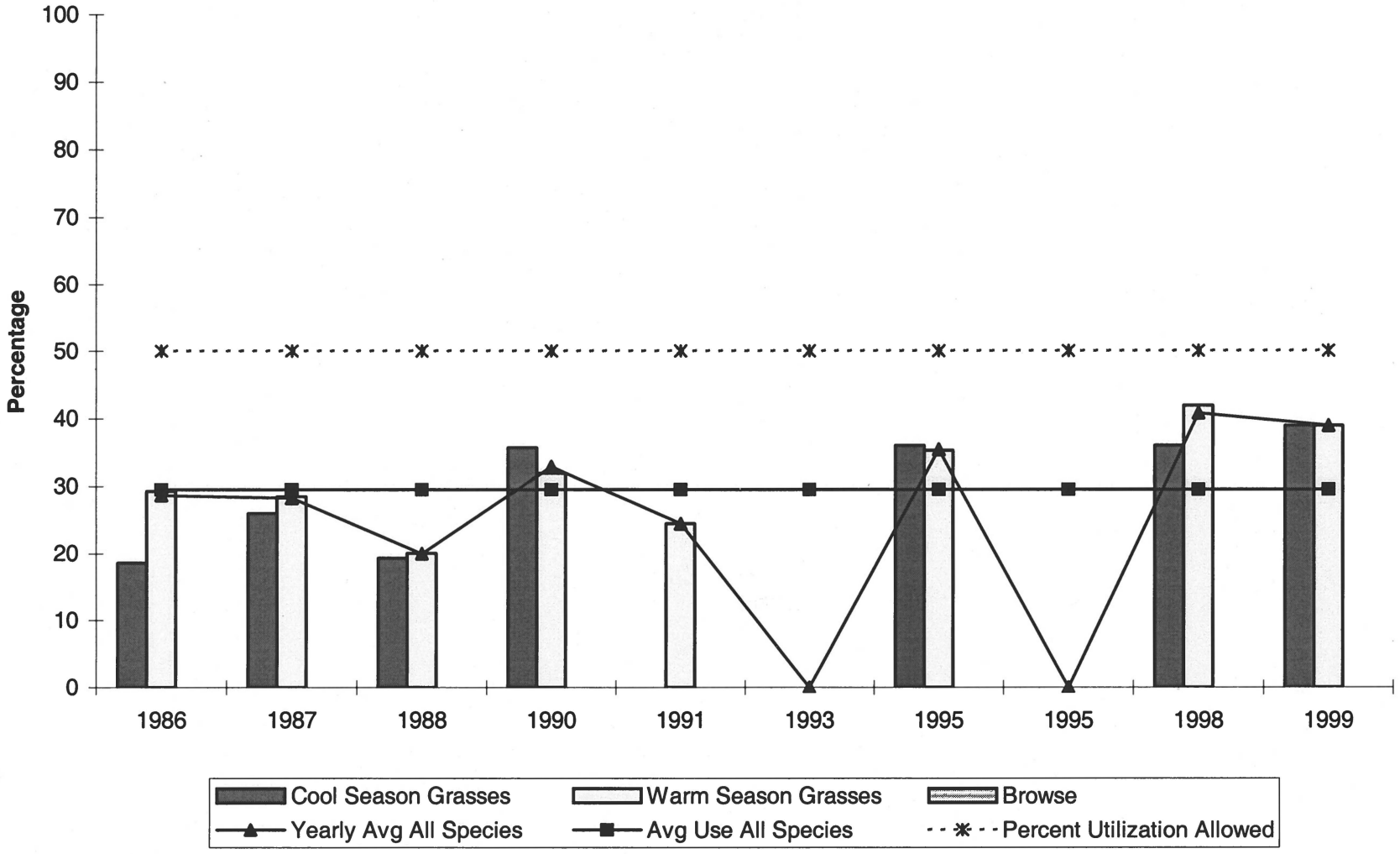
Utilization by Plant Category



ARIZONA STRIP						UTILIZATION STUDY SUMMARY																
ALLOTMENT = TUWEEP					PASTURE = TUWEEP					KEY AREA NUMBER = 7					Page 1						07/10/03
Utilization expressed as a percent use for each species as of the particular year read.																					
Cool Season Grasses																					
	1986	1987	1988	1990	1991	1993	1995	1995	1998	1999											AVG
SIHY	19	26	19	36			36		36	39											32
CSGG																					
AVERAGE	19	26	19	36			36		36	39											32
WARM SEASON GRASSES																					
HIJA	25	32	10	29	20		38		46	41											26
SPCR	47	34	44	32	34		34		41	40											39
BOGR	30	26	9	37	23		35		38	36											26
WSGG																					
AVERAGE	29	29	20	32	24		35		42	39											29
BROWSE																					
SSSS																					
AVERAGE																					
AVG ALL SPEC	29	28	20	33	24		35		41	39											30

Allotment: TUWEEP **Pasture: TUWEEP** **Key Area: 7**

Utilization by Plant Category



PACE FREQUENCY TREND ANALYSIS

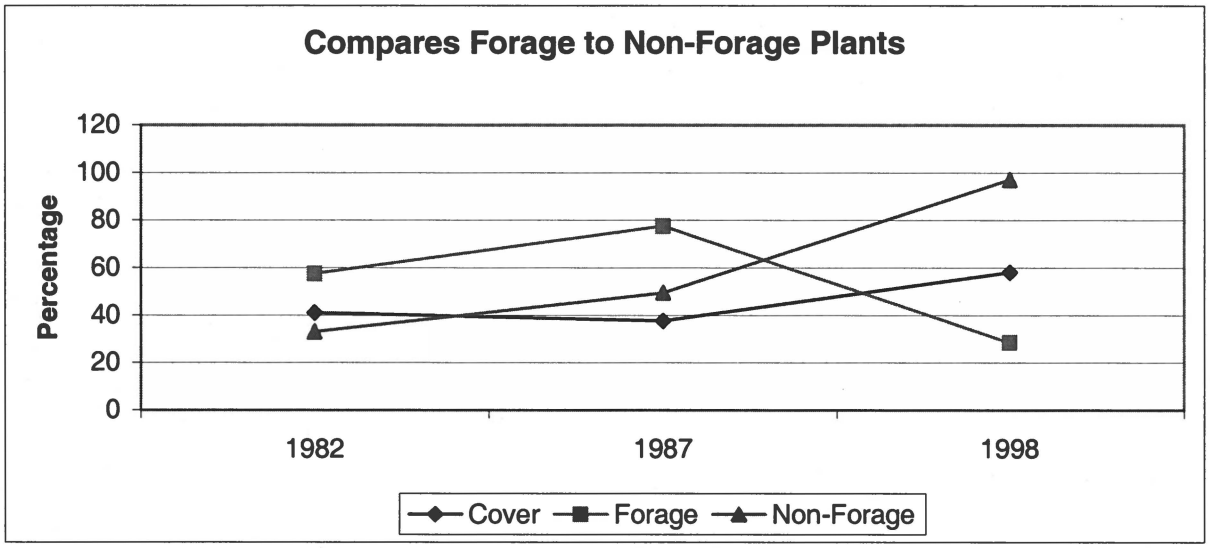
7/10/03		ALLOTMENT: TUWEEP		PASTURE: TUWEEP		KEY AREA 7	PAGE NUMBER 1

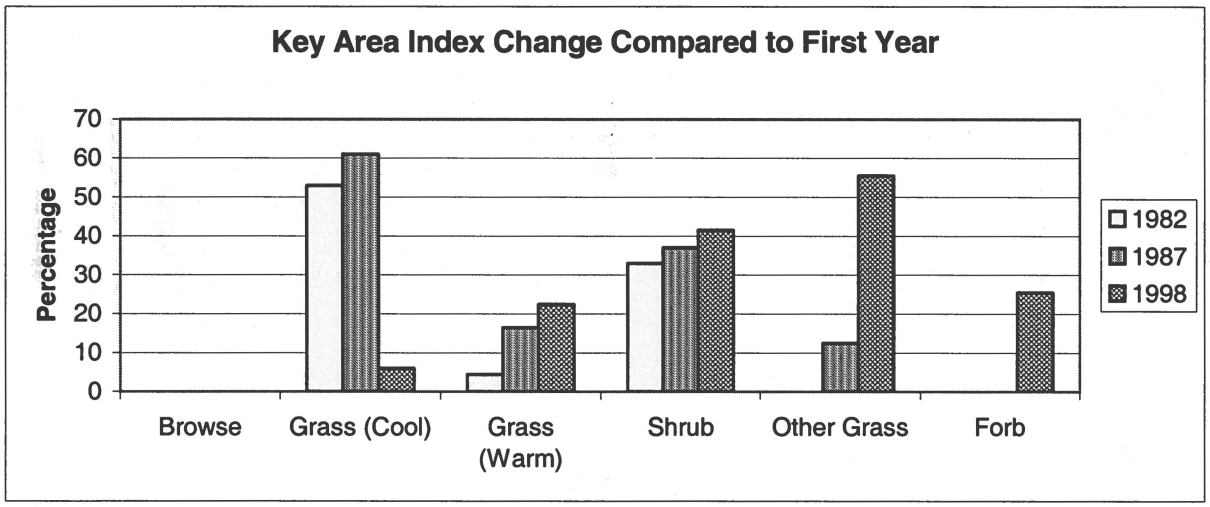
TREND INDEX

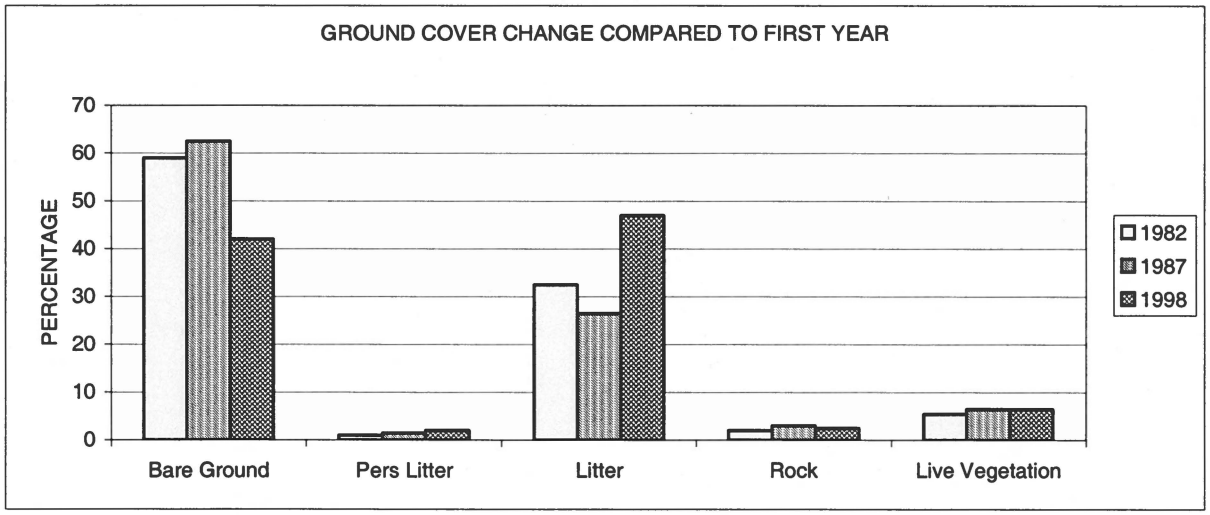
COVER CATEGORIES	YEARS PLOT WERE READ											COMPARES DATA FROM THE YEAR READ BACK TO BASE YEAR TO DETERMINE INDEX (a significant change is more than 10%) BASE YEAR = 1982									
	1982	1987	1998	2001	2004	2007	2010	2013	2016	2019	2022	1987	1998	2001	2004	2007	2010	2013	2016	2019	2022
Bare Ground	59	63	42									6	-29								
Pers Litter	1	2	2									50	100								
Litter	33	27	47									-18	45								
Rock	2	3	3									50	25								
Live Vegetation	6	7	7									18	18								
% Ground Cover	41	38	58									-9	41								
BROWSE																					
OTHER BROWS																					
TOTALS																					
DESIRABLE GRASSES																					
Cool Season																					
SIHY		4	6									800	1200								
STIPA	53	57										8									
Other Cool Season Grass																					
TOTALS	53	61	6									15	-89								
Warm Season																					
HIJA	2	2	2																		
SPCR	2	4	16									100	675								
BOGR	1	11	4									1000	300								
MUPU2			2										300								
Other Warm Season Grass																					
TOTALS	5	17	23									267	400								

7/10/03	ALLOTMENT TUWEEP						PASTURE TUWEEP					KEY AREA 7									
												TREND INDEX									
												COMPARES DATA FROM THE YEAR READ BACK TO BASE YEAR TO DETERMINE INDEX									
COVER	YEARS PLOT WERE READ											(a significant change is more than 10%) BASE YEAR = 1982									
CATEGORIES	1982	1987	1998	2001	2004	2007	2010	2013	2016	2019	2022	1987	1998	2001	2004	2007	2010	2013	2016	2019	2022
OTHER SHRUBS																					
GUSA2	2	1	1									-67	-33								
ARTR2	32	37	38									16	21								
OPUNT			2										400								
LYAN			1										100								
OTHERSHRUB																					
TOTALS	33	37	42									12	26								
OTHER GRASSES																					
SCBR			56										11100								
PPGG		13										2500									
TOTALS		13	56									2500	11100								
FORBS																					
SAKA			21										4100								
SPHAE			1										100								
AAFF			3										500								
AAGG			2										400								
PPFF																					
TOTALS			26										5100								

Allotment: TUWEEP **Pasture: TUWEEP** **Key Area: 7**



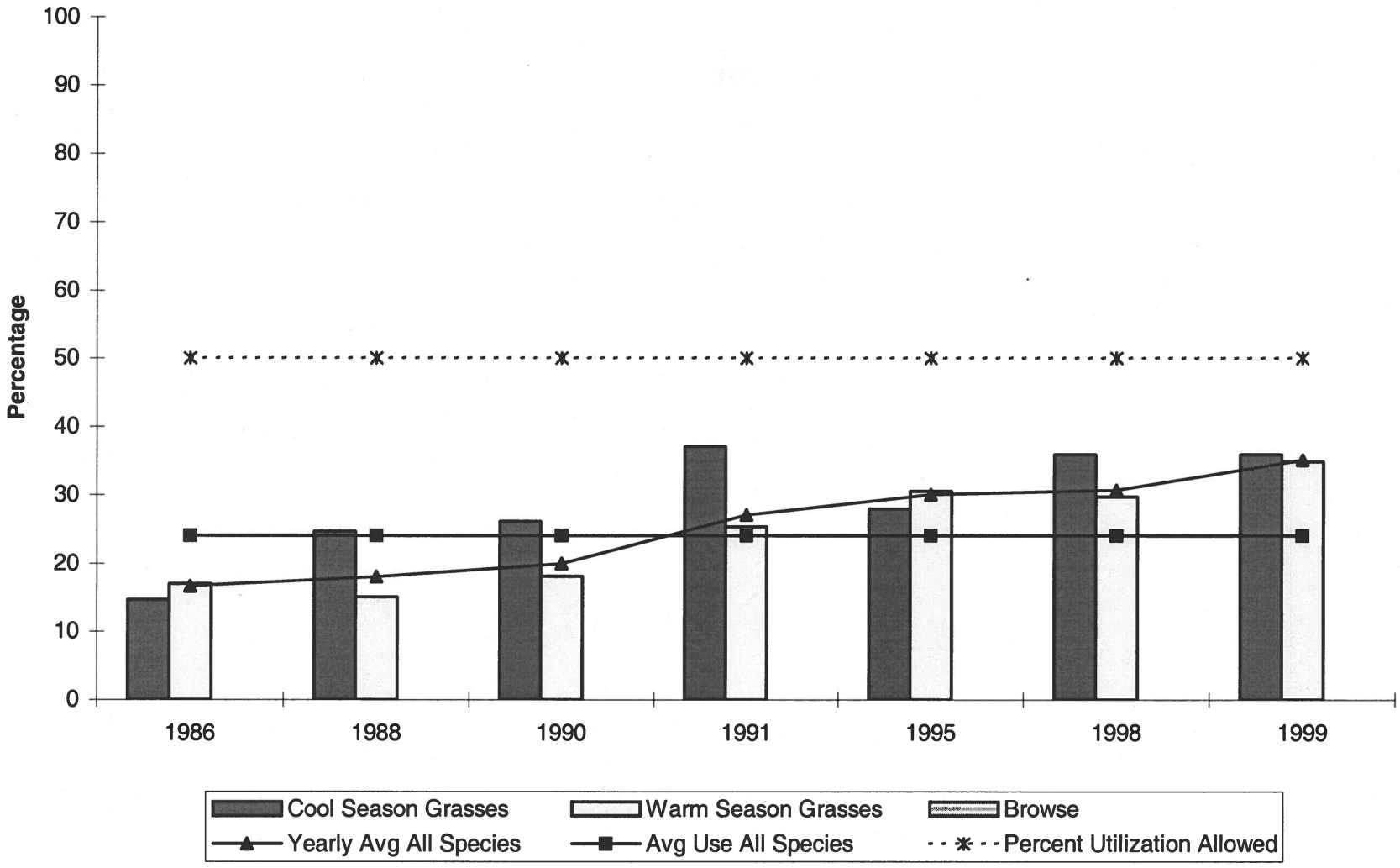




ARIZONA STRIP					UTILIZATION STUDY SUMMARY																	
ALLOTMENT = TUWEEP					PASTURE = TUWEEP					KEY AREA NUMBER = 8					Page 1							07/10/03
Utilization expressed as a percent use for each species as of the particular year read.																						
Cool Season Grasses																						
	1986	1988	1990	1991	1995	1998	1999															AVG
SIHY	15	25	26	37	28	36	36															28
CSGG																						
AVERAGE	15	25	26	37	28	36	36															28
WARM SEASON GRASSES																						
HIJA	17	18	17	26	29	27	35															23
BOGR		11	19	25	32	27	32															23
BOER	17	17	20			37	38															25
WSGG																						
AVERAGE	17	15	18	25	31	30	35															23
BROWSE																						
SSSS																						
AVERAGE																						
AVG ALL SPEC	17	18	20	27	30	31	35															24

Allotment: TUWEEP **Pasture: TUWEEP** **Key Area: 8**

Utilization by Plant Category



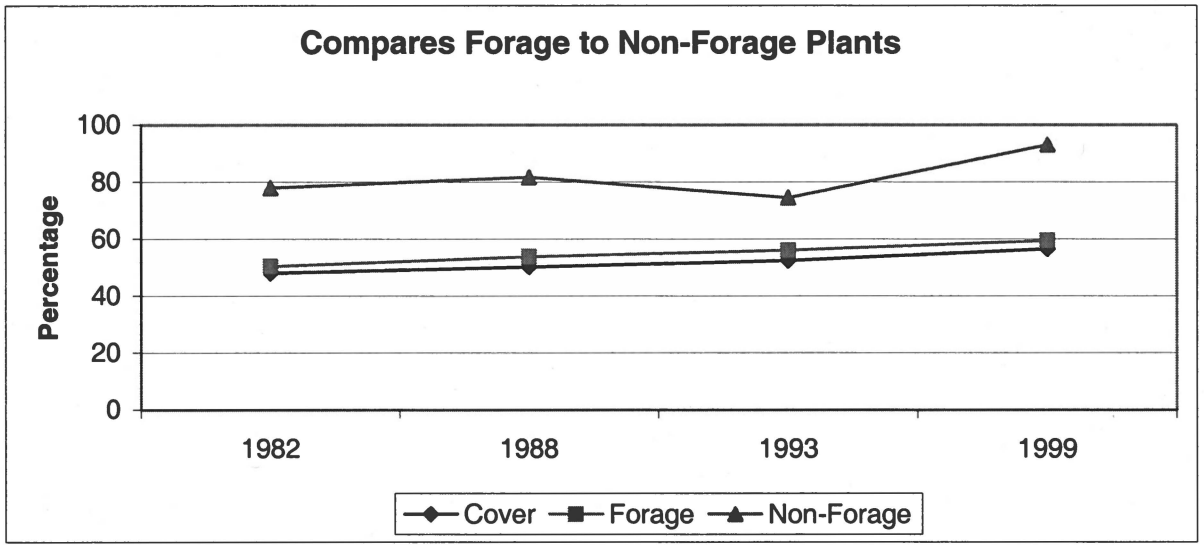
PACE FREQUENCY TREND ANALYSIS

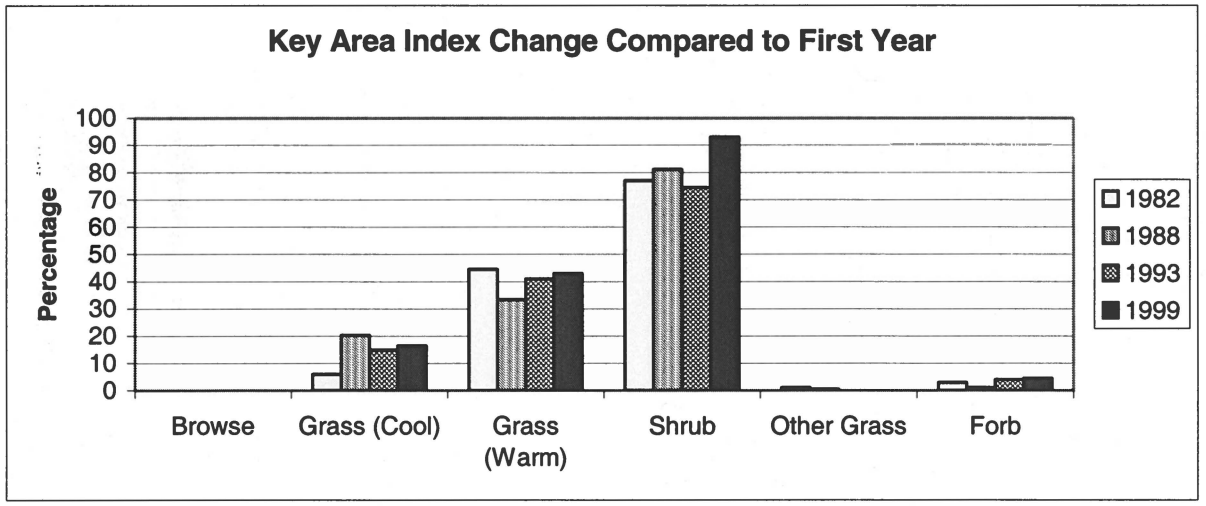
7/10/03		ALLOTMENT: TUWEEP		PASTURE: TUWEEP		KEY AREA 8	PAGE NUMBER 1

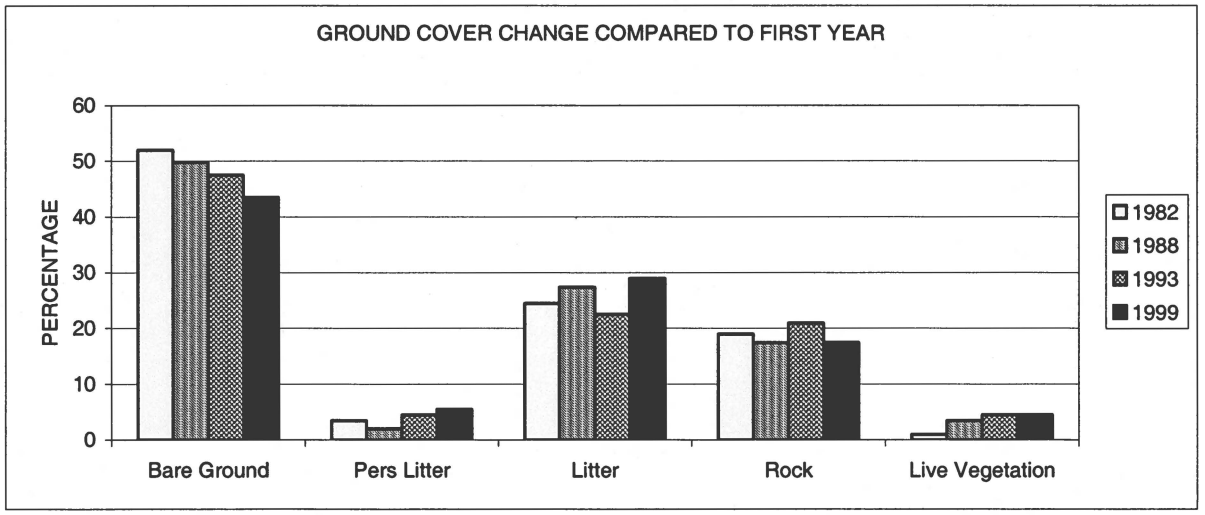
COVER CATEGORIES	YEARS PLOT WERE READ											TREND INDEX COMPARES DATA FROM THE YEAR READ BACK TO BASE YEAR TO DETERMINE INDEX (a significant change is more than 10%) BASE YEAR = 1982									
	1982	1988	1993	1999	2002	2005	2008	2011	2014	2017	2020	1988	1993	1999	2002	2005	2008	2011	2014	2017	2020
Bare Ground	52	50	48	44								-4	-9	-16							
Pers Litter	4	2	5	6								-43	29	57							
Litter	25	27	23	29								12	-8	18							
Rock	19	17	21	18								-8	11	-8							
Live Vegetation	1	3	5	5								248	350	350							
% Ground Cover	48	50	53	57								5	9	18							
BROWSE																					
OTHER BROWS																					
TOTALS																					
DESIRABLE GRASSES																					
Cool Season																					
ORHY			1	1									200	200							
SIHY	6	20	14	16								240	133	158							
Other Cool Season Grass																					
TOTALS	6	20	15	17								240	150	175							
Warm Season																					
HIJA	22	15	14	15								-31	-35	-30							
SPCR	1		1	1									100	100							
BOGR	20	18	25	26								-10	25	30							
BOER	3	0	1	1								-80	-60	-60							
Other Warm Season Grass																					
TOTALS	45	33	41	43								-25	-8	-3							

7/10/03	ALLOTMENT TUWEEP						PASTURE TUWEEP					KEY AREA 8									
												TREND INDEX									
												COMPARES DATA FROM THE YEAR READ BACK TO BASE YEAR TO DETERMINE INDEX									
COVER	YEARS PLOT WERE READ											(a significant change is more than 10%) BASE YEAR = 1982									
CATEGORIES	1982	1988	1993	1999	2002	2005	2008	2011	2014	2017	2020	1988	1993	1999	2002	2005	2008	2011	2014	2017	2020
OTHER SHRUBS																					
GUSA2	29	31	22	30								10	-25	5							
CHVI8				1										100							
ARTR2	47	49	51	60								4	9	28							
OPUNT	1			1																	
YUCCA		0	1	1								100	100	100							
JUOS	1		1																		
EPVI		0										100									
OTHERSHRUB			1	1									200	200							
TOTALS	77	81	75	93								5	-3	21							
OTHER GRASSES																					
ARLO		0										100									
PPGG	1																				
TOTALS	1	0										-50									
FORBS																					
SAKA			1	1									100	100							
SPHAE	3	1	3	2								-67		-50							
AAFF			1	2									100	300							
AAGG																					
PPFF																					
SPURGE				1										200							
TOTALS	3	1	4	5								-67	33	50							

Allotment: TUWEEP **Pasture: TUWEEP** **Key Area: 8**

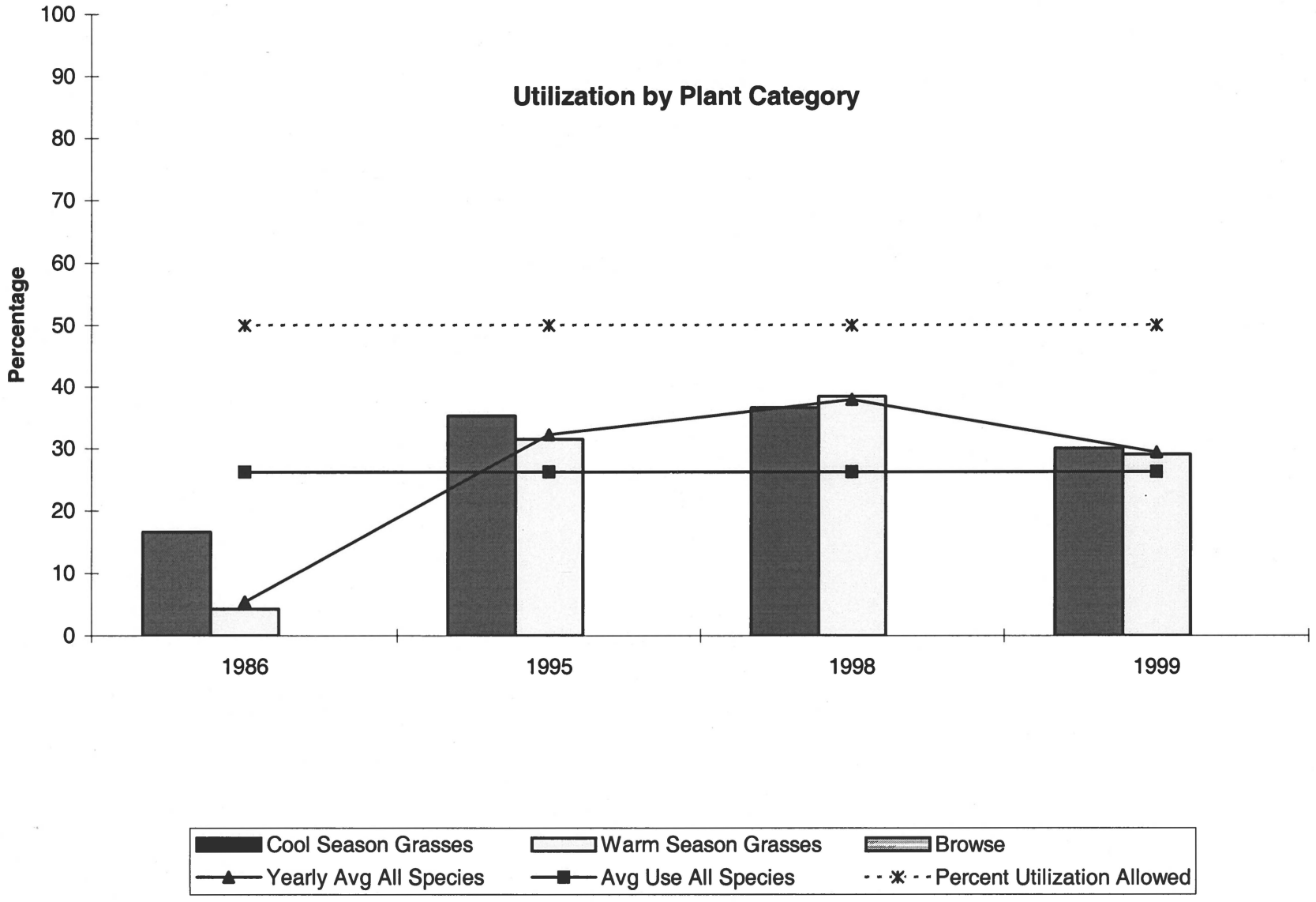






ARIZONA STRIP					UTILIZATION STUDY SUMMARY																
ALLOTMENT = TUWEEP					PASTURE = LITTLE TUWEEP				KEY AREA NUMBER = 9				Page 1								07/10/03
Utilization expressed as a percent use for each species as of the particular year read.																					
Cool Season Grasses																					
	1986	1995	1998	1999																	AVG
SIHY	17	35	37	30																	32
CSGG																					
AVERAGE	17	35	37	30																	32
WARM SEASON GRASSES																					
HIJA	13	28	42	32																	32
SPCR		38																			38
BOGR	3	32	35	26																	19
WSGG																					
AVERAGE	4	32	39	29																	25
BROWSE																					
SSSS																					
AVERAGE																					
AVG ALL SPEC	5	32	38	29																	26

Allotment: TUWEEP **Pasture: LITTLE TUWEEP** **Key Area: 9**

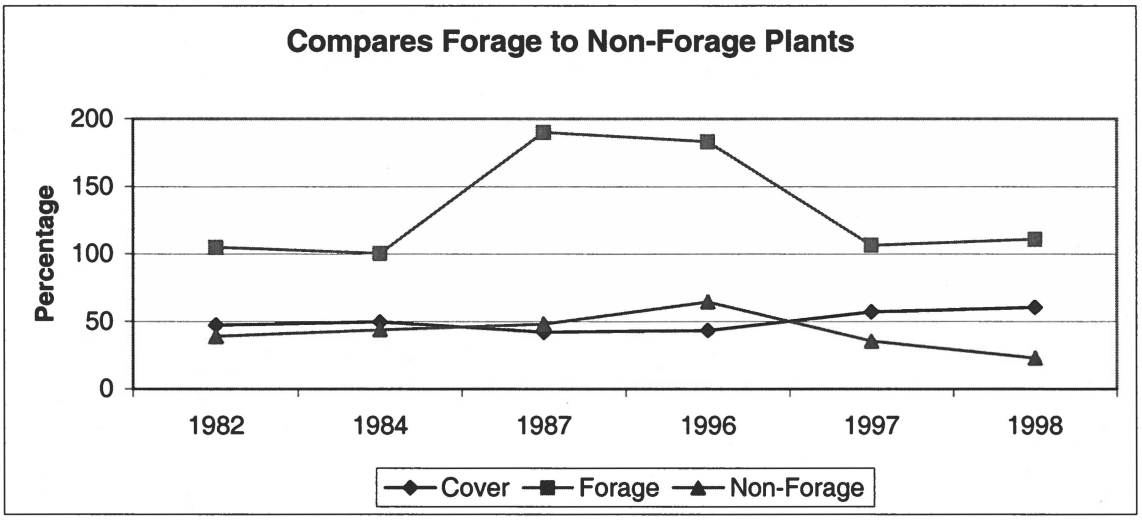


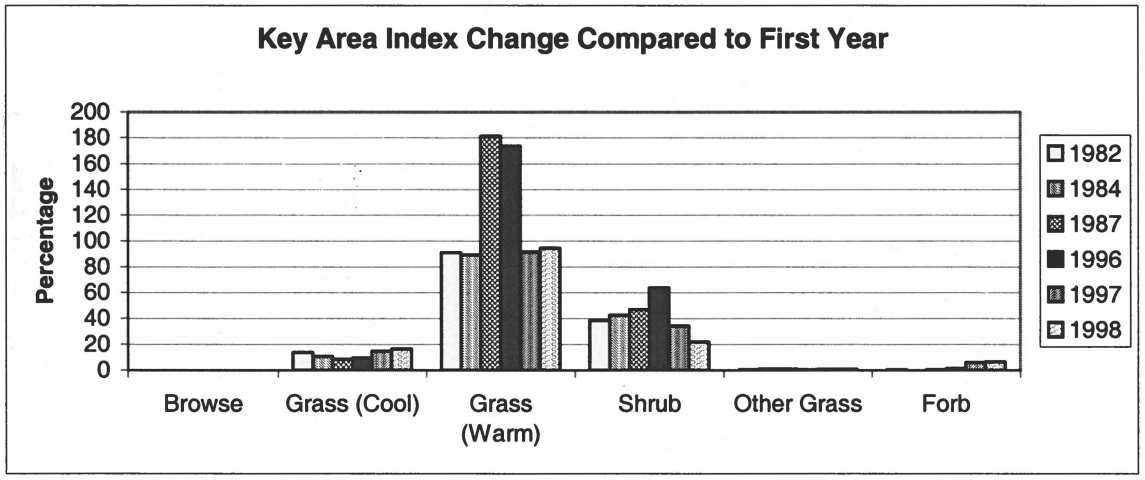
PACE FREQUENCY TREND ANALYSIS

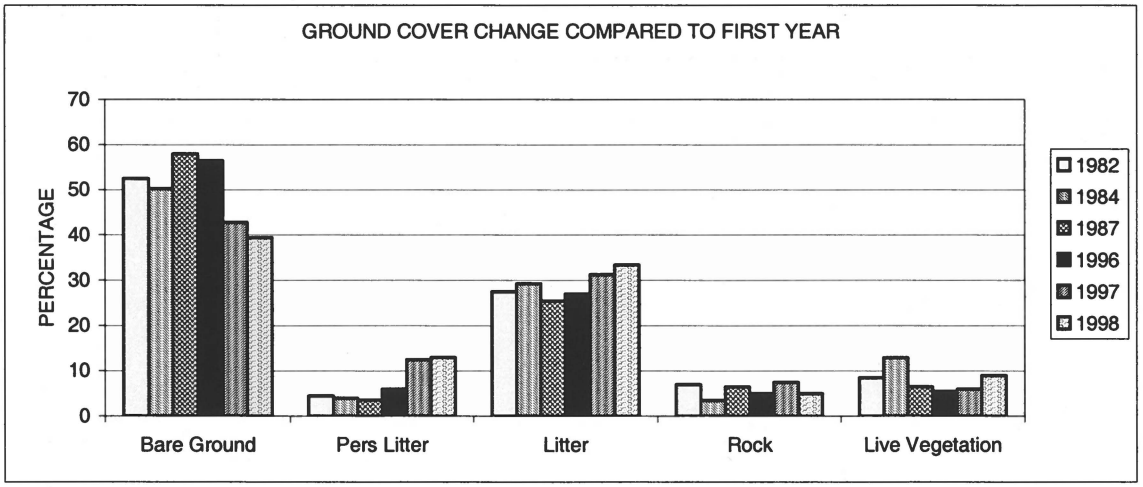
6/2/03		ALLOTMENT: TUWEEP		PASTURE: LITTLE TUWEEP		KEY AREA 9		PAGE NUMBER 1													
												TREND INDEX									
COVER	YEARS PLOT WERE READ											COMPARES DATA FROM THE YEAR READ BACK TO BASE YEAR TO DETERMINE INDEX (a significant change is more than 10%) BASE YEAR = 1982									
CATEGORIES	1982	1984	1987	1996	1997	1998	2001	2004	2007	2010	2013	1984	1987	1996	1997	1998	2001	2004	2007	2010	2013
Bare Ground	53	50	58	57	43	40						-4	10	8	-19	-25					
Pers Litter	5	4	4	6	12	13						-12	-22	33	176	189					
Litter	28	29	26	27	31	34						7	-7	-2	14	22					
Rock	7	3	7	5	7	5						-50	-7	-29	7	-29					
Live Vegetation	9	13	7	6	6	9						52	-24	-35	-30	6					
% Ground Cover	48	50	42	44	57	61						5	-12	-8	20	27					
BROWSE																					
OTHER BROWS																					
TOTALS																					
DESIRABLE GRASSES																					
Cool Season																					
ORHY		1										199									
SIHY	14	10	9	10	15	17						-29	-39	-32	7	18					
Other Cool Season Grass																					
TOTALS	14	11	9	10	15	17						-22	-39	-32	7	18					
Warm Season																					
HIJA	13	11	14	10	7	7						-16	8	-23	-43	-46					
SPCR	3		1	1	0	3							-60	-60	-80	20					
BOGR	76	79	74	93	84	85						4	-2	23	11	12					
BOER			93	70									18500	14000							
Other Warm Season Grass																					
TOTALS	91	90	182	174	92	95						-2	99	91	1	4					

6/2/03	ALLOTMENT TUWEEP						PASTURE LITTLE TUWEEP					KEY AREA 9									
												TREND INDEX									
												COMPARES DATA FROM THE YEAR READ BACK TO BASE YEAR TO DETERMINE INDEX									
COVER	YEARS PLOT WERE READ											(a significant change is more than 10%) BASE YEAR = 1982									
CATEGORIES	1982	1984	1987	1996	1997	1998	2001	2004	2007	2010	2013	1984	1987	1996	1997	1998	2001	2004	2007	2010	2013
OTHER SHRUBS																					
GUSA2	1	3	2	3	2	1						199	100	150	99						
ARTR2	37	39	43	60	30	19						8	18	64	-18	-48					
OPUNT			1	1	0								200	100	100						
JUOS		0	1	1	1	2						100	100	200	299	300					
PIED	1		1		0	1							-50		-50	-50					
OTHERSHRUB																					
TOTALS	39	43	47	64	34	22						11	22	66	-11	-43					
OTHER GRASSES																					
ARIST					1	1									199	200					
ARLO	1	1	1	1								99	100								
PPGG																					
TOTALS	1	1	1	1	1	1						99	100		99	100					
FORBS																					
ASTRA				1		1								100		100					
SPHAE	1		1	1	0	1								100	0	100					
AAFF					5	5									1095	1000					
AAGG																					
PPFF																					
TOTALS	1		1	2	6	7								200	1094	1200					

Allotment: TUWEEP **Pasture: LITTLE TUWEEP** **Key Area: 9**

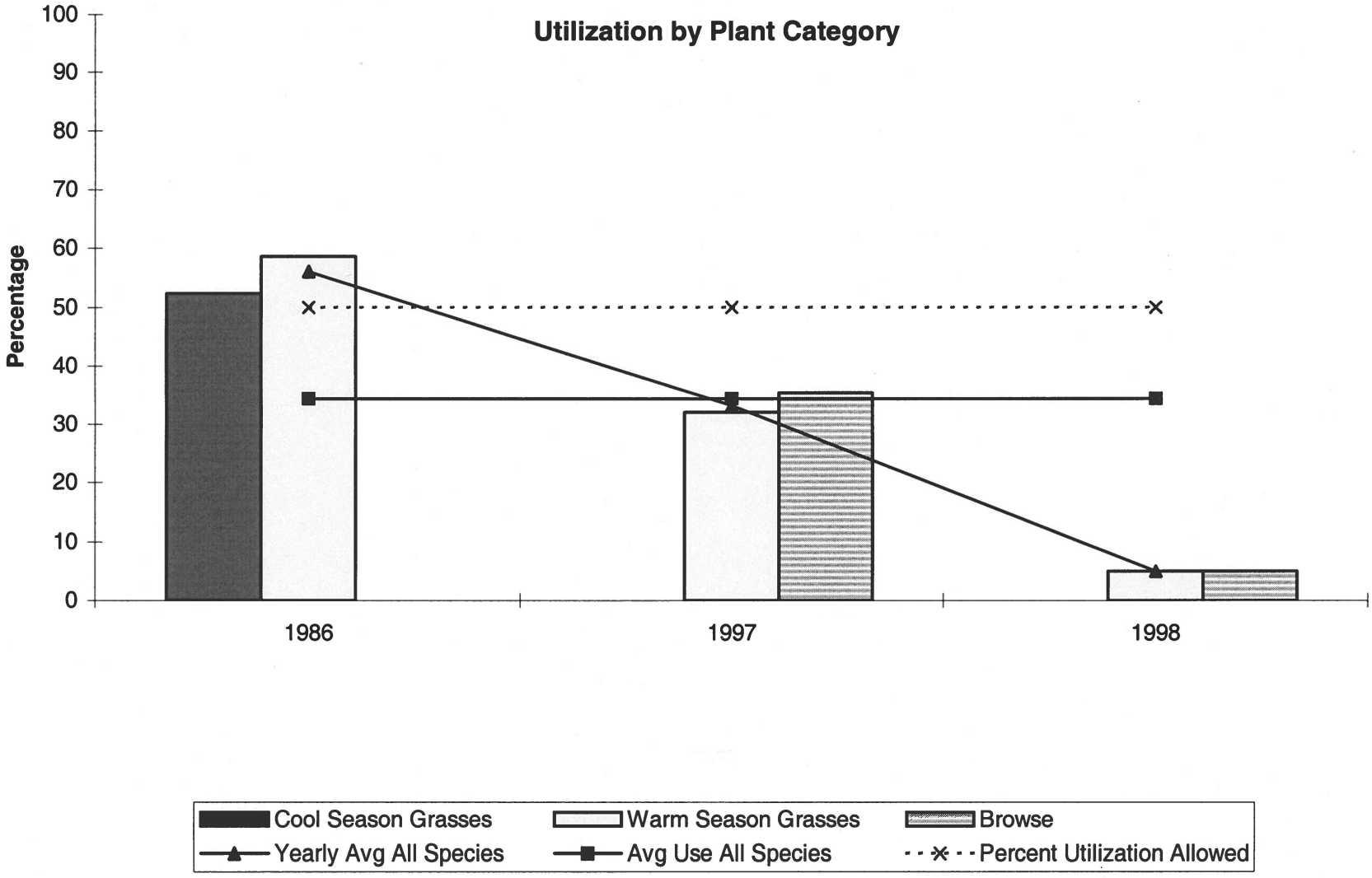






ARIZONA STRIP										UTILIZATION STUDY SUMMARY											
ALLOTMENT = TUWEEP				PASTURE = EAST TRUMBULL						KEY AREA NUMBER = 10					Page 1						07/10/03
Utilization expressed as a percent use for each species as of the particular year read.																					
Cool Season Grasses																					
	1986	1997	1998																		AVG
SIHY	41																				41
AGCR	56																				56
CSGG																					
AVERAGE	52																				52
WARM SEASON GRASSES																					
BOGR	59	29	5																		41
BOER		35	5																		18
WSGG																					
AVERAGE	59	32	5																		34
BROWSE																					
COME		35	5																		18
SSSS																					
AVERAGE		35	5																		18
AVG ALL SPEC	56	33	5																		34

Allotment: TUWEEP **Pasture: EAST TRUMBULL** **Key Area: 10**

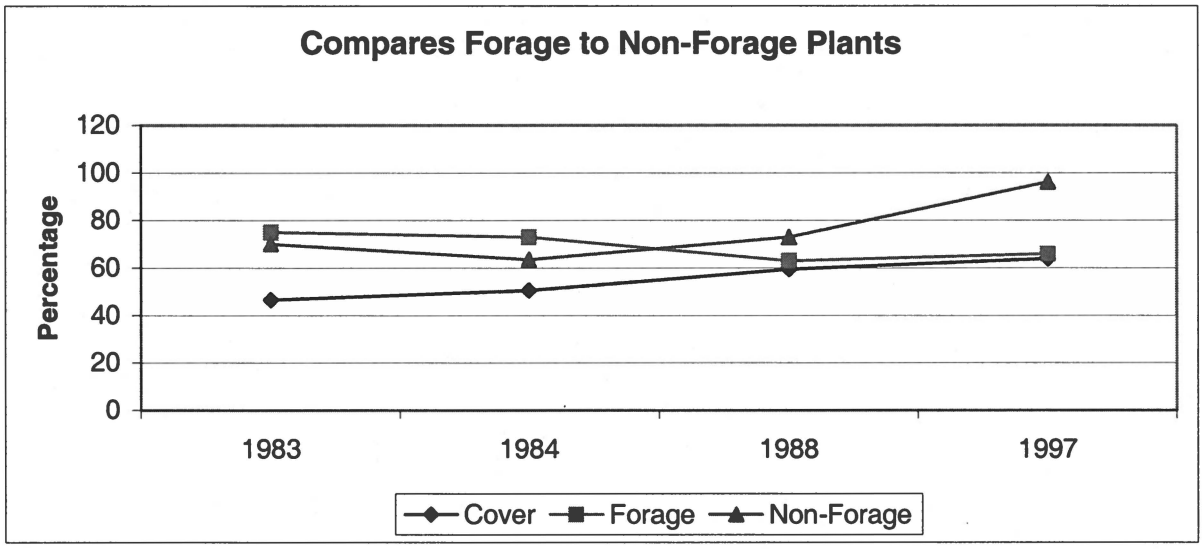


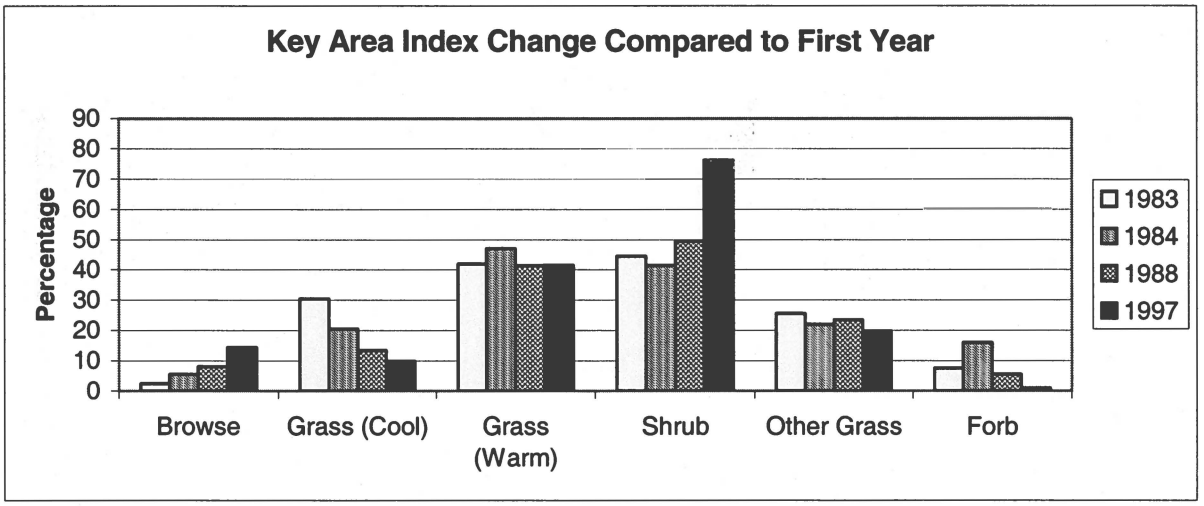
PACE FREQUENCY TREND ANALYSIS

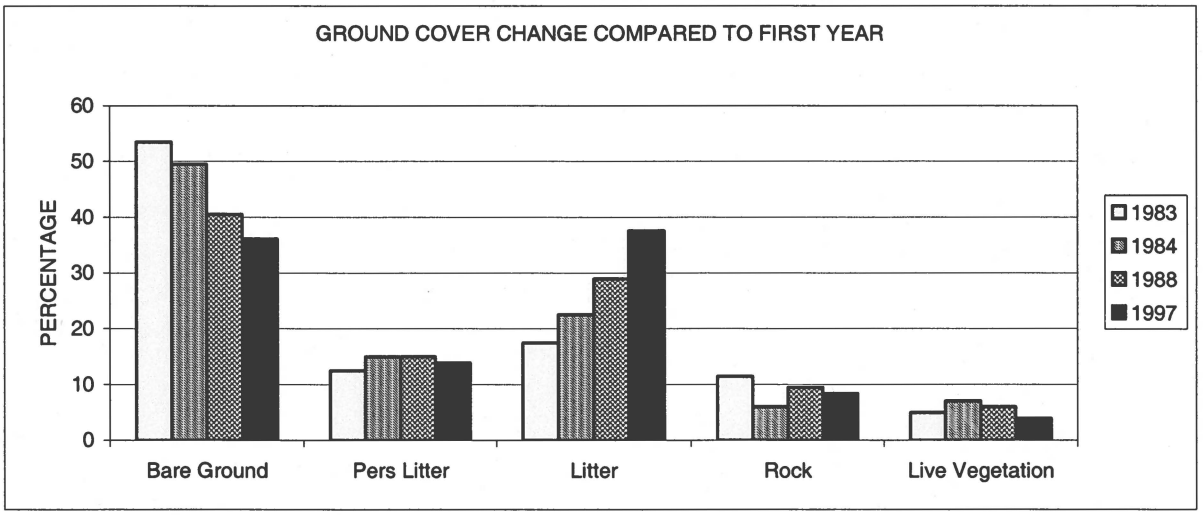
6/2/03		ALLOTMENT: TUWEEP			PASTURE: EAST TRUMBULL				KEY AREA 10			PAGE NUMBER 1									
												TREND INDEX									
COVER	YEARS PLOT WERE READ											COMPARES DATA FROM THE YEAR READ BACK TO BASE YEAR TO DETERMINE INDEX (a significant change is more than 10%) BASE YEAR = 1982									
CATEGORIES	1983	1984	1988	1997	2000	2003	2006	2009	2012	2015	2018	1984	1988	1997	2000	2003	2006	2009	2012	2015	2018
Bare Ground	54	50	41	36								-7	-24	-32							
Pers Litter	13	15	15	14								20	20	11							
Litter	18	23	29	38								29	66	115							
Rock	12	6	10	8								-48	-17	-27							
Live Vegetation	5	7	6	4								40	20	-21							
% Ground Cover	47	51	60	64								9	28	37							
BROWSE																					
EPNE	1	1	1	0								100		-1							
COME	1	4	5	13								300	400	1187							
PUTR	1	1	3	1								-50	150	-1							
OTHER BROWS																					
TOTALS	3	6	8	14								120	220	474							
DESIRABLE GRASSES																					
Cool Season																					
ORHY	1	1		1								100		98							
SIHY	30	20	14	9								-35	-55	-70							
Other Cool Season Grass																					
TOTALS	31	21	14	10								-33	-56	-68							
Warm Season																					
SPCR	2	1										-67									
BOGR	41	47	42	38								15	2	-6							
BOCU				3										693							
Other Warm Season Grass																					
TOTALS	42	47	42	42								12	-1	-1							

6/2/03	ALLOTMENT TUWEEP						PASTURE EAST TRUMBULL						KEY AREA 10								
													TREND INDEX								
													COMPARES DATA FROM THE YEAR READ BACK TO BASE YEAR TO DETERMINE INDEX								
COVER	YEARS PLOT WERE READ												(a significant change is more than 10%) BASE YEAR = 1983								
CATEGORIES	1983	1984	1988	1997	2000	2003	2006	2009	2012	2015	2018		1984	1988	1997	2000	2003	2006	2009	2012	2015	2018
OTHER SHRUBS																						
GUSA2	4	7	6	4									100	57	13							
ARTR2	32	28	35	49									-11	11	56							
OPUNT	1	1		0									-50		-50							
ERIOG_SHRB				2											495							
JUOS	3	1	3	8									-67	-17	181							
PIED	5	5	6	10										22	120							
QUTU	1			2											296							
EPVI	1																					
OTHERSHRUB		1	1										100	200								
TOTALS	45	42	50	76									-7	11	71							
OTHER GRASSES																						
ARIST																						
ARLO	21	19	21	20									-10		-6							
SCBR																						
TRPU																						
TRMU																						
PPGG	5	3	3										-33	-44								
TOTALS	26	22	24	20									-14	-8	-22							
FORBS																						
SPHAE	6	13	1	0									117	-83	-92							
AAFF																						
AAGG																						
ERIOG	2	3	5	0									100	200	-67							
TOTALS	8	16	6	1									113	-27	-87							

Allotment: TUWEEP **Pasture: EAST TRUMBULL** **Key Area: 10**

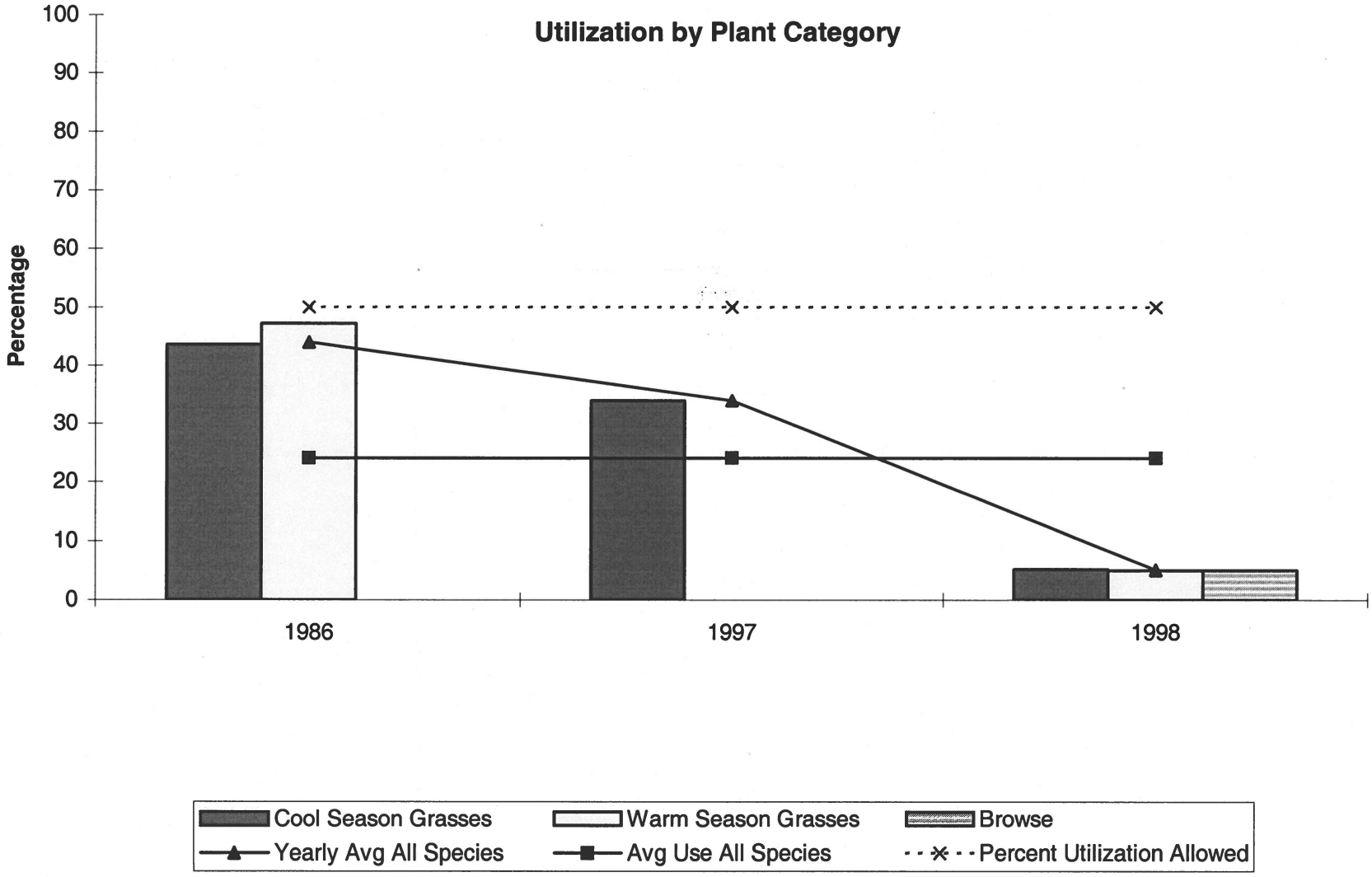






ARIZONA STRIP			UTILIZATION STUDY SUMMARY																			
ALLOTMENT = TUWEEP				PASTURE = EAST TRUMBULL				KEY AREA NUMBER = 12				Page 1										07/10/03
Utilization expressed as a percent use for each species as of the particular year read.																						
Cool Season Grasses																						
	1986	1997	1998																			AVG
ORHY		22	6																			14
SIHY	39	33	5																			26
AGCR		39	5																			20
AGROPY	44																					44
ELJU	50																					50
CSGG																						
AVERAGE	44	34	5																			31
WARM SEASON GRASSES																						
SPCR	47																					47
BOGR			5																			5
BOER			5																			5
WSGG																						
AVERAGE	47		5																			11
BROWSE																						
COME			5																			5
SSSS																						
AVERAGE			5																			5
AVG ALL SPEC	44	34	5																			24

Allotment: TUWEEP **Pasture: EAST TRUMBULL** **Key Area: 12**



PACE FREQUENCY TREND ANALYSIS

7/10/03		ALLOTMENT: TUWEEP		PASTURE: EAST TRUMBULL	KEY AREA 12	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									
	1982	1984	1988	1997	2000	2003	2006	2009	2012	2015	2018	1984	1988	1997	2000	2003	2006	2009	2012	2015	2018
Bare Ground	33	44	36	39								35	11	21							
Pers Litter	13	13	14	9									10	-27							
Litter	31	22	26	30								-28	-14	0							
Rock	21	18	19	17								-17	-9	-17							
Live Vegetation	3	4	4	3								17	48	16							
% Ground Cover	68	56	64	61								-17	-5	-10							
BROWSE																					
EPNE				1										199							
COME	5	3	3	8								-40	-31	69							
PUTR			0	1									99	199							
OTHER BROWS																					
TOTALS	5	3	4	10								-40	-21	109							
DESIRABLE GRASSES																					
Cool Season																					
ORHY			0	1									99	199							
SIHY	4	1	13	8								-71	266	127							
AGCR				17										3383							
Other Cool Season Grass																					
TOTALS	4	1	13	26								-71	280	639							
Warm Season																					
SPCR	2	3	7	1								25	269	-50							
BOGR		1	1	0								100	197	100							
Other Warm Season Grass																					
TOTALS	2	3	8	1								50	319	-25							

PACE FREQUENCY TREND ANALYSIS CONTINUED PAGE NUMBER 2

7/10/03 ALLOTMENT TUWEEP PASTURE EAST TRUMBULL KEY AREA 12

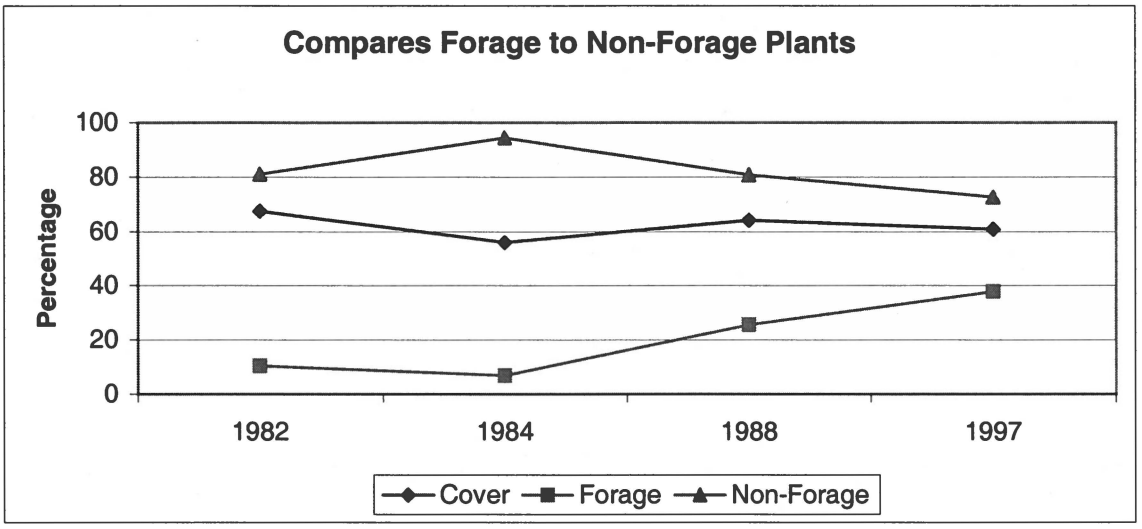
TREND INDEX

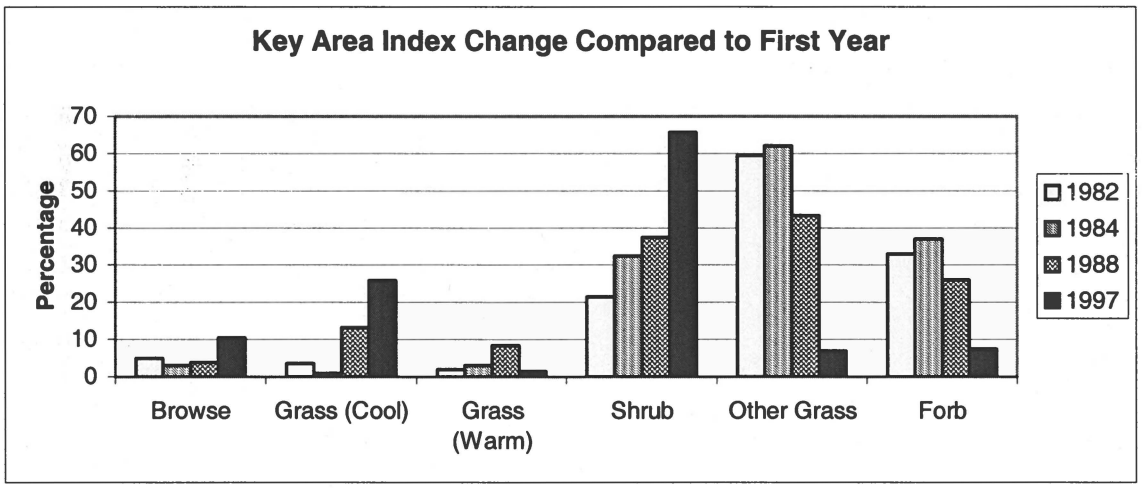
COMPARES DATA FROM THE YEAR READ BACK TO BASE YEAR TO DETERMINE INDEX

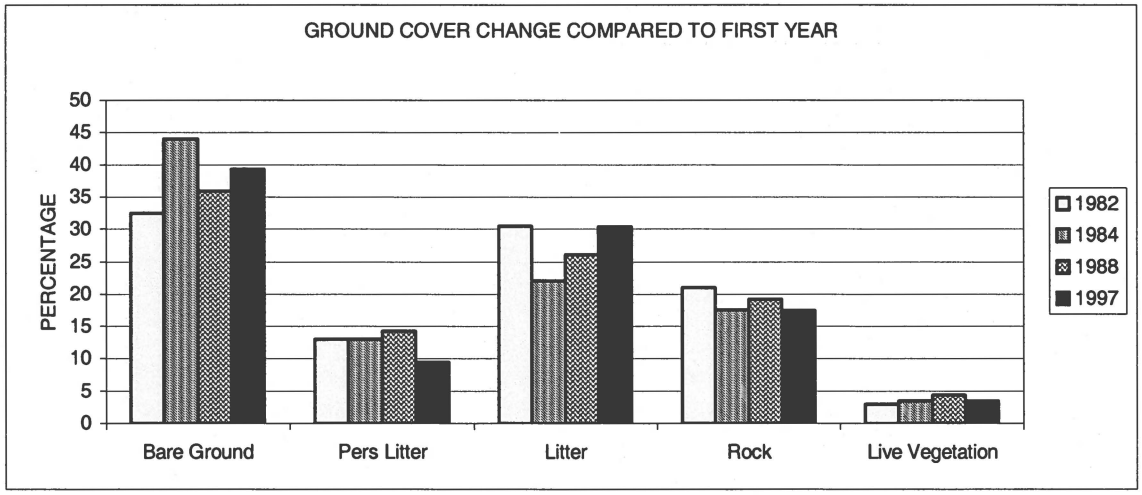
(a significant change is more than 10%) BASE YEAR = 1982

COVER	YEARS PLOT WERE READ											TREND INDEX									
CATEGORIES	1982	1984	1988	1997	2000	2003	2006	2009	2012	2015	2018	1984	1988	1997	2000	2003	2006	2009	2012	2015	2018
OTHER SHRUBS																					
GUSA2	1	1	1	2									196	398							
ARTR2	18	27	29	51								54	63	193							
OPUNT			0	0									99	100							
YUCCA				2										498							
JUOS				1										299							
PIED	2	1	2	3								-33	64	99							
QUTU	2	4	4	4								100	122	124							
OTHERSHRUB																					
TOTALS	22	33	37	66								51	74	205							
OTHER GRASSES																					
ARLO	3	4	5	7								60	117	179							
PPGG	57	58	38									2	-33								
TOTALS	60	62	43	7								4	-27	-88							
FORBS																					
SPHAE	5	12	0	2								156	-89	-45							
AAFF																					
AAGG				2										398							
PENST	29	26	26	1								-11	-10	-97							
MUSTARD				2										398							
PPFF																					
TOTALS	33	37	26	7								12	-21	-77							

Allotment: TUWEEP **Pasture: EAST TRUMBULL** **Key Area: 12**



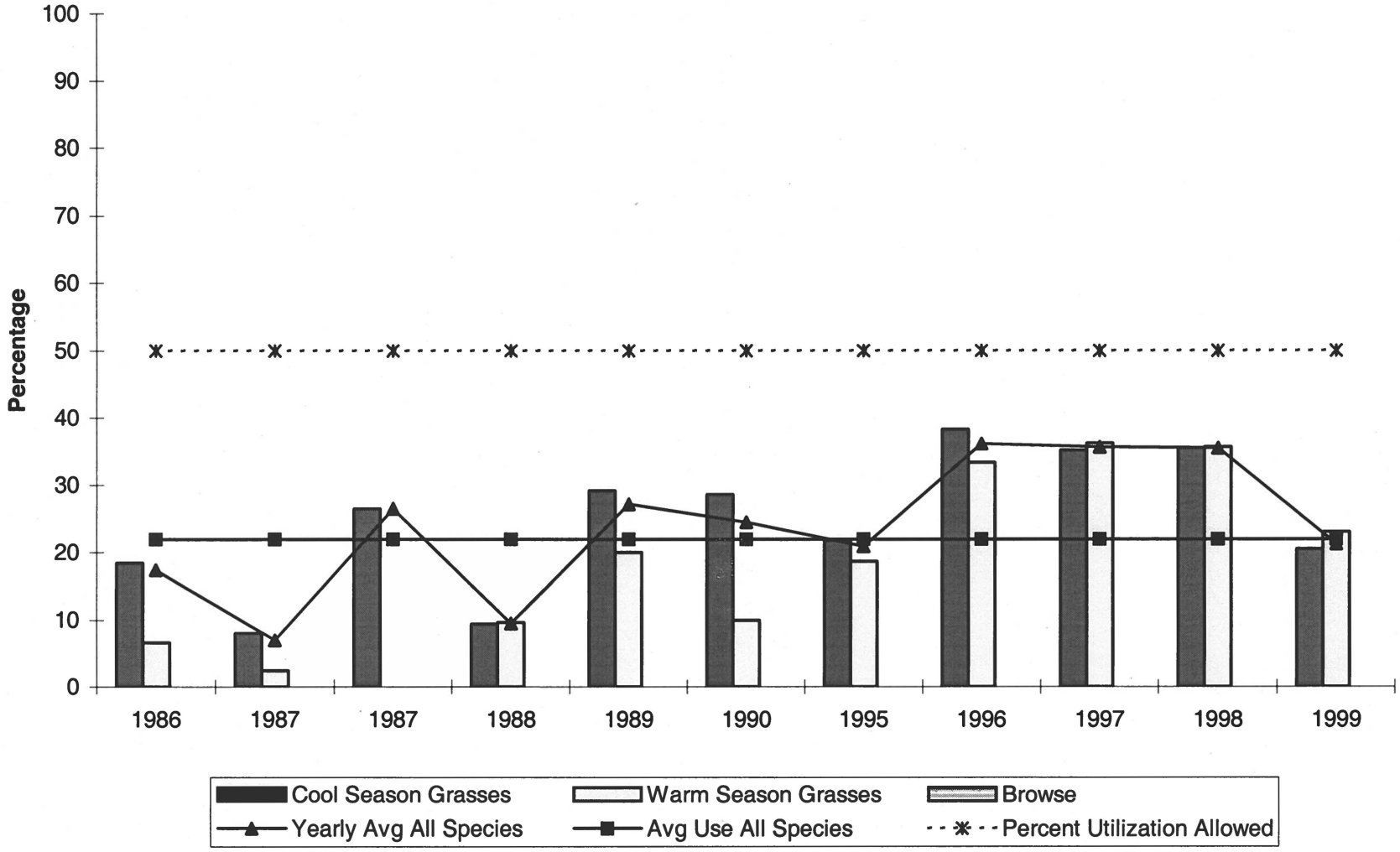




ARIZONA STRIP					UTILIZATION STUDY SUMMARY																	
ALLOTMENT = TUWEEP					PASTURE = PONDEROSA						KEY AREA NUMBER = 13				Page 1							07/10/03
Utilization expressed as a percent use for each species as of the particular year read.																						
Cool Season Grasses																						
	1986	1987	1987	1988	1989	1990	1995	1996	1997	1998	1999											AVG
SIHY	19	11		7	25	22	19	36	36	33	18											21
AGCR								42	34	39												38
AGROPY	19	7	26	16	37	30	25															21
POSE	16	3	27	6	28						26											20
CSGG																						
AVERAGE	18	8	26	9	29	29	22	38	35	35	20											22
WARM SEASON GRASSES																						
SPCR								39	41	36	26											36
BOGR	7	2		10	20	10	19	32	34	35	20											18
WSGG																						
AVERAGE	7	2		10	20	10	19	33	36	36	23											22
BROWSE																						
SSSS																						
AVERAGE																						
AVG ALL SPEC	17	7	26	9	27	24	21	36	36	36	21											22

Allotment: TUWEEP **Pasture: PONDEROSA** **Key Area: 13**

Utilization by Plant Category



PACE FREQUENCY TREND ANALYSIS

7/10/03		ALLOTMENT: TUWEEP		PASTURE: PONDEROSA		KEY AREA 13	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									
	1982	1988	1991	1996	1999	2002	2005	2008	2011	2014	2017	1988	1991	1996	1999	2002	2005	2008	2011	2014	2017
Bare Ground	11	17	9	10								57	-14	-4							
Pers Litter	13	4	8	8								-68	-36	-36							
Litter	69	68	70	71								-1	1	3							
Rock	7	9	11	9								29	57	22							
Live Vegetation	1	3	3	3								150	150	151							
% Ground Cover	90	84	91	90								-7	2	1							
BROWSE																					
OTHER BROWS																					
TOTALS																					
DESIRABLE GRASSES																					
Cool Season																					
SIHY	12	25	21	21								104	75	72							
SEEDED		1										100									
Other Cool Season Grass																					
TOTALS	12	25	21	21								108	75	72							
Warm Season																					
SPCR	1	1																			
BOGR	1	1	1	1								-50		-50							
Other Warm Season Grass																					
TOTALS	2	1	1	1								-33	-33	-66							

PACE FREQUENCY TREND ANALYSIS CONTINUED PAGE NUMBER 2

7/10/03 ALLOTMENT TUWEEP PASTURE PONDEROSA KEY AREA 13

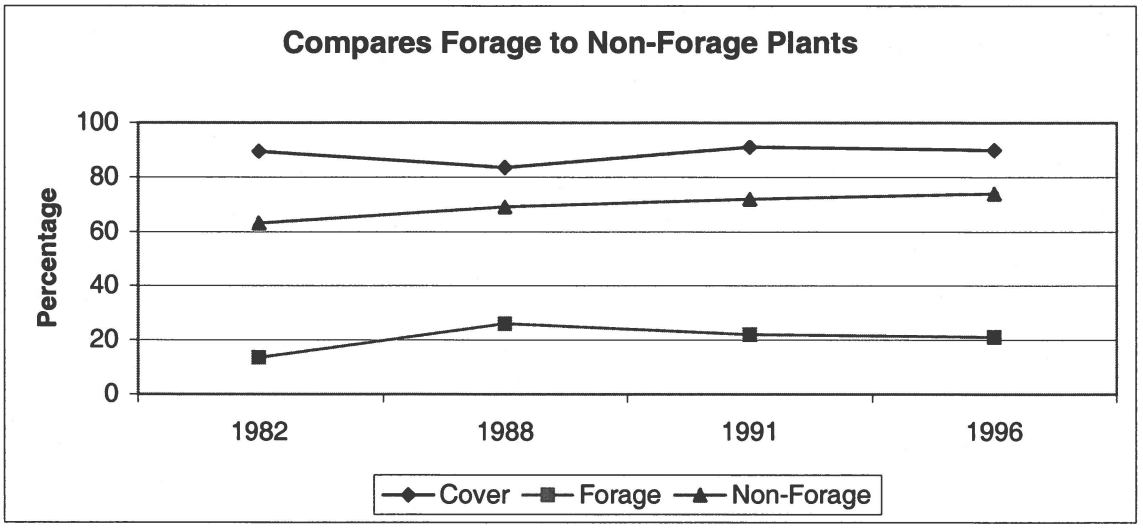
TREND INDEX

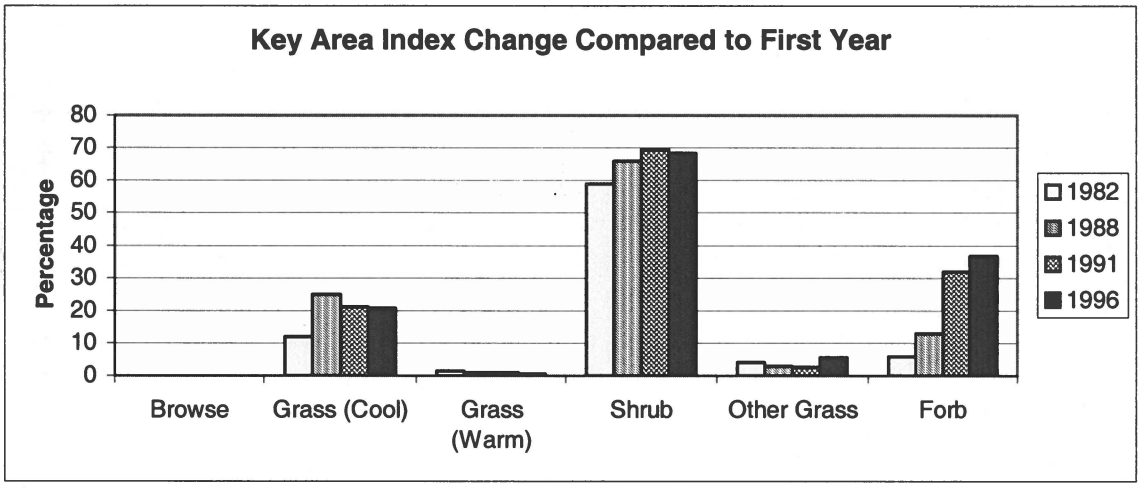
COMPARES DATA FROM THE YEAR READ BACK TO BASE YEAR TO DETERMINE INDEX

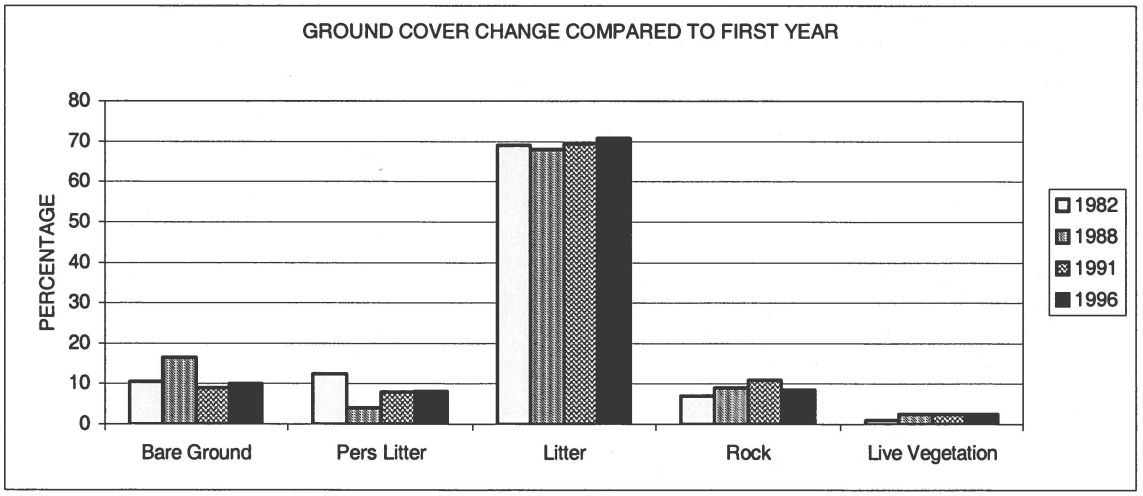
(a significant change is more than 10%) BASE YEAR = 1982

COVER	YEARS PLOT WERE READ											TREND INDEX									
CATEGORIES	1982	1988	1991	1996	1999	2002	2005	2008	2011	2014	2017	1988	1991	1996	1999	2002	2005	2008	2011	2014	2017
OTHER SHRUBS																					
GUSA2				1										101							
ARTR2	27	28	25	23								4	-9	-16							
JUOS			1	1									100	101							
PIED	31	34	42	1								11	36	-98							
RHTR			1										100								
QUTU	2	4	2	1								167	33	-66							
OTHERSHRUB			1	44									100	8744							
TOTALS	59	66	70	68								12	18	16							
OTHER GRASSES																					
PPGG	4	3	3	6								-25	-38	38							
TOTALS	4	3	3	6								-25	-38	38							
FORBS																					
ASTRA				1										101							
AAFF			8	16									1500	3116							
AAGG																					
ERIOG			8	5									1500	905							
ERIGERON		4	2	5								800	400	1005							
PPFF	6	9	15	11								50	150	84							
TOTALS	6	13	32	37								117	433	511							

Allotment: TUWEEP **Pasture: PONDEROSA** **Key Area: 13**



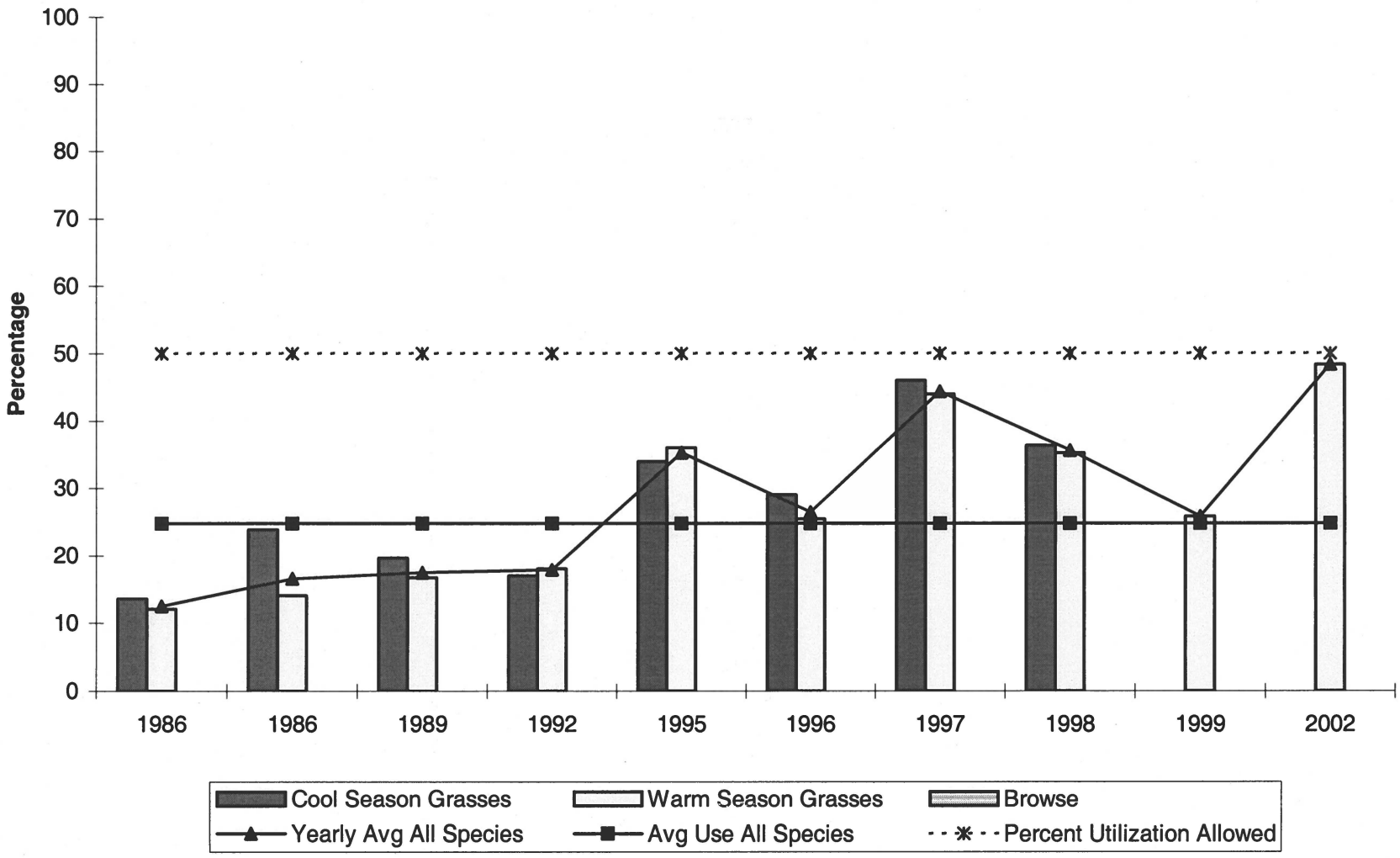




ARIZONA STRIP					UTILIZATION STUDY SUMMARY																
ALLOTMENT = TUWEEP					PASTURE = TUCKUP						KEY AREA NUMBER = 14					Page 1					07/10/03
Utilization expressed as a percent use for each species as of the particular year read.																					
Cool Season Grasses																					
	1986	1986	1989	1992	1995	1996	1997	1998	1999	2002											AVG
SIHY	14	24	20	17	34	29	46	36													26
CSGG																					
AVERAGE	14	24	20	17	34	29	46	36													26
WARM SEASON GRASSES																					
HIJA	12	17	14	17	39	28	44	37	25	49											25
BOGR	12	11	19	20	34	23	44	33	27	48											24
WSGG																					
AVERAGE	12	14	17	18	36	25	44	35	26	48											24
BROWSE																					
SSSS																					
AVERAGE																					
AVG ALL SPEC	12	17	17	18	35	26	44	36	26	48											25

Allotment: TUWEEP **Pasture: TUCKUP** **Key Area: 14**

Utilization by Plant Category



PACE FREQUENCY TREND ANALYSIS

7/10/03		ALLOTMENT: TUWEEP		PASTURE: TUCKUP		KEY AREA 14	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									
	1982	1986	1989	1998	2001	2004	2007	2010	2013	2016	2019	1986	1989	1998	2001	2004	2007	2010	2013	2016	2019
Bare Ground	63	39	38	42								-38	-39	-34							
Pers Litter	7	8	7	8								14		7							
Litter	21	43	44	39								102	110	83							
Rock	2	3	4	4								100	133	167							
Live Vegetation	8	8	8	9									-6	6							
% Ground Cover	38	62	62	59								64	65	56							
BROWSE																					
OTHER BROWS																					
TOTALS																					
DESIRABLE GRASSES																					
Cool Season																					
SIHY	13	20	16	12								56	28	-8							
STIPA				1										100							
Other Cool Season Grass																					
TOTALS	13	20	16	12								56	28	-4							
Warm Season																					
HIJA	8	16	14	9								107	87	13							
SPCR	1	3	2	1								200	100	-50							
BOGR	84	88	85	89								5	1	6							
Other Warm Season Grass																					
TOTALS	93	107	101	98								15	9	6							

PACE FREQUENCY TREND ANALYSIS CONTINUED PAGE NUMBER 2

7/10/03 ALLOTMENT TUWEEP PASTURE TUCKUP KEY AREA 14

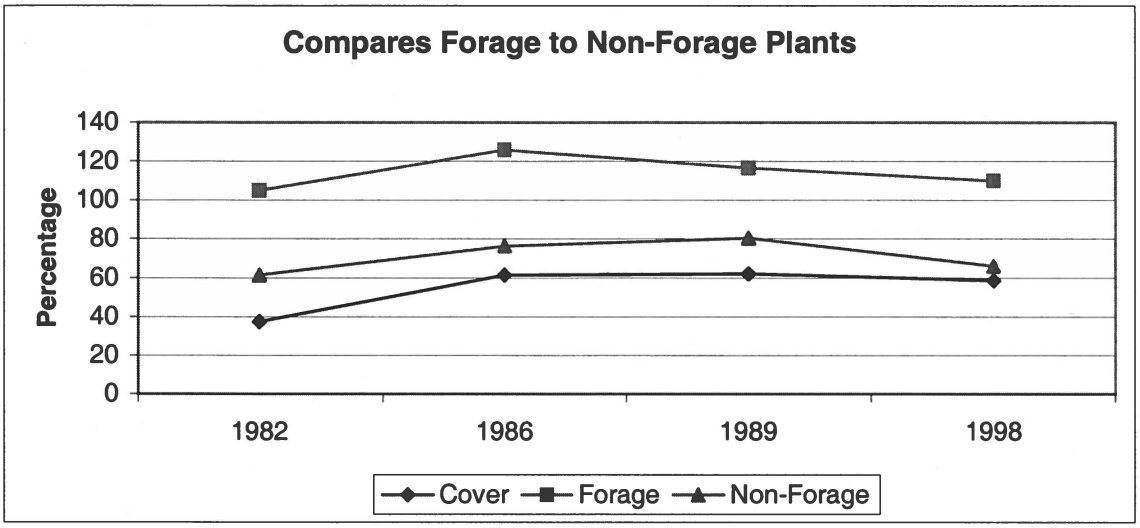
TREND INDEX

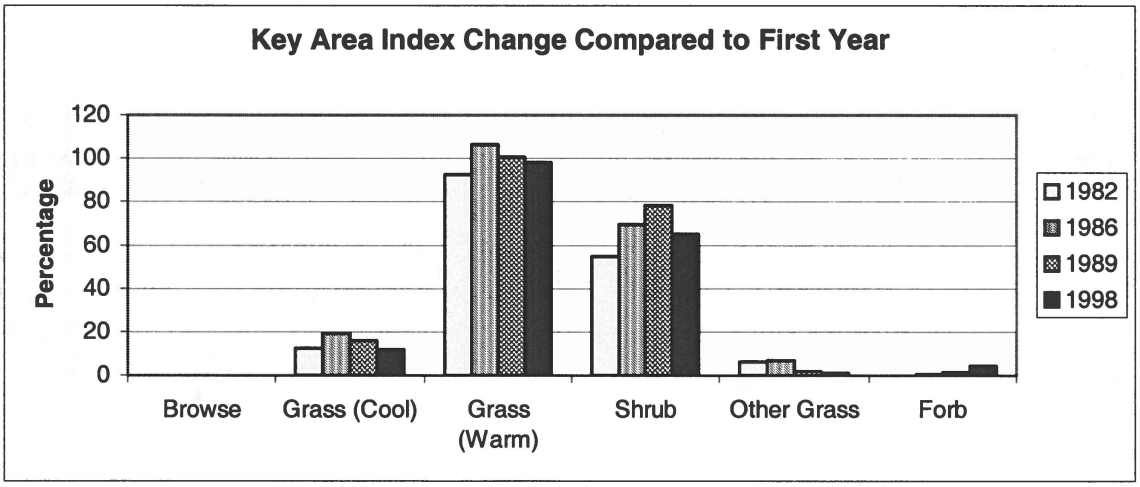
COMPARES DATA FROM THE YEAR READ BACK TO BASE YEAR TO DETERMINE INDEX

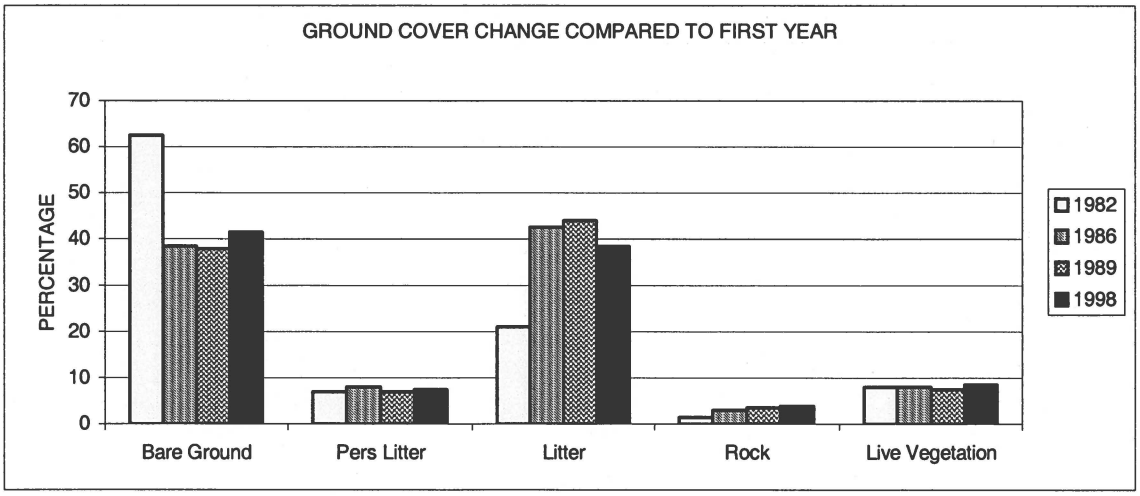
(a significant change is more than 10%) BASE YEAR = 1982

COVER	YEARS PLOT WERE READ											TREND INDEX									
CATEGORIES	1982	1986	1989	1998	2001	2004	2007	2010	2013	2016	2019	1986	1989	1998	2001	2004	2007	2010	2013	2016	2019
OTHER SHRUBS																					
GUSA2	8	13	19	9								63	131	13							
ARTR2	47	57	60	56								20	27	19							
OPUNT			1										100								
OTHERSHRUB																					
TOTALS	55	70	79	65								26	43	18							
OTHER GRASSES																					
ARLO	7	7	2	1								8	-69	-85							
PPGG																					
TOTALS	7	7	2	1								8	-69	-85							
FORBS																					
ASTRA		1										100									
SPHAE			2	1									300	200							
AAFF																					
AAGG																					
ERIGERON				2										300							
MUSTARD				1										200							
PPFF																					
SPURGE				1										200							
TOTALS		1	2	5								100	300	900							

Allotment: TUWEEP **Pasture: TUCKUP** **Key Area: 14**



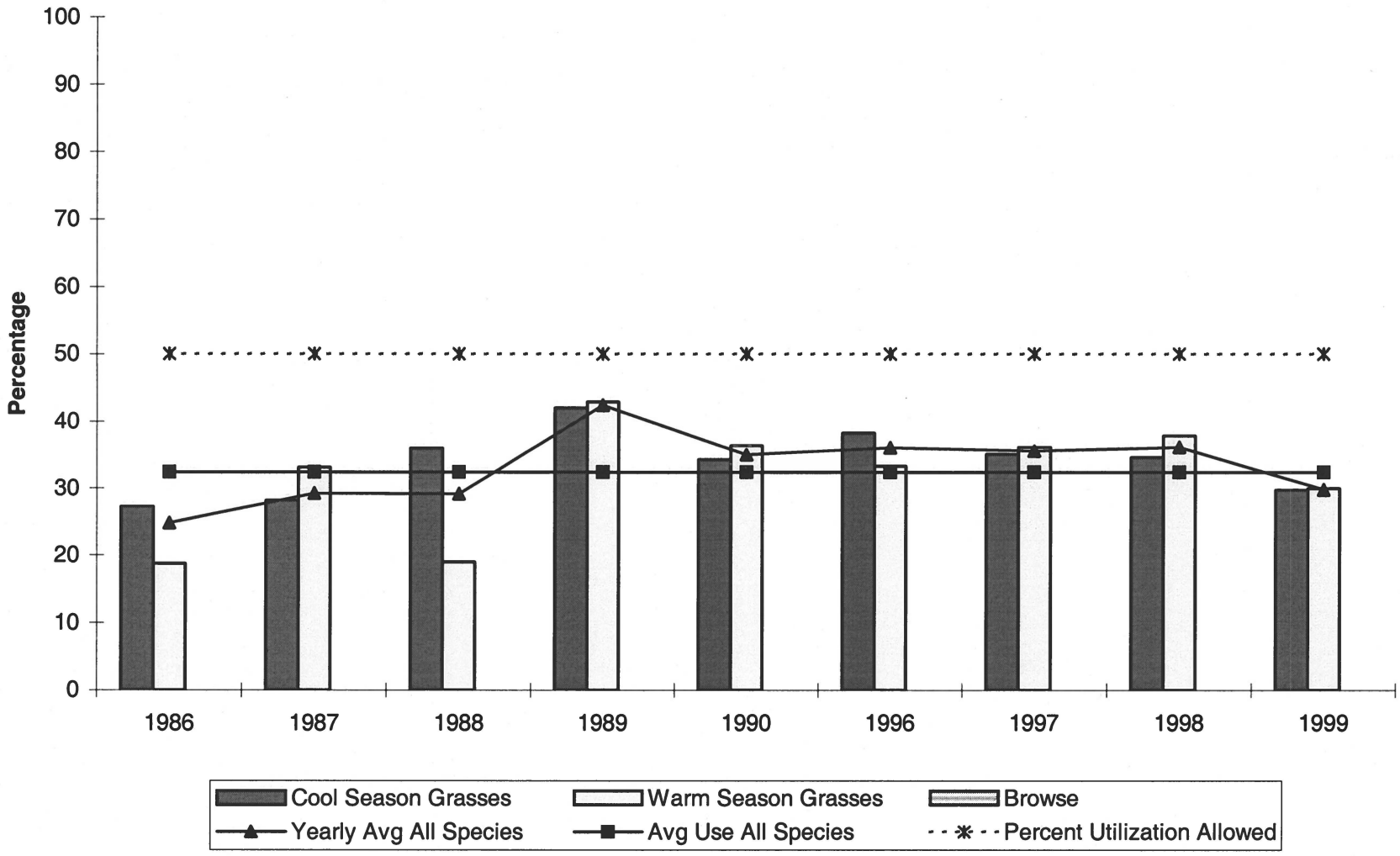




ARIZONA STRIP					UTILIZATION STUDY SUMMARY																
ALLOTMENT = TUWEEP					PASTURE = PONDEROSA					KEY AREA NUMBER = 15					Page 1						07/10/03
Utilization expressed as a percent use for each species as of the particular year read.																					
Cool Season Grasses																					
	1986	1987	1988	1989	1990	1996	1997	1998	1999												AVG
SIHY	27	29	24	39	42	36	36	31	32												32
AGCR						42	34	38	28												35
AGROPY	27	28	42	44	32																33
CSGG																					
AVERAGE	27	28	36	42	34	38	35	35	30												33
WARM SEASON GRASSES																					
SPCR	31	34	36	44	34	39	41	39	26												37
BOGR	2	33	8	41	40	32	34	37	34												27
WSGG																					
AVERAGE	19	33	19	43	36	33	36	38	30												31
BROWSE																					
SSSS																					
AVERAGE																					
AVG ALL SPEC	25	29	29	42	35	36	36	36	30												32

Allotment: TUWEEP **Pasture: PONDEROSA** **Key Area: 15**

Utilization by Plant Category



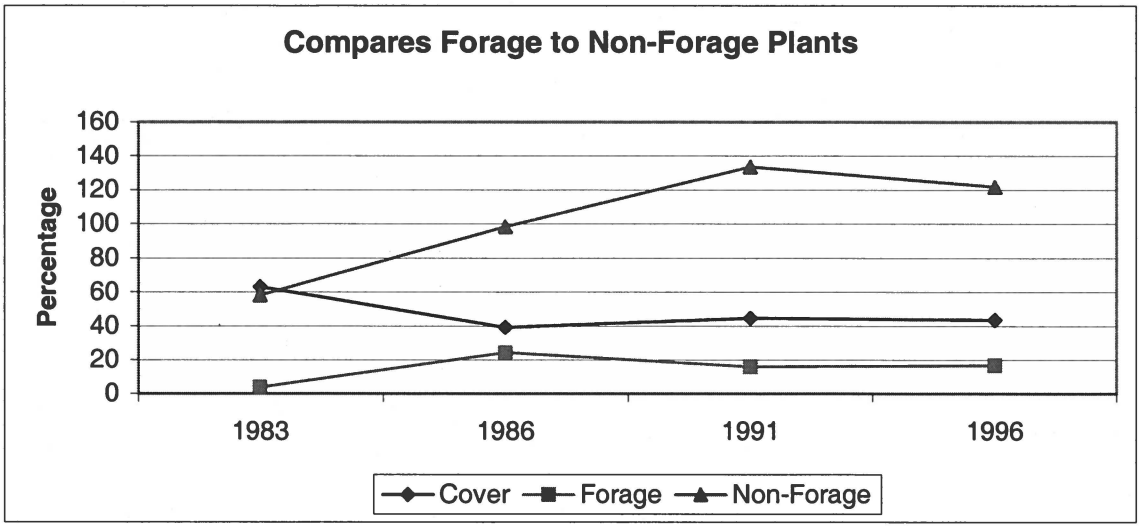
PACE FREQUENCY TREND ANALYSIS

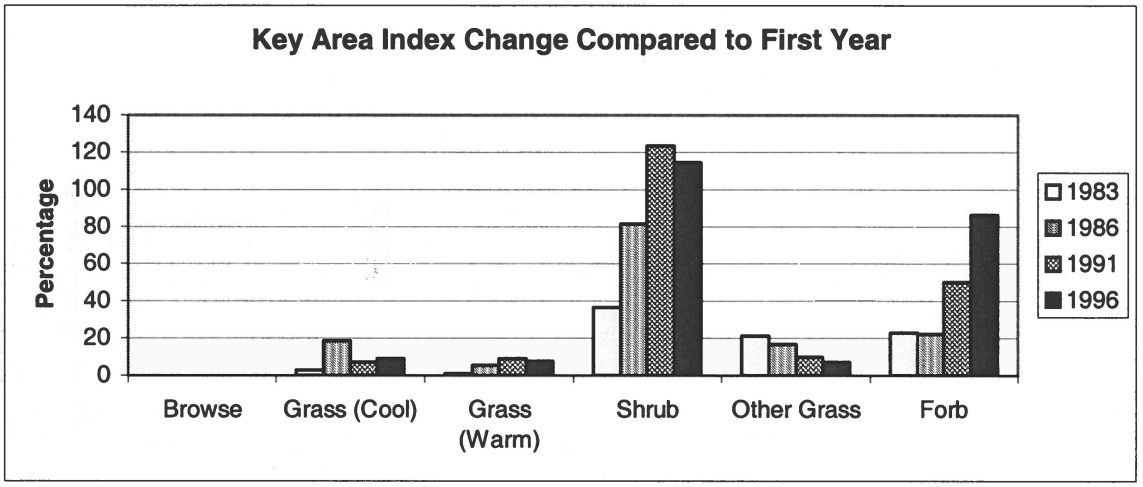
7/10/03		ALLOTMENT: TUWEEP		PASTURE: PONDEROSA		KEY AREA 15	PAGE NUMBER 1

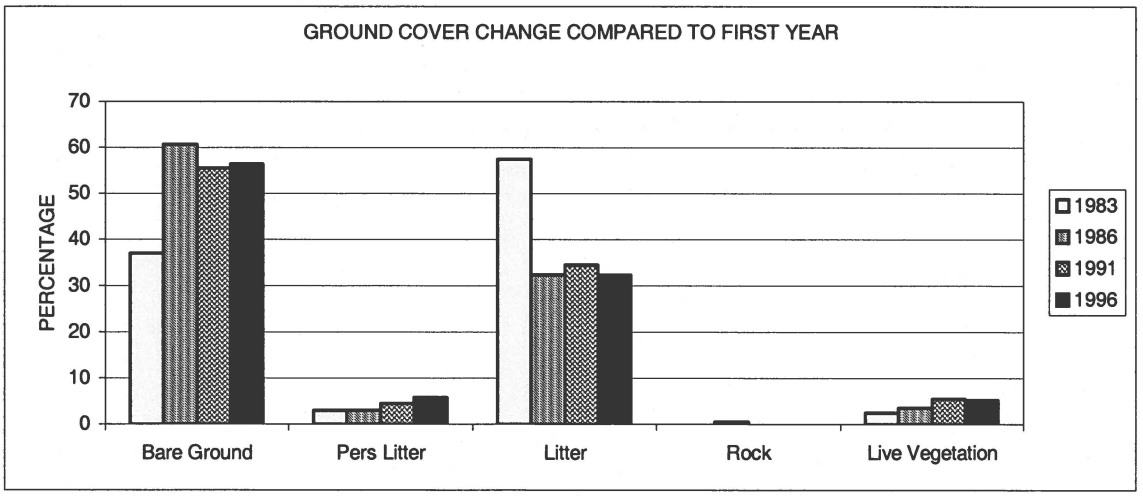
COVER	YEARS PLOT WERE READ											TREND INDEX COMPARES DATA FROM THE YEAR READ BACK TO BASE YEAR TO DETERMINE INDEX (a significant change is more than 10%) BASE YEAR = 1982									
CATEGORIES	1983	1986	1991	1996	1999	2002	2005	2008	2011	2014	2017	1986	1991	1996	1999	2002	2005	2008	2011	2014	2017
Bare Ground	37	61	56	57								64	50	53							
Pers Litter	3	3	5	6								0	50	93							
Litter	58	32	35	32								-44	-40	-44							
Rock		0										100									
Live Vegetation	3	3	6	5								39	120	113							
% Ground Cover	63	39	45	43								-38	-29	-31							
BROWSE																					
OTHER BROWS																					
TOTALS																					
DESIRABLE GRASSES																					
Cool Season																					
SIHY	3	10	4	4								318	60	55							
AGCR		7	2	1								1493	400	193							
AGSM			1	4									200	870							
ELYMUS	1	1										99									
Other Cool Season Grass																					
TOTALS	3	19	7	9								530	133	206							
Warm Season																					
SPCR		3	8	6								697	1600	1256							
BOGR	1	2	1	1								298	100	190							
SPAI	1																				
Other Warm Season Grass																					
TOTALS	1	5	9	8								447	800	673							

7/10/03	ALLOTMENT TUWEEP						PASTURE PONDEROSA					KEY AREA 15									
												TREND INDEX									
												COMPARES DATA FROM THE YEAR READ BACK TO BASE YEAR TO DETERMINE INDEX									
COVER	YEARS PLOT WERE READ											(a significant change is more than 10%) BASE YEAR = 1983									
CATEGORIES	1983	1986	1991	1996	1999	2002	2005	2008	2011	2014	2017	1986	1991	1996	1999	2002	2005	2008	2011	2014	2017
OTHER SHRUBS																					
GUSA2	2	6	6	6								298	267	286							
CHVI8	10																				
ARTR2	14	19	59	61								35	321	335							
CHNA		23	36	41								4577	7200	8213							
ARLU	11	34	23	7								208	109	-39							
OTHERSHRUB																					
TOTALS	37	82	124	114								124	238	214							
OTHER GRASSES																					
SCBR	1																				
PPGG	21	17	10	7								-17	-51	-65							
TOTALS	22	17	10	7								-21	-53	-66							
FORBS																					
SPHAE	4	1	9	3								-57	143	-17							
AAFF		21	41	64								4179	8200	12754							
AAGG				1										290							
ERIOG				3										580							
PENST			1										100								
PPFF	20			15										-21							
TOTALS	23	22	50	86								-3	117	276							

Allotment: TUWEEP **Pasture: PONDEROSA** **Key Area: 15**







Appendix E:

Wildlife Data

Arizona Game & Fish Unit 13A Mule Deer Population Counts			
Year	**Number of Animals Surveyed**	**Bucks / 100 does**	**Fawns / 100 does**
1989	112		39
1990	63		27
1991	85		57
1992	31		-
1993	117		13
1994	143		84
1995	88		35
1996	154		69
1997	64		-
1998	156		44
1999	145		31
2000	170	27	33
2001	165	36	68

Tuweep Allotment

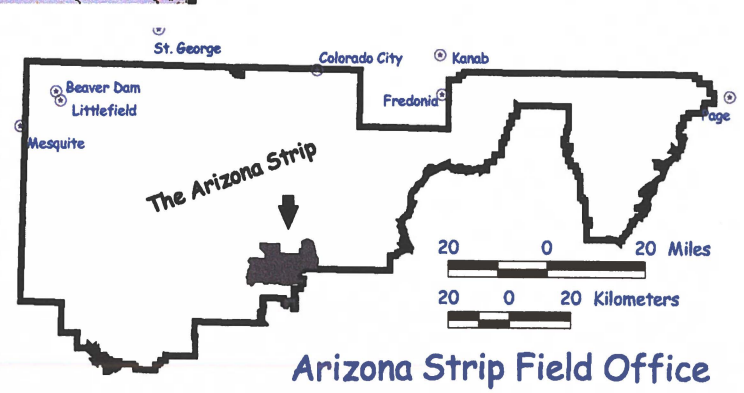
1 0 1 Miles

1 0 1 2 Kilometers

N
W E
S

- Morningglory
- Russian Knapweed
- Saltcedar
- Scotch Thistle
- Wildlife Catchment
- Livestock Catchment
- Well
- Storage Tank
- Fenced Reservoir
- Developed Spring
- Key Area
- Fence
- Cattleguard
- Corral
- Unfenced Reservoir
- Trough
- Wilderness Area
- Allotment Boundary
- Private Ownership
- State Ownership
- BLM Ownership

U.S. Department of the Interior
Bureau of Land Management
Arizona Strip Field Office



Arizona Strip Field Office