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DEPARTMENT OF INTERIOR  
BUREAU OF LAND MANAGEMENT  
CARSON CITY DISTRICT OFFICE  
1535 HOT SPRINGS ROAD, SUITE 300  
CARSON CITY, NEVEADA 89706

## CLIFTON ALLOTMENT EVALUATION

January, 1995



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I. INTRODUCTION

In June, 1992, the Bureau of Land Management issued its *Strategic Plan for Management of Wild Horses and Burros on Public Lands*. One of the objectives is to establish initial Appropriate Management Levels (AMLs) for all herd areas by 1995. In order to establish an AML for wild horses in the Pine Nut Herd Management Area (HMA), it is necessary to evaluate resource management within all the allotments included within the HMA. One of these is the Clifton allotment.

Specifically, the purpose of the allotment evaluation is to determine if current grazing practices are consistent with attainment of Land Use Plan (LUP) and allotment specific objectives. If current grazing practices are not consistent with attainment of these objectives, appropriate changes in management will be identified and implemented. The allotment is classified as category C<sup>1</sup>. It was classified as category C because the majority of the acreage was in an early seral status<sup>2</sup>, had low production and low potential. The evaluation period is from 1986 to 1993.

II. INITIAL STOCKING LEVEL

A. Livestock Use

1. Preference (AUMs)

ALLOTMENT NUMBER	ALLOTMENT NAME	SEASON OF USE	% PUB. LAND	AUMS
03519	CLIFTON	4/1 TO 5/31	77	772

2. Other Information

Rolling A Ranch controls the grazing permit in this allotment.

At the time of adjudication, April 9, 1962, the active preference was apportioned at 2127 AUMs in the Como Administrative Unit and 123 AUMs in the Sutro Administrative Unit. A change in class of livestock was made from sheep to cattle reducing the active preference from 2250 to 772 AUMs.

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<sup>1</sup> "Custodial" - manage in a custodial capacity, while protecting existing resource values.

<sup>2</sup> Ecological status is use-dependent and defined as the present state of the vegetation and soil protection of an ecological site in relation to the potential natural community for that site. Potential natural community is a biotic community that would become established if all successional sequences were completed without interference by man under present environmental conditions. Four seral stage classes are identified with corresponding numerical ratings. These are 0-25 (early seral), 26-50 (mid seral), 51-75 (late seral), and 76-100 (potential natural community).

The allotment is located approximately four miles east of Dayton, Nevada. It is bounded on the west by Eldorado allotment, the south by Rawe Peak and Mill Canyon allotments, and the north by the Carson River (Refer to Map No. 1, Appendix I).

Documented improvements within the allotment are:

<u>NAME</u>	<u>TOWNSHIP</u>	<u>RANGE</u>	<u>SECTION</u>	<u>SUBDIVISION</u>
Rawe Peak N. Spg. Dev.	16 N	22 E	25	NWSW
Barton Spring Exclosure	16 N	22 E	24	NESW
Bull Canyon Guzzler #4	16 N	23 E	15	NWNW
Carson River Fence	16 N	23 E	6	NENE

Locations are shown on Map No. 2, Appendix I.

There are 16,570 acres of public land in the allotment. The LUP identified 23,247 acres in the allotment. A total of 6677 acres was classified as unsuitable (rock outcrops/badlands). In actuality, this acreage is private land.

B. Wild Horse Use

1. Management Level

The LUP identified 531 AUMs as the existing demand for wild horses. The AML for the Pine Nut HMA will be based on stocking levels for wild horses determined for all the allotments within the HMA. The stocking level for the Clifton allotments will be determined through the analysis of monitoring data contained within this evaluation.

2. Herd Management Area within the Allotment

The Pine Nut HMA encompasses the majority of public land within the allotment. The allotment comprises fifteen percent of the total acreage contained within the HMA (Refer to Map No. 3, Appendix I).

C. Wildlife Use

1. Mule Deer (*Odocoileus hemionus*).

a. Existing Demand

Existing demand for mule deer identified in the LUP is 93 AUMs.

b. Key and Crucial Areas

The southern tip of the allotment contains key summer range while the majority of the remaining acreage is winter range. The area along the Carson River, located on private land, is classified as yearlong range (Refer to Map No. 4, Appendix I).

## 2. Wildlife - General

Upland and non-game wildlife occur throughout the allotment. Common furbearing species are coyote (*Canis latrans*), bobcat (*Felis rufus*), badger (*Taxidea taxus*), mountain lion (*Felis concolor*) and kit fox (*Vulpes macrotis*).

Upland game species include mountain cottontail (*Sylvilagus nuttallii*), desert cottontail (*Sylvilagus audubonii*), mourning dove (*Zenaidura macroura*), California quail (*Lophortyx californicus*), and chukar (*Alectoris chukar*).

A portion of the allotment, in the vicinity of Bull Canyon, is used by sage grouse (*Centrocercus urophasianus*). Refer to Map No. 4, Appendix I.

Raptors inhabiting the allotment include the prairie falcon (*Falco mexicanus*), red-tailed hawk (*Buteo jamaicensis*), golden eagle (*Aquila chrysaetos*), and American kestrel (*Falco sparverius*).

Also present are a host of small mammals, birds, and reptiles.

### III. ALLOTMENT PROFILE

#### A. Description

##### 1. Topography

Elevations range from approximately 4300 feet in the vicinity of the Carson River to 8343 feet in the southern portion of the allotment. In most areas, it rises abruptly from the river to low-lying foothills. A gradual increase in elevation occurs from the foothills to the base of the Pine Nut Mountains. Access is limited due to the lack of roads.

##### 2. Soils/Range Sites

The soils in the allotment are typical of the Western Great Basin and exhibit wide ranges in depth, drainage class, percent surficial and subsurface rock fragments, pH, and other diagnostic soil properties. For a more detailed description, refer to the Reno Grazing Environmental Impact Statement (1982), Appendix E, Section 1, pages 5-25 to 5/39.

Accelerated erosion within the allotment is mostly confined to small areas adjacent to seeps/springs, shallow/lithic soils and steep slopes. A complete description of range sites can be found in the Lyon County Soil Survey compiled by the Soil Conservation Service. Field work for the soil survey was done between 1968 and 1979.

Statements in the document are based on information from 1980. The primary range sites in Clifton are:

- 26-05 (Loamy 12-14 precipitation zone)
- 26-09 (Mahogany Slope 14 -18 precipitation zone)
- 26-12 (Dry Floodplain)
- 26-16 (Loamy 8-10 precipitation zone)
- 26-23 (Claypan 10-12 precipitation zone)
- 26-24 (Droughty Loam 8-10 precipitation zone)
- 26-25 (Claypan 8-10 precipitation zone)
- 27-02 (Moist Floodplain)
- 27-04 (Wet Meadow 8-12 precipitation zone)
- 27-05 (Saline Meadow)
- 27-09 (Sandy 5-8 precipitation zone)
- 27-18 (Gravelly Loam 4-8 precipitation zone)
- 27-19 (Stoney Slope 4-8 precipitation zone)
- 27-20 (Shallow Claypan 8-10 precipitation zone)
- 27-23 (Dunes 4-8 precipitation zone)
- 27-24 (Sodic Terrace)

### 3. Water Resources

For the following sites, BLM write-ups have been completed that indicate water availability and the functionality<sup>3</sup> of these sites (Refer to Map No.5, Appendix I).

<u>Township</u>	<u>Range</u>	<u>Section</u>	<u>Subdiv</u>	<u>Name</u>	<u>Water</u>	<u>Rating</u>	<u>Land Status</u>
16 N	22 E	15	SESW	Equus Spring	Yes	Functional at Risk	Private
16 N	22 E	14	SWSE	Populus Spring	Yes	Functional at Risk	Public
16 N	22 E	22	NWNE	Pine Spring	Yes	Functional at Risk	Public
16 N	22 E	15	SWSE	Rush Spring	Yes	Functional at Risk	Private
16 N	22 E	24	SESW	West Barton Enclosure	Yes	Proper Functioning	Public
16 N	22 E	24	NESW	East Barton Enclosure	Yes	Proper Functioning	Public
16 N	22 E	24	SESE	Hercules Meadow Spg	Yes	Functional at Risk	Public
16 N	22 E	25	SWNW	Rawe Peak N. Spg.	Yes	Proper Functioning	Public
16 N	23 E	8	SENE	Urrutia Spring	Yes	Proper Functioning	Public

The low-lying areas of the allotment are serviced by the Carson River. No portion of the river is located on public land. Numerous guzzlers have been constructed in the vicinity of Bull Canyon, primarily for chukar.

<sup>3</sup> Proper Functioning Condition, as defined in Technical Reference 1737-9 (1993), Riparian Area Management, *Process for Assessing Proper Functioning Condition*, is when adequate vegetation, landform, or large woody debris is present to dissipate stream energy associated with high waterflows, thereby reducing erosion and improving water quality; filter sediment, capture bedload, and aid floodplain development; improve flood-water retention and ground-water recharge; and support greater biodiversity. The functioning condition of riparian-wetland areas is a result of interaction among geology, soil, water, and vegetation.

The majority of sources are located in open spaces and are categorized as functional at risk. Sources located amongst the pinyon/juniper, for the most part, are classified as functional. This is probably due to the greater amount of cover which allows large predators a better opportunity for ambush. The horses avoid these areas.

4. Vegetation

The major vegetative type is low sage which occurs on the alluvial fan and the lower foothills. Associated perennial grass species, which are scarce at the lower elevations, are squirreltail (*Sitanion hystrix*), Indian ricegrass (*Oryzopsis hymenoides*), Sandberg's bluegrass (*Poa secunda*), and scattered patches of Galletta grass (*Hilaria jamesii*). Cheatgrass (*Bromus tectorum*) and annual mustards are common.

The southern portion is a pinyon/juniper site. This occurs on uplands and more mountainous sections. Associated species are low sage, squirreltail, Sandberg bluegrass, bitterbrush, mountainmahogany (*Cercocarpus sp.*), and cheatgrass.

5. Key Species

a. Uplands

No key areas have been established that identify specific key species. Important to cattle and wild horses are grasses. Bitterbrush and mountainmahogany are important for mule deer and will be utilized by cattle. Cheatgrass is important for chukar. Meadow vegetation is important for sage grouse because of the production of insects and succulent forage, particularly dandelion (*Taraxacum sp.*).

b. Riparian

Vegetation located in and around water sources is composed of cottonwood (*Populus sp.*), aspen (*Populus sp.*), willow (*Salix sp.*), rushes (*Juncus sp.*), wild rose (*Rosa sp.*) and sedges (*Carex sp.*). Watercress (*Nasturtium officinale*) is also present in the shady areas where pooling and/or overland flow occurs.

6. Threatened and Endangered Species

a. Vegetation

There are no threatened, endangered, or sensitive plant species known to inhabit the allotment.

b. Wildlife

Category 2<sup>4</sup>, Candidate species, as defined by the U.S. Fish and Wildlife Service, that may occur in the

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<sup>4</sup>Category 2: Taxa for which existing information indicates that the listing may be warranted, but for which substantial biological information to support a proposed rule is lacking.

allotment are the pygmy rabbit (*Brachylagus idahoensis*) and the spotted bat (*Euderma maculatum*). While they are not listed as threatened or endangered, in order to avoid further jeopardizing their existence, the Bureau treats candidate species the same as threatened or endangered. No other threatened, endangered, or sensitive animals are known to inhabit the allotment.

The spotted bat spends daylight hours and reproduces in caves, cliffs and talus slopes. It generally feeds on flying insects in the vicinity of juniper grasslands and tall sagebrush. The pygmy rabbit reproduces and feeds in sagebrush/grasslands and riparian habitats. Since these habitats occur throughout the Pine Nut Range, there is a possibility that both species occur in the allotments.

B. Allotment Specific Objectives

Objectives taken from the LUP are as follows:

1. Short Term

- a. Provide for 772 AUMs of livestock use. There will be no initial change in active preference.
- b. Manage so that mule deer habitat does not decline.
- c. Initially manage wild horses in current herd use areas at present estimated population levels. Existing demand is 531 AUMs in Clifton. Manage remaining horses to maintain viable herd compatible with other resources.

2. Long Term

- a. With the exception of wild horses, maintain existing situation through custodial management.
- b. Assure ecological condition does not decline in Clifton.
- c. Manage wildlife habitat for a long term goal of providing forage for reasonable numbers of big game. In Clifton, monitor bitterbrush and other desirable mule deer forage to reach 102 AUMs (reasonable numbers) within 5 years.
- d. Manage big game habitat to fair or good condition to support big game populations.
- e. Protect and improve riparian areas to a good or better condition class.
- f. Develop and implement the Pine Nut Herd Management Area Plan (HMAP) for wild horses and burros.
- g. If monitoring programs indicate there are significant resource problems developing, the allotment could be added to Category I.



- h. Continue rangeland and watershed monitoring to determine if management objectives are being met and what future adjustments in grazing use are necessary.

IV. MANAGEMENT EVALUATION

A. Actual Use

1. Livestock

1993	NO USE
1992	NO USE
1991	NO USE (ACTUAL USE REPORT)
1990	418 AUMS (ACTUAL USE REPORT)
1989	169 AUMS (ACTUAL USE REPORT)
1988	494 AUMS (ACTUAL USE REPORT)
1987	776 AUMS (ACTUAL USE REPORT)
1986	772 AUMS (LICENSED USE)

The lack of perennial grasses and competition for this resource is a concern in the lower elevations of the allotment. Topography confines use to the area adjacent to the river.

The central portion of the allotment contains adequate water and forage availability is much improved. Distribution is the problem.

The upper elevations are steeper and characterized by woodlands which precludes use by both wild horses and cattle.

2. Wild Horses

Aerial census data was collected in 1993, 1992, 1990, 1989, and 1986 for wild horses in the Pine Nut HMA.

The most current information (1993) showed 68 wild horses (816 AUMs of demand). The major concentration areas are around the existing waters in the central portion of the allotment and along the river. Distribution and uncontrolled year-round use are of concern.

3. Wildlife

The allotment is contained within Nevada Division of Wildlife (NDOW) Management Unit 291, Pinenut Range, Carson City, Douglas and Lyon Counties. Mule deer population estimate for this unit provided by NDOW is as follows:

1993	932 head
1992	1311 head
1990	942 head

Allotment specific information projected from the NDOW population estimate is as follows:

NUMBER	TYPE USE	PRORATED (AUMS)
15	Year-round	35
40	Winter	47
	Totals	82

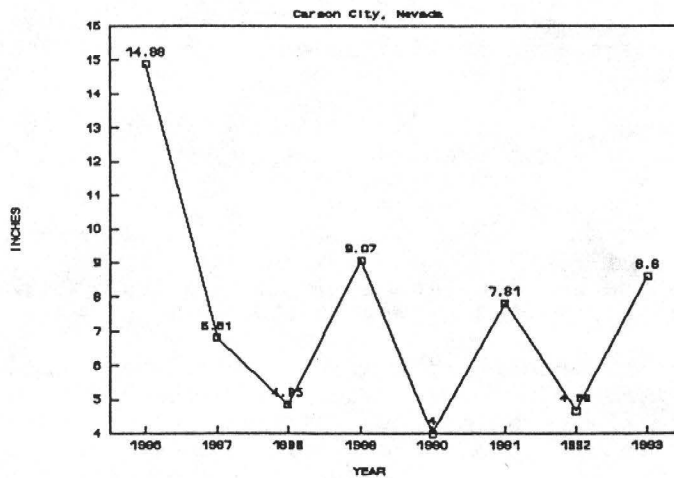
LUP identified 93 AUMs Existing Demand

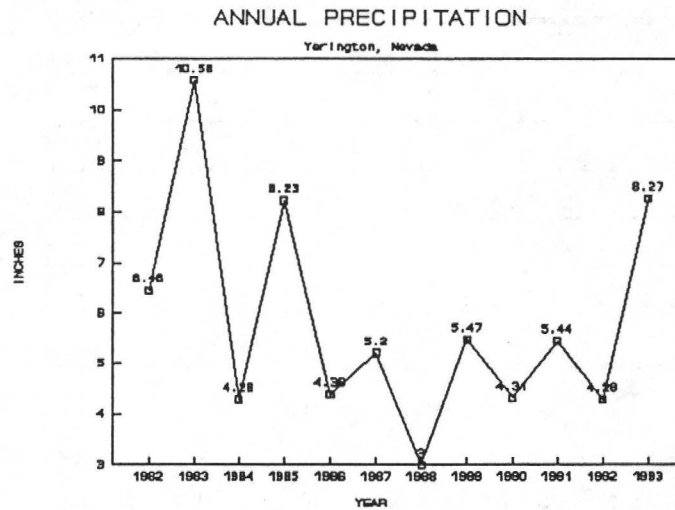
B. Precipitation

Carson City and Yerington, Nevada are weather stations that depict weather patterns that may affect this allotment. The mean annual precipitation is 10.98 inches for Carson and 5.38 inches for Yerington. Depending upon the path, intensity, and duration of storms, the Pine Nut Mountains and the Sierra Nevadas can influence precipitation amounts in the allotment. Therefore the data presented provides the reader with an idea of what may have occurred over the evaluation period. The higher elevations of the allotments receive larger amounts of precipitation than what is recorded at the stations.

Data presented for Yerington for the years 1988, 1990, and 1991 is incomplete. One or more months of data must be absent for the information to be considered incomplete.

ANNUAL PRECIPITATION





C. Use Pattern Mapping

Use pattern mapping data was gathered in Clifton in 1993, 1992, 1988, 1987, and 1985 (Refer to Map No.s 6 - 10, Appendix I). Data for 1993 is specific to wild horses. It represents the upper limits of the grazeable area that both horses and cattle could be expected to utilize.

Prior to 1993, use pattern mapping was done in a manner that was not intensive. This was a result of classifying the allotment as category C. Cattle made use of the allotment between the years of 1986 and 1990. The following data represents the use that made on both public and private lands. It gives the reader a better idea of the actual areas that have been used in the past. Results are as follows:

1993 USE PATTERN MAPPING

UTILIZATION CLASS	ACREAGE
SEVERE	1637
HEAVY	4957
MODERATE	0
LIGHT	989
SLIGHT	5250
NO USE	10414

1992 USE PATTERN MAPPING

UTILIZATION CLASS	ACREAGE
SEVERE	1600
HEAVY	160
MODERATE	2000
LIGHT	0
SLIGHT	920
NO USE	18567

1988 USE PATTERN MAPPING

UTILIZATION CLASS	ACREAGE
SEVERE	20
HEAVY	70
MODERATE	0
LIGHT	0
SLIGHT	0
NO USE	23157

1987 USE PATTERN MAPPING

UTILIZATION CLASS	ACREAGE
SEVERE	150
HEAVY	830
MODERATE	160
LIGHT	0
SLIGHT	14390
NO USE	7717

1986 USE PATTERN MAPPING

UTILIZATION CLASS	ACREAGE
SEVERE	0
HEAVY	0
MODERATE	0
LIGHT	19927
SLIGHT	3320
NO USE	0

Lack of forage, animal habits, and concentration of waters results in historical areas of use.

D. Trend

Two photo trend plots are located in the allotment (Refer to Map No. 11, Appendix A).

Plot #1 - It has been photographed eight times, beginning in 1975 and ending in 1993. The 1975 photos show grasses common but appearing to be grazed heavily. In 1979/80/83, it appears these were wet years, annuals are abundant. By 1993 the vigor of all species is poor. Grass plants have essentially disappeared. The size of shrubs has declined. Overall the site is in a downward trend.

Plot #2 - It has been photographed nine times, beginning in 1975 and ending in 1993. Soil displacement is evident. Grass plants are being lost. The vigor of all plant species is downward. The annual component has increased. Overall the site is in a downward trend.

E. Range Survey Data

An ocular reconnaissance survey was completed by BLM personnel in 1962. This resulted in the establishment of the current active preferences, mentioned at the beginning of this document (II. A. 1.).

F. Ecological Condition

Information provided in the LUP, taken from the 1979 soil/vegetation inventory, showed 30 acres are in late seral, 696 acres are in mid seral, 15844 acres are in early seral. The trend was static.

G. Wildlife Habitat

Habitat condition ratings for key mule deer summer range in the allotment show the area to be in fair/good condition. Cattle have not used this area during the evaluation period. Wild horse use has been confined to the mid and lower elevational areas of the allotment.

H. Riparian/Fisheries Habitat

Refer to Section III. A. 3. for a discussion of riparian areas in the allotment. No fisheries habitat exists on public land. The Carson River is encompassed entirely by private land.

I. Wild Horse Habitat

The majority of Clifton is contained within the HMA. Use by horses is concentrated in the vicinity of waters that are located on both public and private land in the northern and central portions of the allotment. Year-round use is resulting in a downward decline in ecological condition.

V. CONCLUSIONS

The accomplishment of the objectives shown in Section III. B. are discussed below.

A. Short Term

1. Provide for 772 AUMs of livestock use. There will be no initial change in active preference.

Use averaged 526 AUMs of livestock use between 1986 and 1990. From 1991 to the present, no livestock use occurred. Grass species are disappearing from the low lying areas of the allotment. Moving upslope, frequency and diversity of grass species increases, particularly in areas that are rockier and further from the numerous springs located in the central portion of the allotment. Zones around the springs are receiving continual heavy/severe use. These areas are in a downward trend based on field observations (professional judgement). Use during the critical growth period (spring) is contributing to the downward trend.

The objective was not met.

2. Manage so that mule deer habitat does not decline.

The habitat rating for the key mule deer summer range found in the allotment is fair/good condition. A limiting factor, though no where near the impact as is the case in Rawe Peak, is the pinyon/juniper woodlands. Although it provides adequate thermal and hiding cover, a reduction in forage abundance and diversity is present. An opportunity exists, through intensified management of the woodlands, to improve the quality and quantity of key mule deer summer range.

For this area the objective has been met.

The mule deer winter area receives use yearly by wild horses. Livestock also graze this area but the use hasn't occurred on an annual basis since 1990. Forbs are readily being utilized. Grass species, though not preferred by mule deer any other time than during spring green-up, are disappearing from the plant community. Plants are being bitten (eaten) more than once during the growing season. The physiological needs of the plants are not being met. This is resulting in species that are not desirable being used. Trend in this area is downward.

The winter use area is being adversely affected and the objective has not been met.

3. Initially manage wild horses in current herd use areas at present estimated population levels. Existing demand is 531 AUMs. Manage remaining horses to maintain viable herd compatible with other resources.

The AUMs identified for wild horses were target levels. They were identified for the purpose of monitoring. Future evaluations, such as this one, would be used to determine the potential stocking level for wild horses.

The 1993 aerial census identified 68 horses (816 AUMs) in

Clifton. They were concentrated in the northern portion of the allotment along the Carson River. Ground checks and use pattern mapping showed that they also concentrated in the central portion of the allotment, where numerous springs are located. These areas are deficient in grass production and diversity or the grasses that are present are in poor condition. Ecological condition is in a downward trend. Use is occurring outside of the HMA boundary. Undesirable plant species, such as mustards are being utilized by the wild horses. The condition of the wild horses is poor.

The objective has not been met.

**B. Long Term**

1. **With the exception of wild horses, maintain existing situation through custodial management.**

Ecological status based on professional judgement has not changed. The majority of the allotment remains in an early seral status. Although there is a loss of grass plants and soil movement occurring at the lower elevations of the allotment. Livestock use has been sporadic. Wildlife use has remained constant and at a low level

The objective has been met.

2. **Assure ecological condition does not decline in Clifton.**

For a majority of the acreage, it remains in an early seral status. The status cannot go any lower. Of concern is the apparent continuing downward trend.

Use is occurring every year during the critical growth period for grasses by wild horses. Livestock, until the past three years, were using the allotment at this time. Two areas of concentration are showing a loss in the grass component. Both of these locations are within the HMA. Where plants remain, vigor is extremely poor. The allotment currently has 18% of its area as pinyon/juniper woodlands. The natural occurring pinyon/juniper woodland site should consist of 6% of the acreage.

Research points to the effectiveness of pinyon/juniper woodlands to intercept moisture. This provides a tremendous advantage for the trees to out-compete and ultimately eliminate other plant species where they have established themselves.

The objective has been met.

3. **Manage wildlife habitat for a long term goal of providing forage for reasonable numbers of big game. Monitor bitterbrush and other desirable mule deer forage to reach 102 AUMs (reasonable numbers) within 5 years.**

Reasonable numbers identified in the LUP were a target level. This figure is used for future analysis/evaluation. The 1991 data shows mule deer AUM demand is below the target level.

The most current data (1991) showed 81 AUMs were being

provided (79% of the target level). Based on current conditions, the existing situation may be near the maximum that can be expected. The extent of existing pinyon/juniper woodlands in the key mule deer summer range is the major limiting factor to providing for 102 AUMs.

Woodlands are/will have a detrimental effect on the potential for providing a reasonable amount of forage for mule deer. This is substantiated from observations made by Bureau range and wildlife personnel in many portions of the Pine Nut Mountain Range.

Bitterbrush is primarily located from the central part of the allotment to the southern boundary. Livestock, historically, do not utilize a majority of this area. Wild horses essentially stay clear of this area due to pinyon/juniper cover because it provides large predators, primarily mountain lion, a better opportunity to successfully ambush young colts. Wild horses do not appear to be using bitterbrush. Existing management of livestock is not adversely impacting bitterbrush. Use of the bitterbrush has been confined to mule deer and is generally light. Some of the plants appear to be in good condition but many are becoming decadent.

Pinyon/juniper woodlands, where they are the dominant species, have an insufficient bitterbrush component. Many of the plants are becoming decadent. As the woodlands expand in area and dominance, the health and frequency of bitterbrush will decline. It is unlikely that enough healthy bitterbrush plants are present to provide 102 AUMs for mule deer.

This objective is difficult to evaluate since verifiable data is not available to make a determination.

4. **Manage big game habitat to fair or good condition to support big game populations.**

As pointed out in V. A. 2. along with information contained in Appendix III, a threat to the condition of big-game habitat is the pinyon/juniper woodlands. The current habitat condition is most likely very close to conditions that existed during development of the LUP. Habitat rating data, taken in 1994, shows the key mule deer summer range to be in fair/good condition. The allotment has bitterbrush plants that are decadent. Propagation is present but not to the extent that is desirable.

In the interim, the objective has been met.

5. **Protect and improve riparian areas to a good or better condition class.**

Lower and Upper Barton enclosures are in good condition. Upper Barton would benefit from grazing. Plants are becoming decadent due to an accumulation of dead matter at their base. This is preventing sunlight from reaching the crown of the plants. Grazing would remove this dead matter and stimulate the plants to produce foliage. Hercules Meadows is proposed to have an enclosure constructed in



1995. This will protect and enhance riparian values. Other riparian areas that are located on public and private land are being adversely impacted. It would be desirable if these areas could be fenced. Overall watershed condition is in poor condition due to year-round grazing, lack of a diverse vegetative community, and the continuing drought.

For the most part the objective has been met.

**6. Develop and implement the Pine Nut Herd Management Area Plan (HMAP) for wild horses and burros.**

Issuance of this document for public review/input initiates a process that will ultimately result in the preparation of the Pine Nut HMAP.

Steps are being taken to meet this objective but to date the objective has not been met.

**7. If monitoring programs indicate there are significant resource problems developing, the allotment could be added to Category I.**

There are not any significant resource problems developing or existing that were not present at the time the allotment was categorized. Upgrading the categorization to an "I" won't provide additional alternatives or accelerate changes beyond what the process currently allows.

Steps are being taken to meet this objectives.

**8. Continue rangeland and watershed monitoring to determine if management objectives are being met and what future adjustments in grazing use are necessary.**

Aerial census of wild horses, actual use for livestock, use pattern mapping, and continuation of photographing the trend plots have all been completed during the evaluation period. Riparian functionality has also been evaluated.

The results of this monitoring data indicates that adjustments in management are needed.

The objective has been met.

## VI. TECHNICAL RECOMMENDATIONS

### A. Potential Stocking Level - Wild Horses

Factors affecting ecological condition are 1) the lack of control in the amount of time that grazing animals are in contact with plant species during active growth, 2) to a limited extent the influence of pinyon/juniper woodlands, and 3) the continuation of the drought.

In order to maintain and protect resources and provide a viable habitat for all grazing/browsing animals, it is necessary to determine the potential stocking level for wild horses and livestock within that portion of the HMA found in this allotment. The calculations, contained in Appendix II, reflect the potential stocking level. The potential stocking level for wild horses has been determined to be 414 AUMs. This data represents only use

made on public land.

**B. Potential Stocking Level - Livestock**

Clifton is still practical as a cattle operation. A major concern is the decline/disappearance of the grass component at the mid and lower elevations of the allotment. Soil movement is also occurring. Since the allotment has a low potential, recovery will be slow.

Use pattern mapping studies for livestock shows acceptable use levels have basically resulted during the evaluation period. A considerable amount of this use has been on private land.

Use pattern mapping completed in 1993 for wild horses reflects the majority of acreage that both wild horses and livestock could be expected to utilize. This is due to terrain and woodland sites. The potential stocking level for wild horses was determined to be 414 AUMs, as per calculations found in Appendix II. The was based upon an equal proportioning of the annual utilization level of 55%. Therefore, within the HMA there is a total of 414 AUMs available for livestock. Additional acreage outside of the HMA, south of the Carson River totals 131 AUMs. North of the Carson River a total of 38 AUMs is available for livestock grazing. These figures were determined based upon the Ocular Reconnaissance Survey completed by the Bureau. This results in a total of 583 AUMs available for livestock.

Based upon the above information, it is recommended that:

**The active preference for livestock be adjusted from 772 AUMs to 583 AUMs.**

**The season of use should be expanded from 4/1 - 5/31 to 1/1 - 5/31.**

This expanded season of use provides the opportunity for use to be made prior to the critical growth period for the grass species. Removal of old growth during the dormant period allows the grass species to expand root capacity and reserves. This in turn will result in a healthier, more productive plant community. Recovery of the area will be extremely slow. It must be stressed that this allotment has low potential.

**C. Pinyon-Juniper Woodlands**

Upland sites lack diversity due to the influence of pinyon/juniper woodlands (Refer to Appendix III for a detailed discussion). The natural site for these woodlands, based upon the Lyon County Soil Survey and Soil Conservation Service Range Site Write-ups, is located on the shallow talus slopes. They provide cover and bind soil to protect these rocky, inhospitable sites. The balance of the range sites where they are located are lacking in vegetative production and diversity of both flora and fauna.

Bitterbrush, a key species for mule deer, is gradually being crowded out of the community. Moisture interception, prevention of water infiltration into the soil, and the blocking of sunlight are major influences. In some instances, with the exception of the loss of sunlight, this is resulting in loss of some riparian habitat (vegetation and water).

Fire hazard potential continues to increase. Fuel build-up is providing the opportunity for a devastating wildland fire.

Based on the data analyzed in this evaluation, an ecosystem without human intervention would have probably resulted in a potential natural plant community of approximately 6% pinyon/juniper woodlands. Instead, as determined in this evaluation and during preliminary research, human activities including fire suppression have resulted in 18% in pinyon/juniper dominated plant communities. This, in turn, has resulted in a significant, adverse effect on biological diversity and therefore on wildlife, wild horse and livestock habitat. Therefore an opportunity exists for habitat improvement even though the potential is low.

Since pinyon/juniper woodlands have potential ecological, economic, aesthetic, cultural, and recreational values, it is important to manage for a long term ecosystem to include all these values for a viable pinyon-juniper woodland.

Therefore, it is recommended that long term management be directed toward achieving an ecosystem containing a natural balance of pinyon-juniper woodland, and other ecological sites.

D. Modification of Existing Objectives

With the emphasis on riparian management and new definitions associated with assessing riparian areas, it is recommended that the following objective be changed.

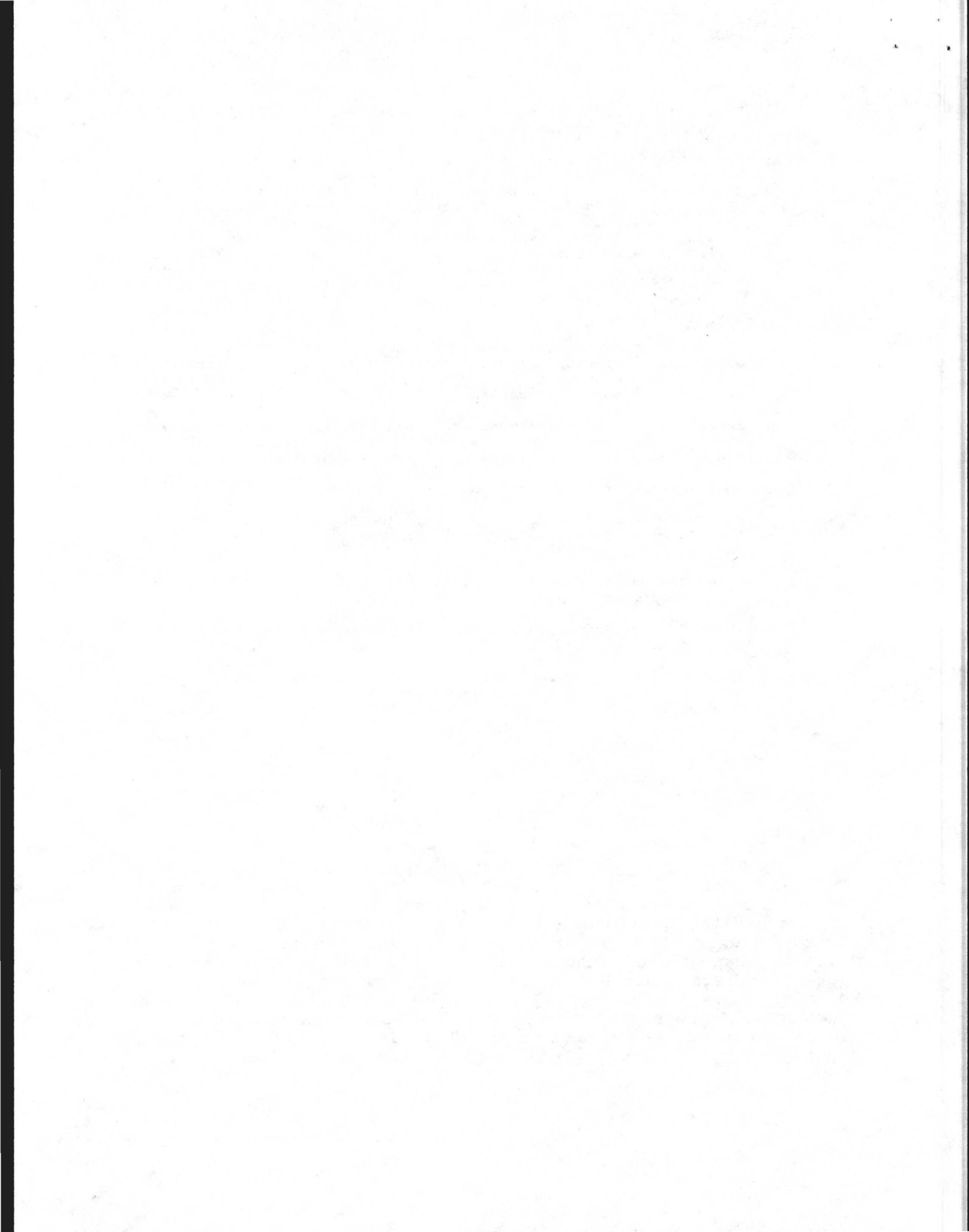
**FROM:** Protect and improve riparian areas to a good or better condition class.

**TO:** Protect and improve riparian areas to a proper functioning condition.

This change is consistent with with the Bureau-wide mandate to "restore and maintain riparian-wetland areas so that seventy-five percent or more are in proper functioning condition by 1997<sup>5</sup>.

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<sup>5</sup> BLM, Riparian-Wetland Initiative for the 1990's, page 16 (Goal Number 1 - Restoration and Maintenance). It is important to remember that seral stage does not determine whether a riparian area is healthy and functioning. BLM Technical Reference 1737-5 states that relating riparian health to ecological site status "...is a dangerous and functionally impossible view of how riparian systems operate." This same idea was recognized in the Riparian-Wetland Initiative for the 1990's, which states (emphasis added): "The overall objective is to achieve and advanced ecological status, except where resource objectives, including proper functioning condition, would require and earlier successional stage."



APPENDIX I

MAP NO. 1.....LAND STATUS  
MAP NO. 2.....RANGE IMPROVEMENTS  
MAP NO. 3.....HERD MANAGEMENT AREA  
MAP NO. 4.....WILDLIFE HABITAT  
MAP NO. 5.....WATER RESOURCES  
MAP NO. 6.....USE PATTERN MAPPING (1993)  
MAP NO. 7.....USE PATTERN MAPPING (1992)  
MAP NO. 8.....USE PATTERN MAPPING (1988)  
MAP NO. 9.....USE PATTERN MAPPING (1987)  
MAP NO. 10.....USE PATTERN MAPPING (1986)  
MAP NO. 11. ....PHOTO TREND PLOTS

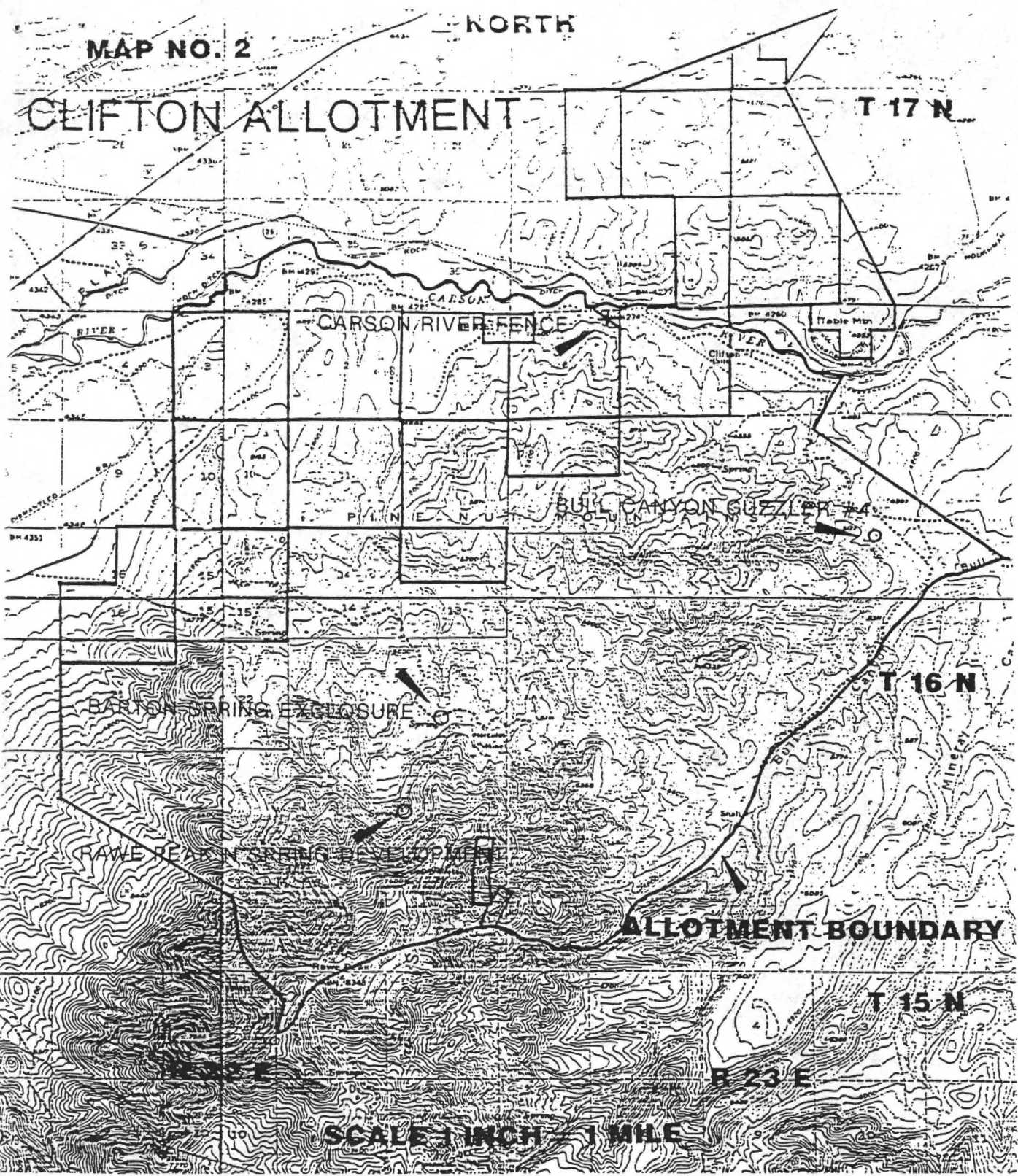


MAP NO. 2

NORTH

# CLIFTON ALLOTMENT

T 17 N



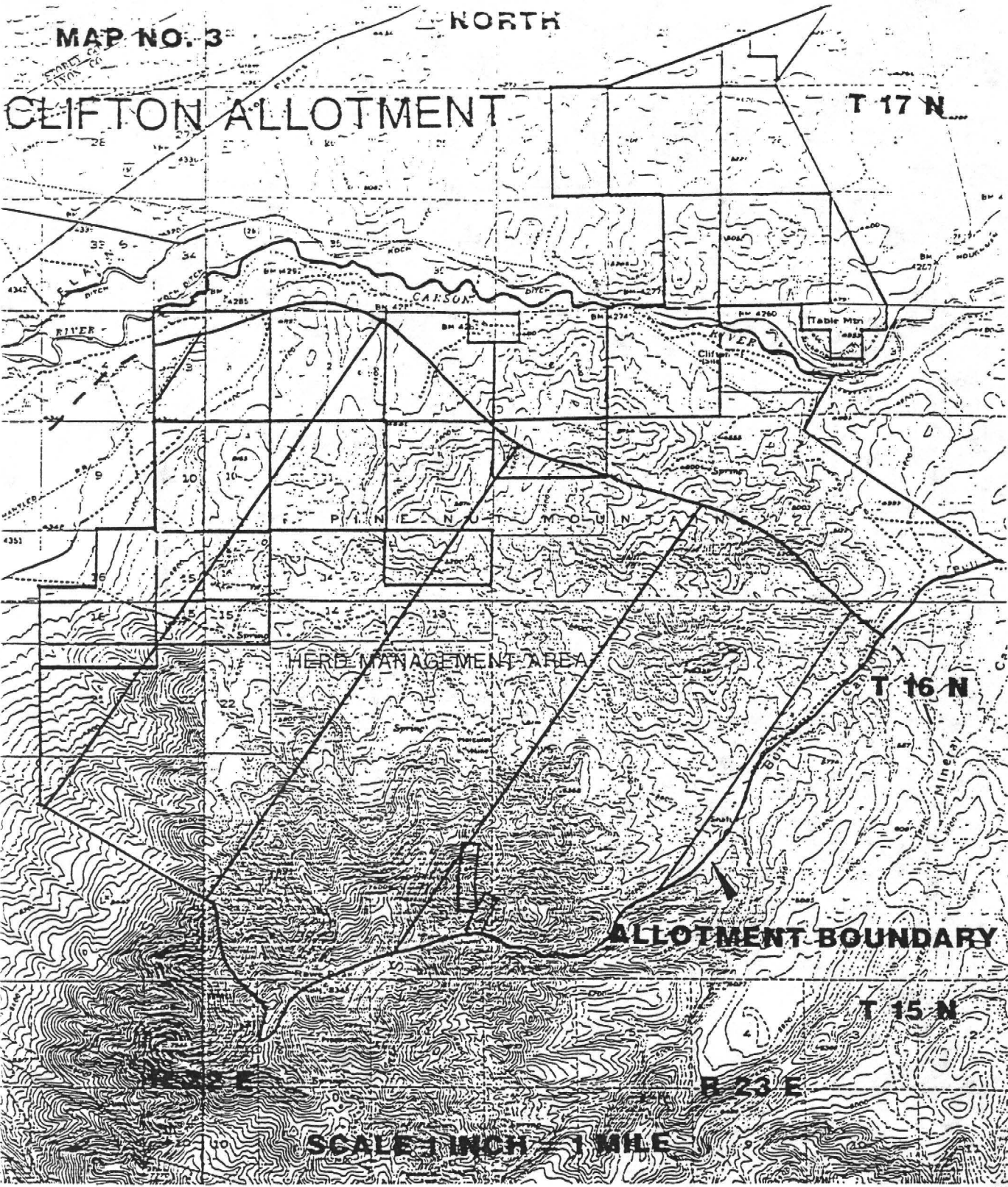
SCALE 1 INCH = 1 MILE

MAP NO. 3

NORTH

# CLIFTON ALLOTMENT

T 17 N



HERD MANAGEMENT AREA

T 16 N

ALLOTMENT BOUNDARY

T 15 N

SCALE 1 INCH = 1 MILE



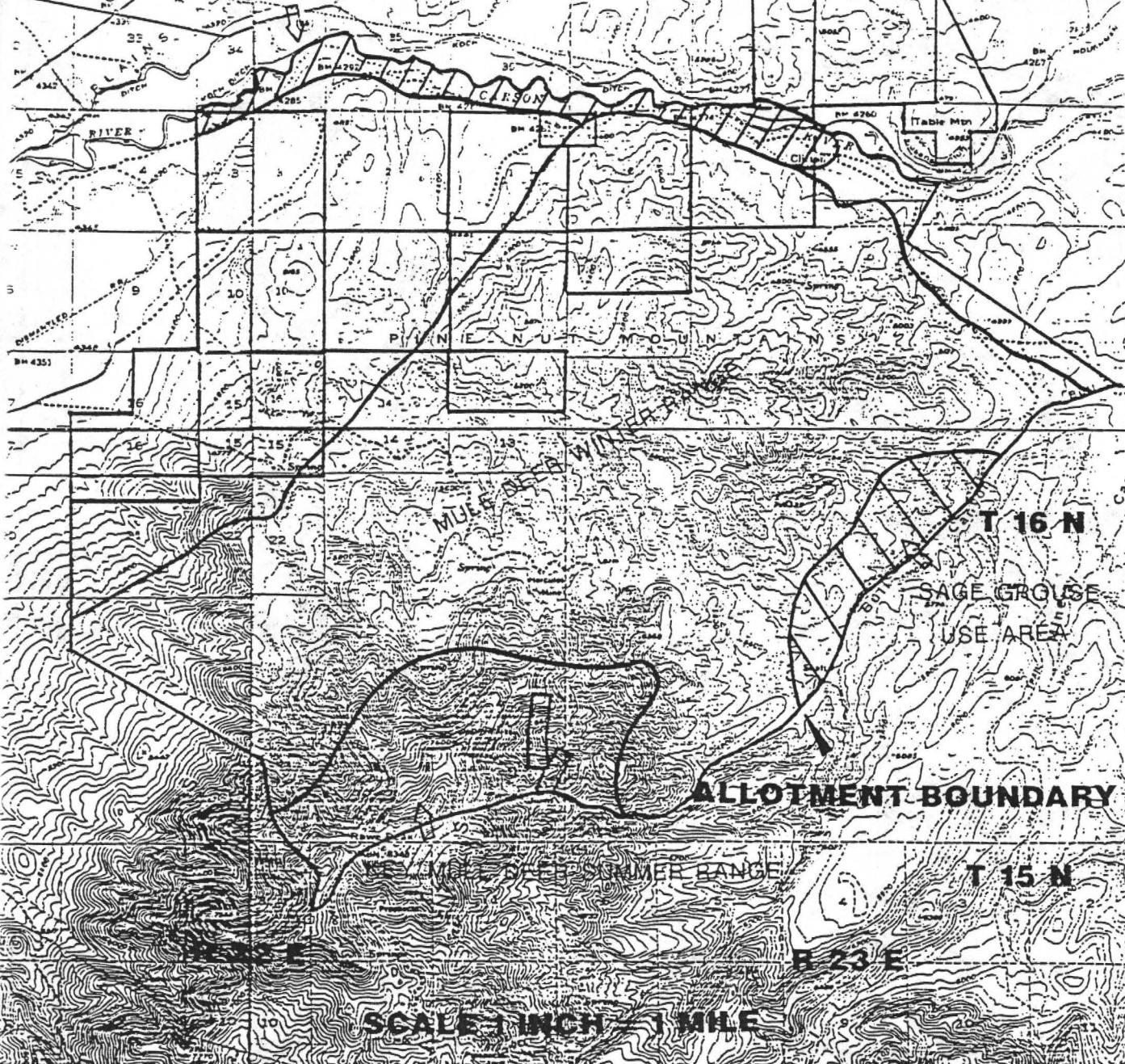
MAP NO. 4

NORTH

# CLIFTON ALLOTMENT

T 17 N

MULE DEER YEARLONG RANGE



T 16 N

SAGE GROUSE  
USE AREA

ALLOTMENT BOUNDARY

T 15 N

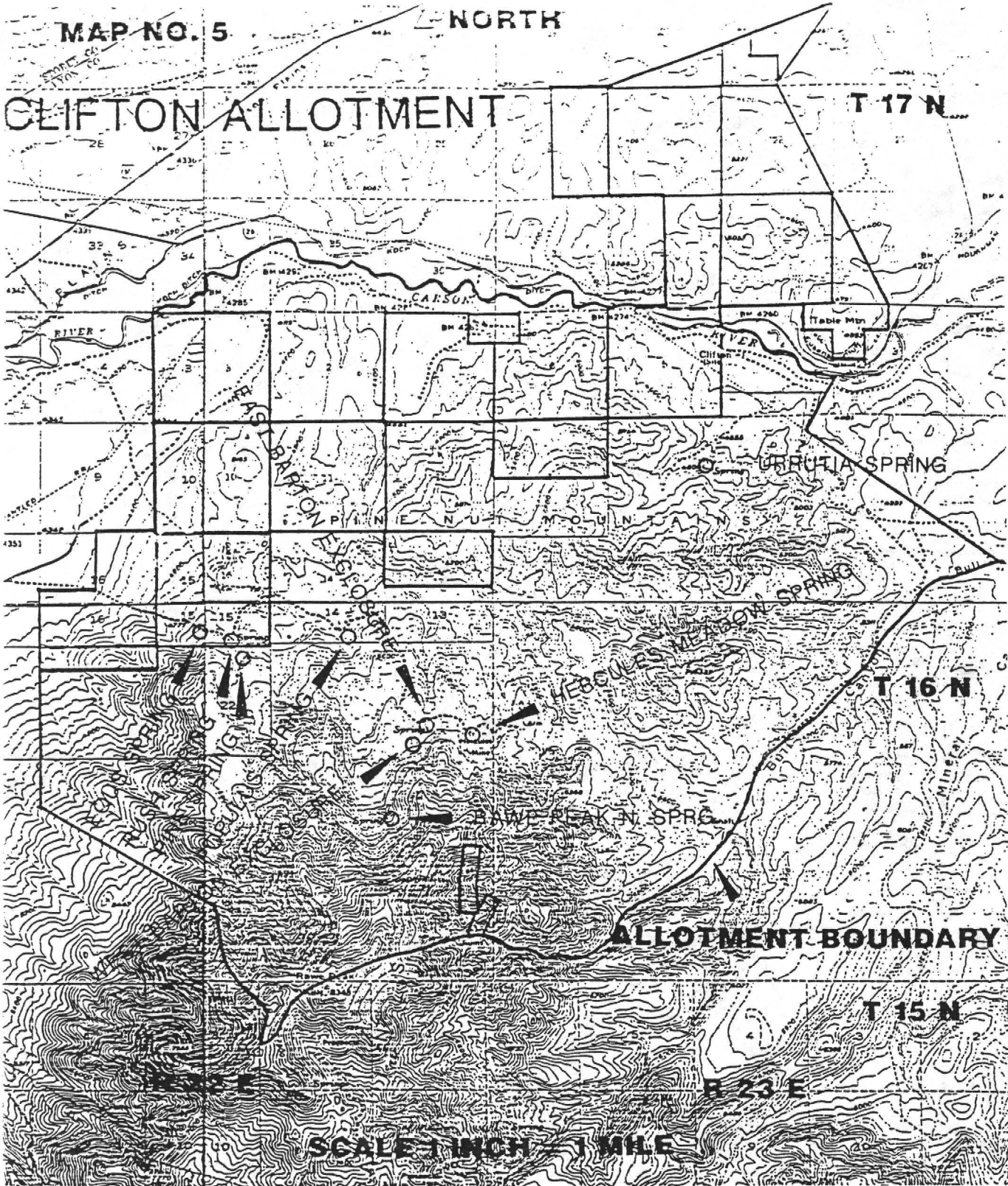
SCALE 1 INCH = 1 MILE

MAP NO. 5

NORTH

# CLIFTON ALLOTMENT

T 17 N



SCALE 1 INCH = 1 MILE

LEGEND  
USE PATTERN MAPPING  
MAPS 6 - 10

SEVERE



HEAVY



MODERATE



LIGHT



SLIGHT



NO USE

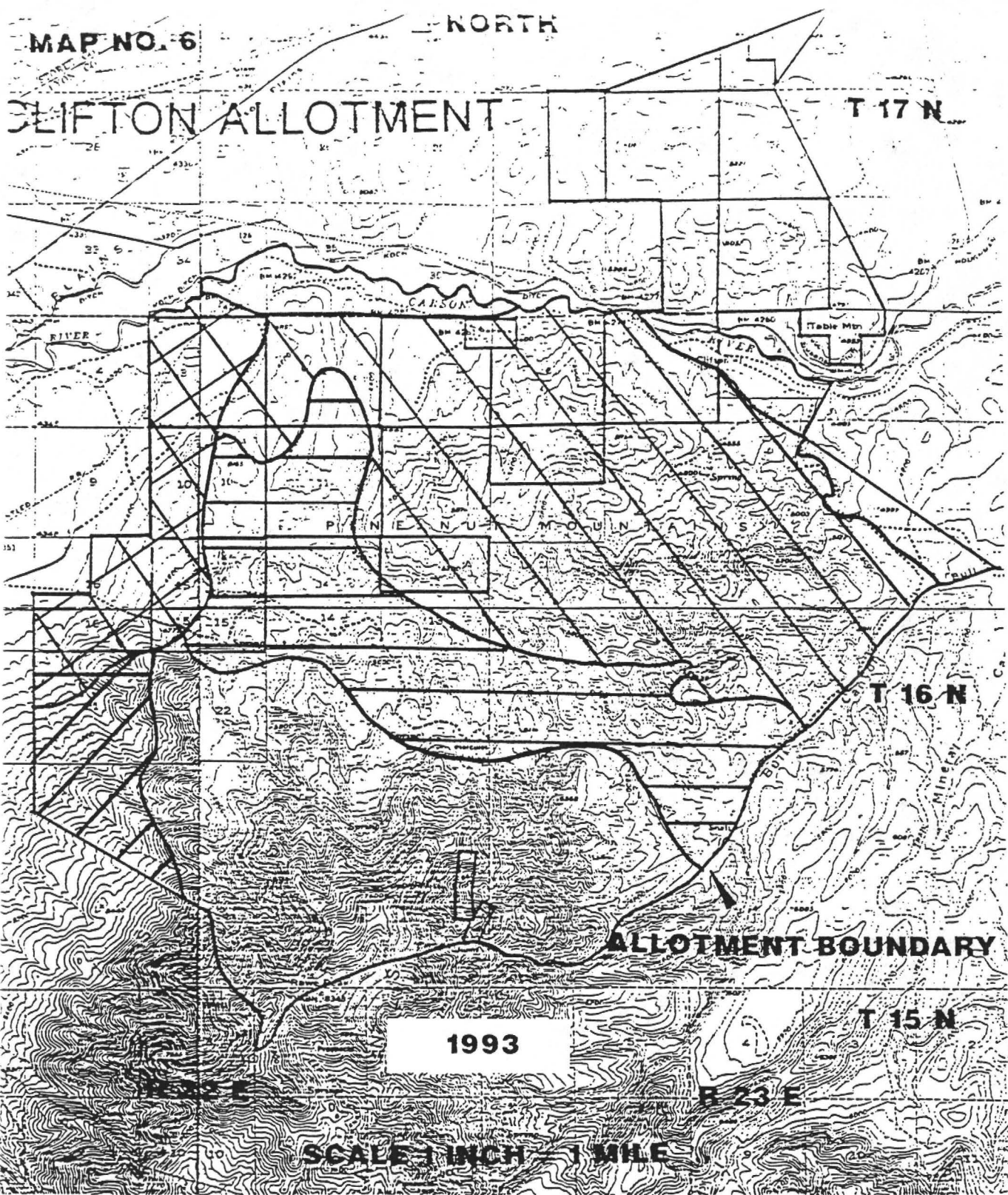


MAP NO. 6

NORTH

CLIFTON ALLOTMENT

T 17 N



1993

T 15 N

ALLOTMENT BOUNDARY

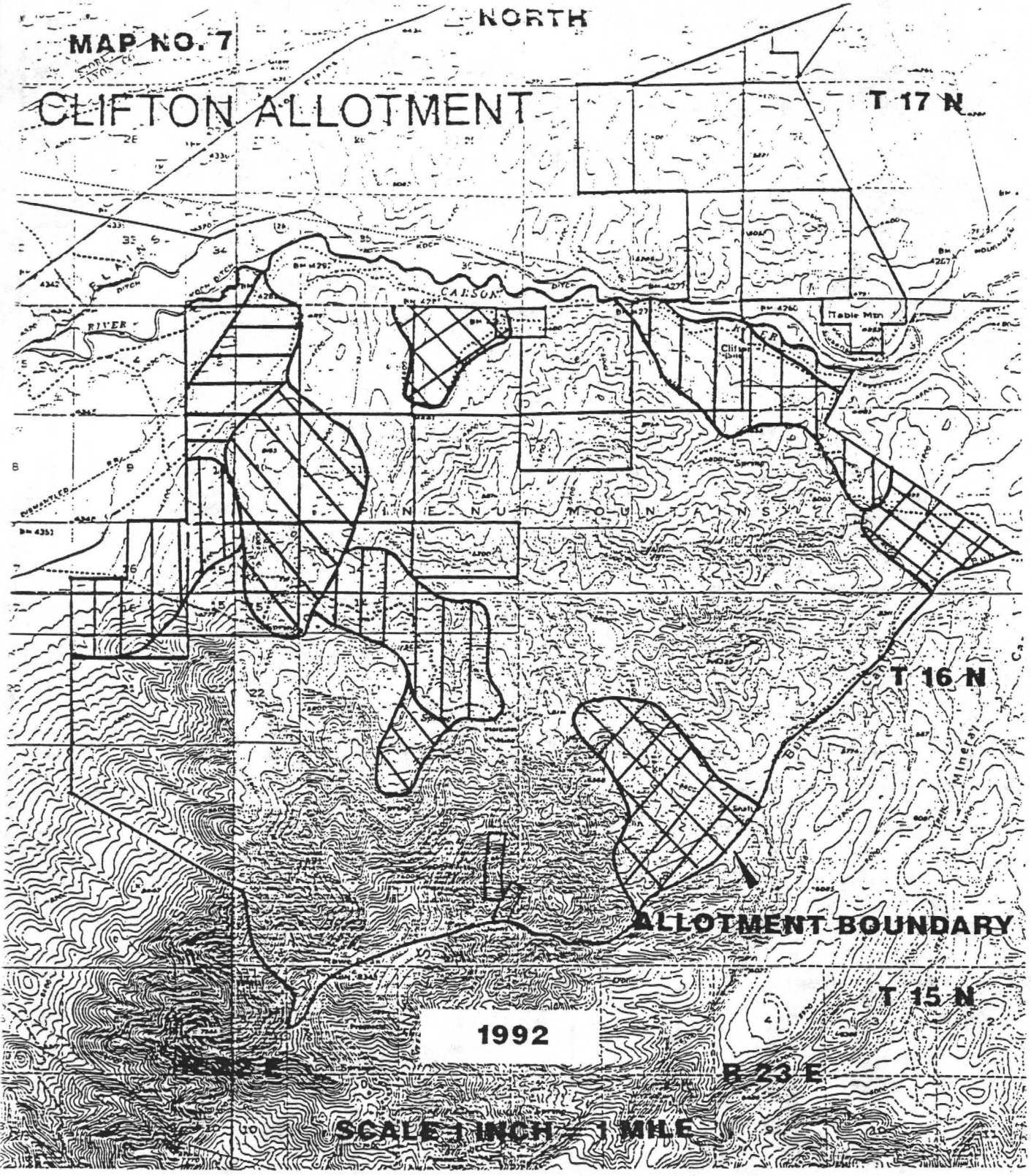
SCALE 1 INCH = 1 MILE

MAP NO. 7

NORTH

# CLIFTON ALLOTMENT

T 17 N



**ALLOTMENT BOUNDARY**

1992

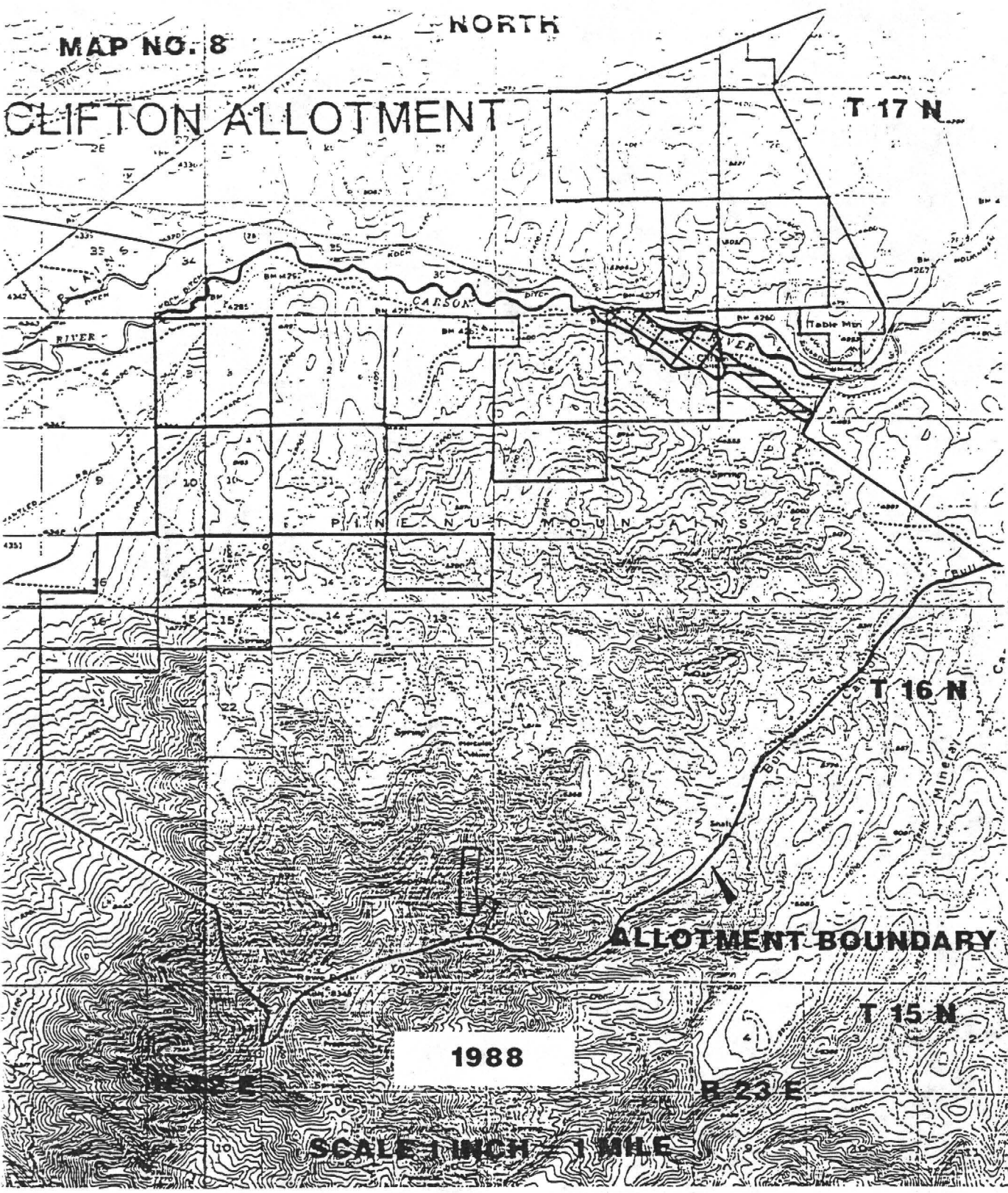
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MAP NO. 8

NORTH

# CLIFTON ALLOTMENT

T 17 N



1988

ALLOTMENT BOUNDARY

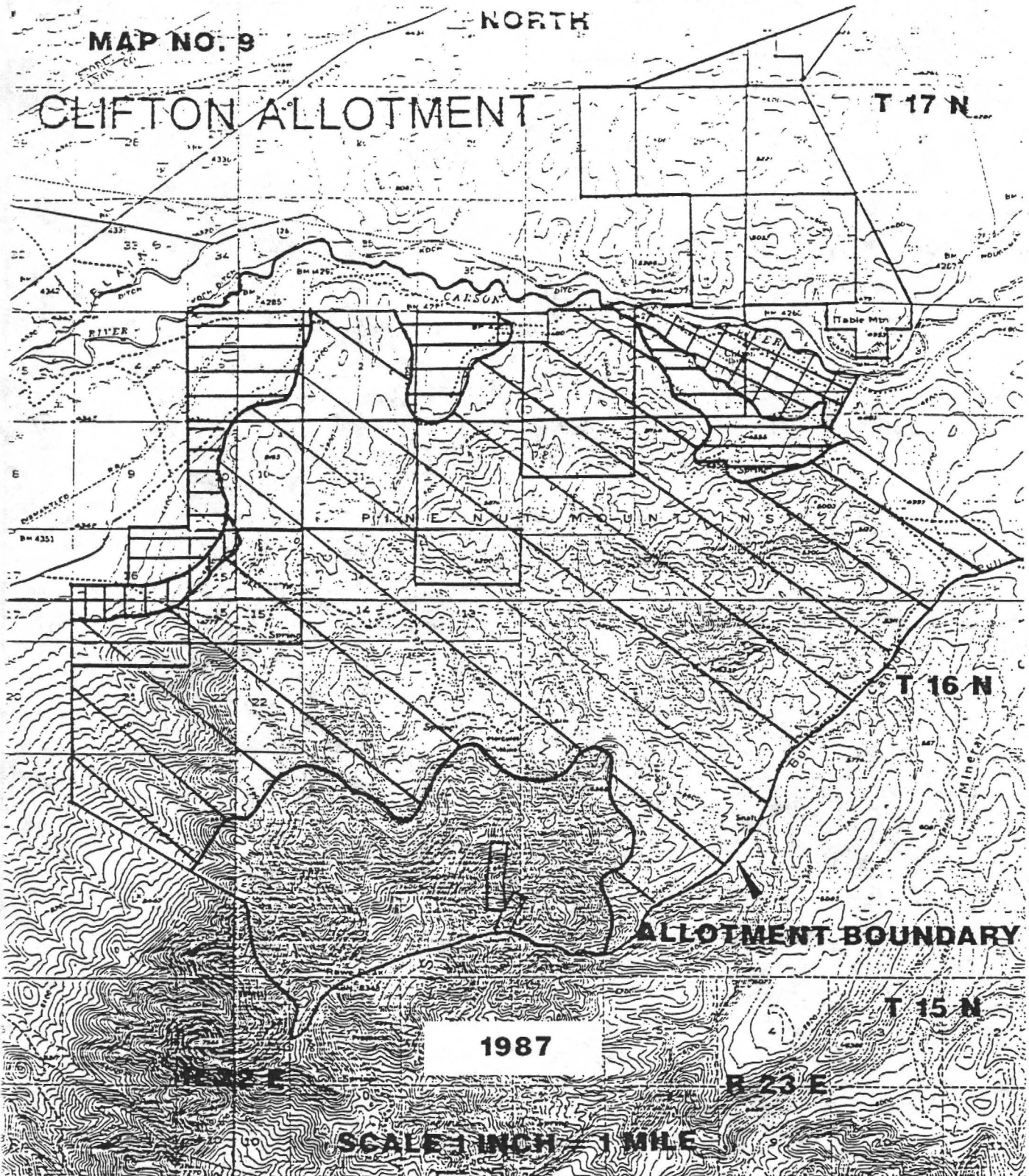
SCALE 1 INCH = 1 MILE

MAP NO. 9

NORTH

# CLIFTON ALLOTMENT

T 17 N



ALLOTMENT BOUNDARY

T 16 N

T 15 N

1987

SCALE 1 INCH = 1 MILE

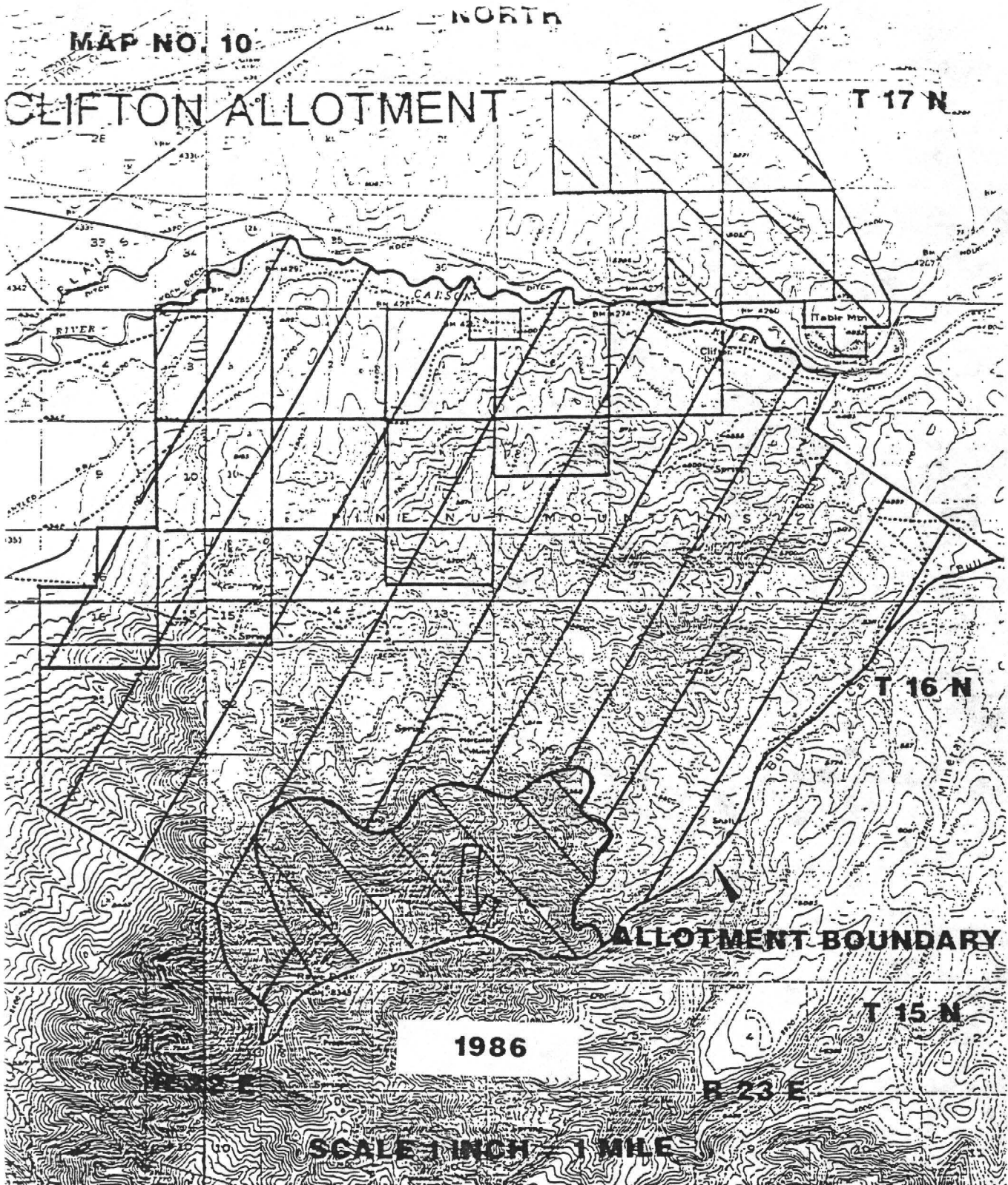
R 23 E

MAP NO. 10

NORTH

# CLIFTON ALLOTMENT

T 17 N



1986

ALLOTMENT BOUNDARY

T 15 N

SCALE 1 INCH = 1 MILE



MAP NO. 11

NORTH

# CLIFTON ALLOTMENT

T 17 N

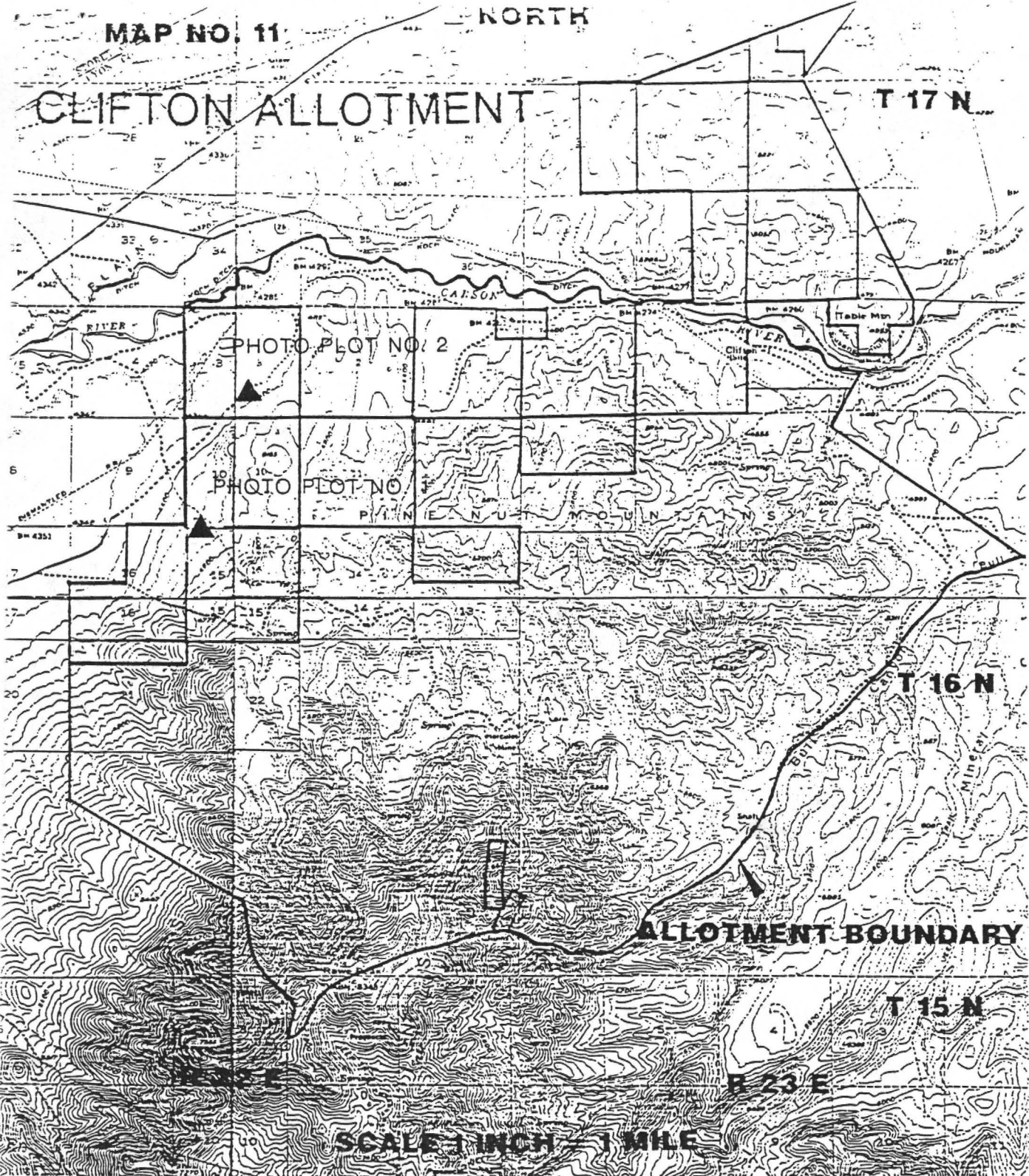


PHOTO PLOT NO. 2

PHOTO PLOT NO. 10

T 16 N

ALLOTMENT BOUNDARY

T 15 N

R 23 E

R 23 E

SCALE 1 INCH = 1 MILE

APPENDIX II  
POTENTIAL STOCKING LEVEL CALCULATIONS

## APPENDIX II

### Clifton Allotment

### Stocking Level Calculations

Shown below are the series of calculations used to derive the potential stocking level for wild horses in the Clifton Allotment. Stocking levels are determined using the Potential Actual Use formula from BLM Technical Reference (TR) 4400-7, *Rangeland Monitoring Analysis, Interpretation, and Evaluation* (November, 1985), Appendix 2, pages 54-56:

$$\frac{\text{Actual Use (AUMs)}}{\text{Average Utilization (\%)}} = \frac{\text{Potential Actual Use (AUMs)}}{\text{Desire Average Utilization (\%)}}$$

The formula compares the percent *Average Utilization* (calculated in Sections A and B, below) to the *Actual Use* of the grazing animal(s) that resulted in that utilization (Section C). Based on this comparison, the *Potential Actual Use* necessary to achieve the *Desired Average Utilization* (Section D) can algebraically be determined (Section E). The potential actual use at the desired utilization level would be the desired stocking level for this allotment.

- A. Use Pattern Mapping Data. Acreages shown below are taken from the 1993 use pattern mapping. The "No Use" category was not used in calculations relating to wild horses. Being free-roaming creatures of habit, the wild horses did not use these portions of the allotment due to topographical restrictions, fear of predation, and/or lack of forage due to dense pinyon-juniper overstory. Therefore, these areas are considered to be ungrazable by wild horses.

No livestock were grazed in the Clifton allotment in 1993, therefore all use is by wild horses.

TABLE 1  
UTILIZATION DATA WITHIN THE HERD MANAGEMENT AREA BY ALLOTMENT

Utilization Class	Class Mid-point (y)	Acres in Clifton Allot. by Class (x)	Weighted Acres (x multiplied by y)
Slight	10%	635	63.5
Light	30%	3530	1059.0
Moderate	50%	0	0
Heavy	70%	4974	3481.8
Severe	90%	958	862.2
TOTALs		10097	5466.5

Use occurred outside of the HMA as well as on private lands within the HMA. Establishing a potential stocking level considers use made within the HMA and excludes private lands.

- B. Average Utilization. The source for the weighted average formula use below is from BLM Technical Reference TR 4400-7<sup>1</sup>.

$$\text{Average Utilization} = \frac{\text{Sum (Acres per Utilization Class X Class Midpoint)}}{\text{Sum (Acres)}}$$

$$\text{Average Utilization} = \frac{\text{Sum (x multiplied by y)}}{\text{Sum (x)}} = \frac{5466.5}{10097.0} = 54.14\%$$

- C. Wild Horse Actual Use. 68 head of wild horses were counted in Clifton allotment.

$$68 \text{ wild horses} \times 12 \text{ months} = 816 \text{ AUMs}$$

- D. Desired Utilization in the Herd Management Area. Since these calculations are based on yearlong use of the allotment (i.e., during critical growth periods of plant species) it is appropriate to use the yearlong Annual Use Level (AUL) for perennial grasses (55%) shown in the *Nevada Rangeland Monitoring Handbook* (September, 1984), page 23. An equal division of forage between wild horses and livestock would result in the following desired use level:

$$\frac{55\% \text{ (yearlong use level)}}{2} = 27.5\%$$

- E. Potential Actual Use (AUMs) Calculation for Clifton Allotment. The potential actual use (i.e., potential stocking level) of wild horses necessary to achieve the average utilization level of 55% is calculated below:

$$\begin{aligned} \frac{\text{Actual Use (AUMs)}}{\text{Average Utilization (\%)}} &= \frac{\text{Potential Actual Use (AUMs)}}{\text{Desired Average Utilization (\%)}} \\ \frac{816 \text{ AUMs (C above)}}{54.14\% \text{ (B above)}} &= \frac{\text{Potential Actual Use}}{27.5\% \text{ (D above)}} \\ 414.48 \text{ AUMs} &= \text{Potential Stocking Level} \end{aligned}$$

<sup>1</sup> *Rangeland Monitoring Analysis, Interpretation, and Evaluation* (November, 1985), Appendix 1, page 52 & 53.

APPENDIX III

PINYON/JUNIPER WOODLANDS DISCUSSION -POTENTIAL

APPENDIX III

SINGLELEAF PINYON AND UTAH JUNIPER IN THE NORTHERN  
PINE NUT MOUNTAINS OF NEVADA

In preparation for evaluations on several grazing allotments located in the northern Pine Nut Mountain Range of Nevada, it was necessary to review the current research relating to singleleaf pinyon pine (*Pinus monophylla*) and Utah juniper (*Juniperus osteosperma*). This report is the culmination of that research.

I. Prehistorical and Historical Overview

A. Prehistory

Single-leaf pinyon pine migrated into the Great Basin between 5,000 to 7,000 years ago, when temperatures reach their maximum during the current (Holocene) epoch [Tausch, Wigand, and Burkhardt (1993)]. Very little documentation could be located when pinyon actually reached the Pine Nut Mountains. Utah juniper has existed in the vicinity much longer than pinyon. Research of a pack rat midden site in western Nevada showed that Utah juniper was present in every sampled stratum of the 30,000 years of the record for this site.

Young (1983) asserted that ecosystems currently dominated by pinyon and juniper evolved under episodes of periodic burning. These fires, which occurred at frequencies between ten and thirty years apart, would have restricted the trees to shallow, rocky soils in rough terrain. This idea is reflected in the climax plant community concept as it is used by the Soil Conservation Service to determine the differences in range sites and woodland suitability groups (Brackley, 1987). Wright et al (1979), on the otherhand, maintained that fire cannot be seperated from drought and competition with grasses as a controlling factor in the distribution of pinyon and junipers, especially junipers. This concept would support a more dynamic environment where trees would expand their distribution during wet years, but decrease their distribution during drought periods and/or period of increased fire activity.

Prior to the first settlers immigrating from the east, the native human population (Washoe Tribe) relied on pinyon nuts harvested in the Pine Nut Range as a major food source. Tribe members would camp in the mountains during the harvest season, removing cones from trees by flailing with long poles. More persistent cones were removed with a primitive 'hook' at the end of the flailing poles. Care was taken to avoid damaging trees during the harvest. Undergrowth was removed around the trees to aid in harvesting and to prevent the spreading of forest fires (Goodwin and Murchie, 1980). John C. Fremont contacted Washoe Tribe in 1844 near Topaz Lake in Antelope Valley, who harvested nuts from the southern

Pine Nut Range. The entry in Fremont's Journal from January 25, 1844 contains the following:

**"These (the pinyon nuts) seemed to be a staple of the country, and whenever we met an Indian, his friendly salutation consisted of offering a few nuts to eat and trade..."**

Although documentation exists to the importance of pine nut harvesting to the native population in the southern Pine Nut Range, very little information could be found of the importance of pinyon pine in the northern portion. Cultural Resource records at the Carson City District have very few prehistoric sites associated with the northern Pine Nuts.

#### B. Discovery of the Comstock Lode

With the discovery of the Comstock Lode, pinyon and juniper in the vicinity of Virginia City was harvested extensively for fuel, being almost depleted by the 1860s (Van Hooser and Casey, 1987). Once this occurred, wood was harvested from the Sierra Nevadas and probably, to a large degree, throughout the northern Pine Nut Range. The Pine Nut Mountains also supported the needs of communities such as Carson City (1851 to present), Dayton (1853 to present), and Como (1879 to 1881)<sup>1</sup>.

A map of the "Washoe" region from 1862 (Paher, 1970, page 42) described the lower and mid fans south of Dayton as "Sage Lands". The northern Pine Nut Mountains were described as "Sparsely Timbered with Scrubby Pine & Cedar". Cadastral Survey plats from between 1861 and 1881 generally described the habitat in the vicinity of Sunrise Pass as "Mountains with Pine and Cedar Timber". Based on the surveyors notes and "Timber Line" drawn on the plats, stands of "Heavy Nut Pine Timber" was frequently interrupted by openings. Due to their location next to roads, some of these openings were presumably from timber harvesting.

Photographs from 1902 in the vicinity of Como (Paher, 1970, page 72) showed very few old pinyon and juniper trees, although young trees were visible. This could be the results of the harvesting during the mining boom.

#### C. Post Mining Boom

A twenty year depression between 1880 to 1900 resulted in a decline in population and mining activities (Pendleton et al, 1982), which in turn probably resulted in

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<sup>1</sup>Dates of communities from Pendleton et al, 1982.

a decline in wood harvesting in the northern Pine Nut Range. The heavy livestock grazing in the late 1800s and early twentieth century reduced grass competition and fuel for fires, resulting in an increase in pinyon and juniper.

## II. Impacts of Pinyon - Juniper Overstory to Understory Plant Species

Effects on understory decline due to increasing singleleaf pinyon pine and Utah juniper cover was documented by Everett and Sharrow (1983). These effects include the following:

- A. The ability of pinyon to utilize soil moisture before many of the understory species breaks dormancy and the ability of the taproot to draw moisture at greater levels than most understory species gives an extreme competitive advantage.
- B. Duff accumulation inhibits the establishment of understory species.
- C. Shading and/or toxic influences reduces understory species.
- D. As pinyon - juniper cover increase, understory cover decreases as a whole.

Everett and Sharrow (1985) found in studies from west central Nevada that grass cover, yield and nutrient content increased substantially following single-leafed pinyon and Utah juniper harvesting on north and west facing aspects, but minimal response was observed on south aspects. Based on this, tree harvesting for the purpose of improving livestock forage should not be done on south aspects. They also concluded that nitrogen levels in grasses were adequate for livestock during the summer on tree-harvested sites, but nitrogen and phosphorus levels in grasses were inadequate for deer on both harvested and non-harvested sites. Of course, overstory removal would also result in an increase in forbs and shrubs. Transition zones near the edge of wooded areas produced the best quality and quantity of grass. Although this research was directed toward livestock production, the results should be directly applicable to habitat managed for wild horses and many species of wildlife.

Tausch, Nabi, and West (1977) monitored singleleaf pinyon and Utah juniper sites throughout the Great Basin. They noted that there appears to be four stages in the takeover of an understory. The first step is seedling establishment until trees are about the size of the largest shrubs. Trees may not be noticeable in this stage. The second stage is when the trees reach one to two meters (approx. 3 to 6 feet). At the end of this stage, about 1/3 or less of the understory productivity has been lost. The plant community is completely dominated by trees by the end of the third stage, and 2/3s to over 3/4s of the understory productivity has been lost. According to Tausch, Nabi and West, stage one was completed between 1860's and 1890's and stage two was completed



on more productive sites between 1940's and 1950's (this seems to concur with information under Section I of this report). They also state:

**Much of the remainder of the Great Basin woodlands where invasion is taking place are moving into stage three and are now undergoing a rapid decline in understory productivity. By the year 2000, all but the more marginal sites of pinyon-juniper woodlands in the Great Basin will have lost most of their productive capability, if present trends continue. Tausch, Nabi and West (1977), page 29.**

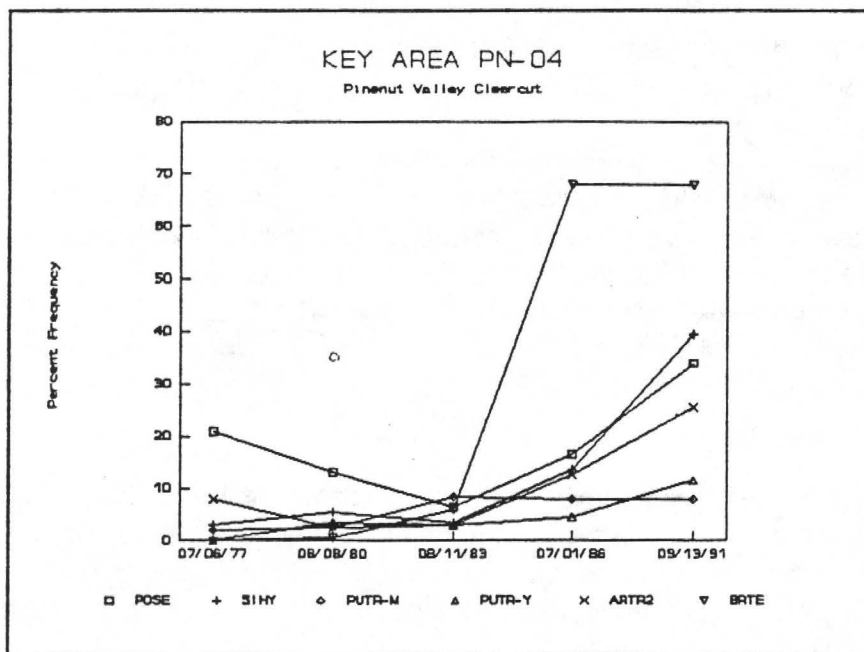
The effects of overstory removal in the Pine Nut Mountains was monitored on a 10 acre experimental pinyon - juniper clearcut done in 1977. Quadrat frequency study data was collected in accordance to procedures adapted from Tueller, etal (1972)<sup>2</sup>. The results are shown in Table 1 and Figure 1. Note that the 1977 recording was done immediately prior to the cut.

Table 1--Major Plant Species at Key Area PN04 (Pinenut Valley Clearcut).

Plant Code	Common Name	Scientific Name
ARTR2	big sagebrush	<i>Artemisia tridentata</i>
BRTE	cheatgrass brome	<i>Bromus tectorum</i>
POSE	Sandberg bluegrass	<i>Poa secunda</i>
PUTR-M	antelope bitterbrush - mature	<i>Purshia tridentata</i>
PUTR-Y	antelope bitterbrush - young	<i>Purshia tridentata</i>
SIHY	bottlebrush squirreltail	<i>Sitanion hystrix</i>

Figure 1.--Frequency study results for Key Area PN04 (Pinenut Valley Clearcut).

<sup>2</sup>Procedures eventually included in BLM Technical Reference 4400-4 (Trend Studies) 1985, pages 29 - 35.



Note that the frequency initially declined or remained static on all species except mature bitterbrush. Based on Carson City and Yerington precipitation data, this coincides with a short drought between 1977 and 1979 . After 1983 (a peak precipitation year), Sandberg bluegrass, bottlebrush squirreltail, big sagebrush and cheatgrass showed dramatic increases. Although mature bitterbrush frequency leveled out, young bitterbrush plants increase.

The beneficial effects of reduced overstory competition could be easily negated by improper management of wild horses and livestock. This is quite evident in quadrat frequency and key area utilization data from a chaining and seeding the Sunrise Allotment. Monitoring results showed that significant reductions in crested wheatgrass (*Agropyron cristata*, *A. desetorum*, or crosses) coincided with heavy and severe use levels due primarily to wild horses<sup>3</sup>.

### III. Impacts of Fire on Pinyon - Juniper Community

Based on Wright, et al (1979), pinyon and juniper less than 4 feet in height were killed during spring fires when temperatures were 70 to 74° F. (21 to 23° C.), relative humidity of 20 to 40 percent and wind speeds were 10 to 20 miles/hour. June fires when temperatures were 97° F. resulted in 100 percent kill on trees less than 4 feet, but was no more effective in killing taller trees than the spring burn. Fine fuels in the understory (approximately 600 to 800 lbs/acre) are necessary to carry the fires, which means that the

<sup>3</sup>This is discussed in the Sunrise Allotment Evaluation completed by the Walker Resource Area on January 11, 1994.

reduced understory from dense stands of pinyon and juniper (495 to 988 trees / acre) may result in reduced tree kill. In this situation, winds greater than 35 mi/h would be required. The "White Pine County Formula" was developed to determine whether pinyon - juniper stands will burn or not:

$$\text{Index} = \text{Maximum wind (mi/hr)} + \text{Shrub and tree cover (\%)} + \text{Air temperature (°F.)}$$

An index higher than 110 will result in the fire being carried and large pinyon and juniper trees being killed. If the index is above 130, the conditions are too dangerous to burn. Pure stands of juniper are more difficult to kill than mixed stands of pinyon and juniper.

However, if fire prescriptions are developed for the northern Pine Nut Mountains, it is important to consider the impacts to other plant species. Tables 2 and 3 are summaries of fire effects on major plant species found in the Pine Nut Mountains. This data is based on information from Wright, et al (1979).

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Table 2.--Summary of fire effects on major plant species found in the Northern Pine Nut Mountains of Nevada. Information contained in this table is from Wright, et al (1979).

Species	Sprouting Ability	Response to fire	Recovery Time (Years)	Remarks
SHRUBS				
Antelope bitterbrush ( <i>Purshia tridentata</i> )	Weak Sprouter	Severely Damaged by summer and fall burns	30 - 40	Effect determined by growth form; decumbent form sprouts vigorously, columnar form is a weak sprouter. If plants sprout, they will recover in 9 to 10 years. Spring burns enhance sprouting but fall burns are best for reproduction from seed. Burn when soil is wet.
Big sagebrush ( <i>Artemisia tridentata</i> )	Non-sprouter	Severely harmed	30	Good seed crop before burning hastens recovery. Effective control requires burning before seed-set.
Low sagebrush ( <i>Artemisia arbuscula</i> )	Non-sprouter	Rarely burned.		May be used as a fuel break.
Rubber rabbitbrush ( <i>Chrysothamnus nauseosus</i> ) & Douglas rabbitbrush ( <i>C. viscidiflora</i> )	Vigorous sprouter	Enhanced	20 - 25	May be killed if burned after heavy grazing or burned in early summer.
Horsebrush ( <i>Tetradymia</i> sp)	Vigorous sprouter	Enhanced	30 - 35	Toxic, increases fivefold within 12 years.
Snowberry ( <i>Symphoricarpos</i> sp)	Sprouter	Unharmed	10 - 15	Enhanced by cool fires but harmed by hot fires.
Curleaf mountain mahogany ( <i>Cercocarpus ledifolius</i> )	Sprouter	Moderately harmed	Not available	More information is needed.
Serviceberry ( <i>Amelanchier</i> sp)	Sprouter	Slightly harmed	30 - 50	Highly adaptable to fire; soil being moist at the time of the burn is important. Usually poor reproduction from seed.
Ocean-spray ( <i>Holodiscus</i> sp)	Sprouter	Enhanced	20 - 30	
Rose ( <i>Rosa</i> sp)	Sprouter	Enhanced	15 - 30	
GRASSES				
Nevada bluegrass ( <i>Poa nevadensis</i> )	N/A	Slight damage	1 - 3	The bluegrasses are generally small plants and fire damage is minimal with late summer and fall burns.
Sandberg bluegrass ( <i>Poa secunda</i> )		Undamaged	1 - 3	

Species	Response to Fire	Recovery Time (Years)	Remarks
GRASSES (Cont.)			
Cheatgrass ( <i>Bromus tectorum</i> )	Undamaged	1	Any reduction to cheatgrass stands is usually short lived.
Indian ricegrass ( <i>Oryzopsis hymenoides</i> )	Slight damage	2 - 4	Good resistance to burning but slow to increase in density.
Needle-and-thread ( <i>Stipa comata</i> )	Severe damage	4 - 8	Needle grass are generally the least fire-resistant bunchgrasses. Large plants are damaged more than small plants. A 50 percent reduction in basal area should be anticipated among the various size plants in a given area.
Thurber needlegrass ( <i>Stipa thurberana</i> )	Severe damage	4 - 8	
Bottlebrush squirreltail ( <i>Sitanion hystrix</i> )	Slight damage	1 - 3	One of the most fire resistant bunchgrasses, although burning in a dry year can reduce basal area. Bottlebrush squirreltail can increase several years after burning.
Crested wheatgrass ( <i>Agropyron cristata</i> , <i>A. desertorum</i> & crosses)	Undamaged	1 - 2	Wheatgrasses are difficult to burn in seeded monocultures.
Riparian wheatgrass ( <i>Agropyron dasystachyum riparium</i> )	Undamaged	1 - 2	
Western wheatgrass ( <i>Agropyron smithii</i> )	Undamaged	1 - 2	

Table 3.-- Response of forbs in Northern Pine Nut Mountain to fall burning. From Wright, et al (1979)

Severely Damaged	Slightly Damaged	Undamaged
None listed in Wright et al are found in Pine Nut Mountains	Milkvetches ( <i>Astragalus</i> sp) Pinnate tansymustard ( <i>Descurania pinnata</i> ) Globemallows ( <i>Sphaeralcea</i> sp) Tapertip hawksbeard ( <i>Crepis acuminata</i> ) Tumblemustard ( <i>Sisymbrium altissimum</i> )	Arrowleaf balsawroot ( <i>Balsamorhiza sagittata</i> ) Common sunflower ( <i>Helianthus annuus</i> ) Coyote tobacco ( <i>Nicotiana attenuata</i> ) Foothill deathcamas ( <i>Zigadenus paniculatus</i> ) Longleaf phlox ( <i>Phlox longifolia</i> ) Russian thistle ( <i>Salsola kali</i> ) Common yarrow ( <i>Achillea millefolium</i> ) Wild onion ( <i>Allium</i> sp)

APPENDIX III - CLIFTON WOODLAND POTENTIAL

DAYTON/COMO/FLOWERY PEAK/AND MISFIT FLAT QUADRANGLES					
SMU	TOTAL TREED ACRES	NO TREED	TOTAL ACRE	% NAT WOODS	WOODED
201		61.13	61.13		
202		228.38	228.38		
204		284.01	284.01		
254		27.69	27.69		
261		39.82	39.82		
263		10.36	10.36		
291		27.47	27.47		
292		149.19	149.19		
293		23.96	23.96		
294		37.16	37.16		
311		1095.49	1095.49		
313	2.84	492.25	495.09		
314	6.48	589.61	596.09		
371	533.73	94.18	627.91	HYLOC 45%	282.56
372	2322.93	371.62	2694.55	HYLOC 35%; ASPEN 1	943.09
411		1085.55	1085.55		
412	323.51	10980.35	11303.86		
481		12.8	12.8		
483		11.78	11.78		
511		15.01	15.01		
521		58.65	58.65		
523		14.95	14.95		
532		20.79	20.79		
534		28.57	28.57		
553		13.5	13.5		
611		11.09	11.09		



APPENDIX III

- CLIFTON WOODLAND POTENTIAL

621		26.92	26.92		
623		24.61	24.61		
651		632.48	632.48		
653		828.11	828.11		
661		96.58	96.58		
662		58.8	58.8		
681		141.42	141.42		
701		278.75	278.75		
711	66.46	502.4	568.86		
731		211.39	211.39		
741		126.5	126.5		
744		41.56	41.56		
751		10.11	10.11		
753		44.8	44.8		
754		30.32	30.32		
755		81.49	81.49		
826		6.59	6.59		
831	472.34	90.56	562.9	HYLOC 30%	168.87
841	469.75	30.19	499.94		
	4198.04	19048.94	23246.98		1394.52

Official allotment acreage is 23,247 acres. This includes 6677 acres of private land and 16570 acres of public land.

This equates to approximately 6% of the allotment being a natural woodland site. The current situation shows that 18% of the allotment is currently treed. This is based on the total acreage of both public and private land.

2/10/95

BOB MILLER  
Governor

STATE OF NEVADA

CATHERINE BARCOMB  
Executive Director



**COMMISSION FOR THE  
PRESERVATION OF WILD HORSES**

255 W. Moana Lane

Suite 207A

Reno, Nevada 89509

February 10, 1995  
(702) 688-2626



Mr. John Singlaub  
District Manager  
Carson City District  
Bureau of Land Management  
1535 Hot Springs Road  
Carson City, Nevada 89706-0638

Subject: Clifton Allotment Evaluation

Dear Mr. Singlaub:

The Commission for the Preservation of Wild Horses appreciates your consultation concerning the Pine Nut Wild Horse Herd. The Clifton Allotment is alike many of the allotments of the Pine Nut Range with constant wild horse use and infrequent livestock use. Data collected on this allotment shows five years of actual use and use pattern mapping data which would allow for an accurate determination of appropriate management level for this allotment.

Page 7, Actual Use

Wild horse and livestock actual use data is available from 1986 to 1990. This joint actual use data can be used to determine a carrying capacity to be split between users.

Was actual use by wild horses determined by the assumption of one adult/foal equal an animal unit month?

Page 9, Use Pattern Mapping

Use pattern mapping data are available for years when the allotment was jointly used by livestock and wild horses. These data with actual use data could be use in carrying capacity computations.

Appendix II

Only 1993 wild horse actual use and use pattern mapping data were used for determining the allotments livestock stocking rate and appropriate management level for wild horses. Monitoring was to

Mr. John Singlaub  
February 10, 1995  
Page 2

replace a one time inventory process and use all available data to determine a carrying capacity.

Weight averaging utilization data discounts the adverse impacts to riparian and other portions of this allotment suffering over utilization.

Allocation of available forage should be based upon the percentage of the necessary reduction to achieve a carrying capacity for the allotment.

Sincerely,  
  
Catherine Barcomb  
Director

February 10, 1995

Mr. John Singlaub  
District Manager  
Carson City District  
Bureau of Land Management  
1535 Hot Springs Road  
Carson City, Nevada 89706-0638

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Sincerely,

DAWN Y. LAPPIN  
Director