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BUREAU OF LAND MANAGEMENT
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In Reply Refer To:
4130/4400.4 (NV-012)

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Big Springs Ranch
Larry Schutte
HC 67 Box 2039 Oasis
Wells, NV 89835

Egbert Livestock LLC
HC 60 Box 135
Wells, NV 89835

SEP 26 2000

Dear Permittees:

The Elko Field Office has completed an allotment evaluation of grazing management on the Big Springs Allotment to determine whether changes are necessary to ensure significant progress toward attainment of the standards for rangeland health and multiple use objectives. I have enclosed a copy of the allotment evaluation for your review. Please provide any written comments as clearly and concisely as possible within 30 days of the date of this letter.

Sincerely yours,

CLINTON R. OKE
Assistant Field Manager
Renewable Resources

Enclosure: As stated

cc: BSR Associates, Ltd.
Newmont Gold Co.
Nevada Division of Wildlife, Region II
Nevada State Clearinghouse Department
Nevada Cattlemen's Association
HTT Resource Advisors
Wild Horse Organized Assistance
Charles and John Young
Commission for the Preservation of Wild Horses

Nevada Land and Resource Co.
U.S. Fish and Wildlife Service
Nevada Division of Agriculture
Elko Board of County Commissioners
Resource Concepts, Inc.
Toiyabe Chapter of the Sierra Club
Friends of Nevada Wilderness
M. Jeanne Hermann

**BIG SPRINGS
ALLOTMENT EVALUATION
SEPTEMBER 2000**

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- Appendix 3 - Wild Horse Census Data
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I. INTRODUCTION

- A. ALLOTMENT NAME:** BIG SPRINGS
ALLOTMENT NUMBER: 04306
- B. EVALUATION PERIOD:** (1977) 1987-2000
- C. SELECTIVE MANAGEMENT CATEGORY:** I (Improve)
PRIORITY: 12th on the current planning efforts in the Rangeland Program Summary

II. PURPOSE OF EVALUATION

- Summarize management on the allotment during the evaluation period;
- Analyze monitoring data collected during the evaluation period;
- Determine whether the standards for rangeland health and multiple-use objectives are being met or adequate progress is being made;
- Make recommendations regarding the need to revise objectives;
- Recommend changes in management needed to achieve the standards for rangeland health and multiple use objectives.

III. ALLOTMENT PROFILE AND OBJECTIVES

A. DESCRIPTION

The Big Springs Allotment is located in the approximate center of the Wells Resource Area, Elko District, Nevada (see Map 1, Appendix 1). This allotment encompasses the northern portions of two valleys - the Independence and Steptoe/Goshute Valleys. These valleys are separated by the Pequop Mountains. The allotment is bounded on the east by the crest-line of the Toano/Goshute Mountain Range and bounded on the west by the crest-line of the Wood Hills. These mountain ranges trend north/south. The distance between the northernmost and southernmost boundary of the allotment is thirty-nine miles, while the westernmost and easternmost boundaries have a range of thirty miles (see Map 2, Appendix 1).

The Big Springs Allotment also varies in elevation from the lowest point of northern Steptoe Valley (southeast boundary) which lies at 5,582 feet above sea level to the highest point of the 9,249 foot South Pequop Mountain (centrally located).

In 1999, the BSR Land Exchange was finalized. This land exchange increased the amount of public lands in the Big Springs Allotment by approximately 70,000 acres and conversely decreased the amount of private lands by the same amount. This exchange resulted in much of the eastern portion of the allotment becoming public land as well as a portion on the south end of the west side of the allotment. However, most of the area on the west side of the allotment continues to have a checkerboard land ownership pattern.

Some of the notable resource values within the Big Springs Allotment include livestock forage, a wild horse herd management area; mule deer year-long and critical winter habitat, elk summer and year-long habitat; antelope summer and year-long habitat; sage grouse strutting, nesting and brood rearing habitat; chukar habitat; blue grouse habitat, ferruginus hawk habitat, a portion of the Bluebell Wilderness Study Area, dispersed camping, hunting and wildlife watching, routes for off highway vehicle recreation as well as competitive motorcycle and mountain bicycle events, and forestry resources that provide Christmas trees, firewood, pine nuts, and posts. The Big Springs Allotment also includes a watershed that provides important sources of municipal water piped to the city of Wendover, Nevada. In addition, exploratory drilling for minerals in the Pequop Mountains has been occurring.

B. ACREAGE

The allotment contains 365,493 public land acres and 113,595 private land acres totaling 479,088 acres.

The combined public and private land acreage by pasture has been identified in Table 1 below.

Table 1. Acreage by Pasture		
Pasture Name	Pasture Number	Acres
Holborn	01	16,471
North Pequop Mountains (Includes Upper and Lower Squaw Creek Ranch Fields)	02	53,443
Railroad Field	03	3,179
Windmill Field	04	3,179
East Squaw Creek	05	14,030
Collar and Elbow	06	69,910
East Pequop Bench	07	72,775
Shafter	08	103,140
North Home Ranch	09	4,016
Payne Basin	10	17,788
Six Mile	11	5,927
Independence Valley	12	117,916
Fenced Federal Range (FFR)	13	493
Total	All	479,088

C. OBJECTIVES

1. Standards for Rangeland Health, and Wells Resource Management Plan (RMP) Objectives:
Refer to Appendix 2.
2. Allotment Specific Objectives:
Refer to Appendix 2.
3. Specific Key Area Objectives:
Refer to Appendix 2.

IV. BACKGROUND INFORMATION

A. LIVESTOCK USE

Currently, the Big Springs Grazing Allotment is divided down the crest-line of the Pequop Mountains to create two separate grazing use areas for the two permittees. Egbert Livestock LLC holds the grazing privileges on the west side of the Pequop crestline while Parasol Ranching LLC holds the grazing privileges on the east. Prior to 1995, both the east and west sides of this allotment were grazed by one operator as a single allotment.

1. Grazing Privileges for Parasol Ranching LLC (East Big Springs):
 - a. Permitted Use: 16,598 AUMs*
 - b. Suspended: 0
 - c. Active: 16,598 AUMs
 - d. Percent Public Land - 87%*

* In 1999, the Bureau of Land Management acquired approximately 70,000 acres of private lands primarily within the eastern portion of the Big Springs Allotment through the BSR Land Exchange. In April 2000, as a result of the land exchange, the percent public land increased from 68% to 87% which increased public land permitted use for Parasol Ranching LLC from 12,887 AUMs to 16,598 AUMs.

2. Grazing Privileges for Egbert Livestock LLC (West Big Springs):
 - a. Permitted Use: 5,385 AUMs
 - b. Suspended: 0
 - c. Active: 5,385 AUMs
 - d. Percent Public Land - 58%
3. Total Allotment Grazing Privileges: 21,983 AUMs
4. Season of Use/Grazing System: 03/01 to 02/28 (year-long)
5. Kind of Livestock: Cow/calf pairs, Dry cows, and Yearlings

B. WILD HORSES

1. Historical Wild Horse Use in Big Springs Allotment

The Wild and Free-Roaming Horse and Burro Act became law on December 15, 1971. With the passage of this act, the authority to manage wild horses and burros on public land was assigned to the Bureau of Land Management (BLM) and U.S. Forest Service. The Act proclaims that wild and free-roaming horses and burros are protected from capture, branding, harassment, or death. They are to be considered, in the area where they were found in 1971, as an integral part of the natural system.

The Elko District was formerly divided into two Resource Areas and the management of wild horses was guided by the Elko and Wells Resource Management Plans. These plans recognized herd areas and set initial herd sizes for wild horses within those herd areas. In 1992, the Wells Resource Area began a wild horse amendment to the Wells RMP. This process was completed on August 2, 1993, with the issuance of the Final Wells Resource Management Plan Approved Wild Horse Amendment and Decision Record. The Wild Horse Amendment is the document which currently guides wild horse management in a portion of the Elko District, and is available upon request at the Elko Field Office.

The Goshute HMA is made up of six grazing allotments including the Big Springs Allotment. Horses are able to move freely about all six allotments, except during the winter months when snow accumulations may prevent horses from traveling east to west over the top of the Goshute Mountains. Horses travel between the Shafter Pasture of the Big Springs Allotment and the Spruce Allotment by trailing around the end of the fence which separates the two allotments. Most of the immigration and emigration to and from the Goshute HMA is across the valley to the neighboring Antelope Valley HMA, especially the Dolly Varden Mountains. Horses caught and marked in the Goshute HMA have been found in the Antelope Valley HMA as have marked horses from the Antelope Valley HMA been found in the Goshute HMA. Wild Horses are also able to move from the Goshute HMA to the Spruce-Pequop HMA. Tables in Appendix 3 display wild horse census data and actual use during the evaluation period.

2. Appropriate Management Levels (AML)

The initial management level for wild horses, as specified in the Rangeland Program Summary (RPS), was to provide forage to sustain up to 1,560 AUMs (130 wild horses) of wild horse use. This came from the Wells Record of Decision dated July 16, 1985. Under the preferred alternative of the RMP, wild horses were to be managed at existing numbers (March 11, 1981) as a starting point for monitoring purposes.

Since the RPS was issued, the Interior Board of Land Appeals (IBLA) rendered a decision (IBLA 88-591, 88-638, 88-648, and 88-679 API v. BLM) which clarified that a wild horse herd size is to be established based on the concept of maintaining a thriving ecological balance. Therefore, the objective for managing wild horses has been reworded as follows:

"Manage for a wild horse herd size which will maintain a thriving ecological balance consistent with other multiple uses while remaining within the wild horse herd management area."

As the Wells Resource Area began collecting data to establish thriving natural ecological balances within the Herd Areas (HAs), it became apparent that a RMP Amendment was needed to establish HMAs, clarify boundaries and to set initial herd sizes. The Wells RMP Wild Horse Amendment became final on August 2, 1993 and established initial herd sizes for the Goshute, Maverick-Medicine, Antelope Valley and Spruce-Pequop HMAs at 160, 389, 240 and 82 wild horses respectively. *The Amendment deleted the Pequop Mountains from wild horse management.* The AML for wild horses in the Shafter Pasture of the Big Springs Allotment will be determined through this allotment evaluation process.

3. Herd Management Area Within the Allotment

a. Goshute HMA

Approximately 39% of the Goshute HMA acres fall within the Big Springs Allotment boundary. See Map 3, Appendix 1 for the location of the HMA in the Shafter Pasture.

C. WILDLIFE USE

1. Mule Deer:
 - a. Existing numbers: 3,131 deer (4,051 AUMs)
 - b. Reasonable numbers: 4,834 deer (6,211 AUMs)
 - c. Key/critical management areas: The Wells RMP identified the following habitat areas: deer summer (DS-4), deer winter (DW-9,10,11, and Goshutes). Based on an updated map (Map 4, Appendix 6) provided by the Nevada Division of Wildlife (NDOW), some changes have been made. The RMP did not designate deer spring range (DSP), deer crucial winter range (DCW), or deer yearlong range (DY); however, use is occurring in those areas shown on Map 4, Appendix 1 (mule deer habitat boundaries). Table 2 below outlines the acres of the mule deer seasonal use areas within the Big Springs Allotment as well as established key use areas.

Table 2. Deer seasonal use areas.		
Deer Seasonal Use Area	Acres	Key Use Areas
Deer Summer (DS) - Wood Hills	2,562	None
Deer Winter (DCW) - Wood Hills	16,728	DCW-09-T-01
		DCW-09-T-03
Deer Spring (DSP) - Wood Hills	2,385	None
Deer Spring (DSP) - Pequop Mts	15,739	None
Deer Yearlong (DY) - Pequop Mts.	111,889	DW-10-T-01A
		DW-10-T-01B
		DW-10-T-02
		DW-10-T-03
		DCW-10-T-04
		DW-10-T-(4306-09)
		DW-10-T-(4306-11)
		DW-10-T-(4306-13)
Deer Winter (DW) - Pequop Mts. North	4,378	None
Deer Winter (DW) - Pequop Mts. South	3,271	None
Deer Yearlong (DY) - Toano/Goshute Mts.	60,089	None
Deer Winter (DW) - Toano/Goshute Mts.	4,459	DW-11-T-01

2. Pronghorn Antelope:
 - a. Existing numbers: 19 antelope (46 AUMs)
 - b. Reasonable numbers: 76 antelope (182 AUMs)
 - c. Key/critical management areas: The Wells RMP identified the following habitat area: antelope yearlong (AY-4). Antelope summer (AS) range was not designated in the RMP, however use is occurring in those areas shown on Map 5 Appendix 1. Table 3 below outlines the acres of antelope seasonal use areas within the Big Springs Allotment as well as established key use areas.

Table 3. Antelope seasonal use areas.		
Antelope Seasonal Use Area	Acres	Key Use Areas
Antelope Yearlong(AY) and Summer (AS) - Independence Valley	104,584	AY-5-T-(4306-01)
		AY-5-T-(4306-02)
		AY-4-T-(4306-03)
		AS-4-T-(4306-06)
Antelope Yearlong(AY) - Goshute Valley	155,772	AY-4-T-(4306-19)
		AY-4-T-(4306-20)
Antelope Summer(AS) and Yearlong(AY) - Pequop Mountains/Goshute Valley	111,461	AS-4-T-(4306-04)
		AS-4-T-(4306-05)
		AY-4-T-(4306-08)
		AS-4-T-(4306-10)
		AS-4-T-(4306-12)
		AY-4-T-(4306-14)

3. Bighorn Sheep:
 - a. Existing numbers: 0 bighorn sheep (0 AUMs)
 - b. Reasonable numbers: 22 bighorn sheep (53 AUMs)
 - c. Key/critical management areas: The Wells RMP identified the following habitat area: bighorn sheep yearlong (BSY-4). The Wells RMP designates this area, although no bighorn sheep exist in the Big Springs Allotment. The area is located at the southeast tip of Big Springs Allotment (see map 5 in Appendix 1).

4. Elk:
 - a. Existing numbers:
 - (1.) Goose Creek Management Area: 225 elk on the allotment part of the year.
 - (2.) Pilot Mountain Management Area: Not Available.
 - (3.) Spruce/Pequop Management Area: Not Available.
 - b. Target population numbers:
 - (1.) Goose Creek Management Area: 1,070 plus or minus 10 percent.
 - (2.) Pilot Mountain Management Area: 250 plus or minus 10 percent.
 - (3.) Spruce/Pequop Management Area: 340 plus or minus 10 percent.
 - c. Key/critical management areas: The Elk Amendment to the Wells RMP identified elk habitat objectives for three elk management areas within the Big Springs Allotment. These elk management areas include portions of the Big Springs Allotment as well as larger areas outside the allotment.

One of the management areas within the allotment is the Toano Mountains north of Interstate 80. This is part of a larger management area named Pilot Mountain. A second management area called Goose Creek includes generally the Pequop Mountain north of Interstate 80 and the valleys on both sides of the Pequop Mountains within the allotment. The third elk management area covers the allotment south of Interstate 80 and is named the Spruce/Pequop Elk Management Area. These areas are also displayed on Map 6 in Appendix 1.

5. Sage grouse:
 - a. Existing numbers: no data available for numbers
 - b. Reasonable numbers: no data available for numbers
 - c. Key/critical management areas: There are 9 known historic or active sage grouse strutting grounds identified in the Big Springs Allotment (see table 4 below). Map 7, Appendix 1 illustrates the location of the known strutting grounds within Goshute Valley and south of Toano Draw.

Table 4. Sage Grouse Leks Around and in the Big Springs Allotment.

Ground Name	General Location	Legal Description
Burn North	Goshute Valley	T 35; R 66; Sec. 20 NW
Little Lake	Goshute Valley	T 35; R 66; Sec. 15 SW 1/4
Independence	Goshute Valley	T 35; R 66; Sec. 21
Oasis	Goshute Valley	T 35; R 66; Sec. 25
Oasis	Oasis	T 37; R 66; Sec. 25
Pequop Spring East	Pequop Mountains	T 38; R 66; Sec. 06 W 1/2
T-D-17	Toano Dome	T 38; R 66; Sec. 17 NE SW
T-D-17-2	Toano Dome	T 38; R 66; Sec. 17 NW SE
T-D-20	Toano Dome	T 38; R 66; Sec. 20 NE SW

6. Blue grouse:
 - a. Existing numbers: no data available for numbers
 - b. Reasonable numbers: no data are available for numbers inhabiting the upper north slopes of the Pequop Mountains in conifer zones above 7,000 feet elevation. These areas are south of Interstate 80.

7. Endangered, Threatened or Nevada BLM Special Status Species:

The following endangered, threatened, and special status species are known to exist within the Big Springs Allotment:

 - a. Plants -

Collomia renacta: Status: Nevada BLM Sensitive Plant Specie. One known site of occurrence in the allotment is located just north of pequop summit in T. 37 N., R. 66 E., section 18 SWNWSE.
 - b. Birds -
 - (1.). Bald eagle: uncommon - winter resident; spring/fall migrant. Status: Threatened.
 - (2.). Ferruginous hawk: common - summer resident. Status: State of Nevada Special Status Specie. Known nest sites occur at: T. 34, R. 65, sec. 34; T. 34, R. 67, sec. 12; T. 34, R. 68, sec. 19; T. 34, R.68, sec. 31; T. 35, R. 64, sec. 7; T. 37, R. 64, sec. 20.

8. Other Wildlife (non-game)

Numerous species on songbirds, raptors, mammals, amphibians, and reptiles inhabit the allotment on a seasonal or year-long basis. Riparian habitats are particularly important to the majority of these animals.

D. RIPARIAN/WETLAND AREAS

The preponderance of riparian habitat on public lands in this allotment is found on the Pequop Mountains north of Interstate 80. Within this area, most of the habitat is associated with East Squaw Creek. Much of this riparian habitat came into public ownership through the BSR Land Exchange completed in 1999. There are also a few springs located in the West Squaw Creek drainage, with a few other springs scattered else within the north Pequop Mountain area. In the Payne Basin area, which is located immediately south of Interstate 80 on the east side of the Pequop Mountains, there are several springs also. In the remainder of the allotment, there are only a few other surface waters on public lands and most of these are seeps. The riparian areas are described more specifically in section IV below.

E. WATER SOURCE PROTECTION ZONES

There are five wells and springs that are the municipal water sources for the city of West Wendover, Nevada. These water sources occur on the Big Springs Allotment associated with the Big Springs Ranch and well heads south of the Shafter exit off Interstate 80, and all have a delineated water quality protection zone on public land (please see the locations on map 8, Appendix 1). Certain protection strategies have been suggested which include salting and watering livestock outside the Source Water Protection Zones, and avoiding livestock concentrations in these zones. No stockwaters or livestock concentration areas are located on public lands within the protection zones.

F. FORESTRY USE

Forest resources within the Big Springs Allotment are currently used both commercially and noncommercially. Forest resources harvested include Christmas trees, firewood, pine nuts, posts and wildings. Historically, the district's only saw timber sale was held on the north end of the Pequop Mountains in 1968. White fir was harvested and then hauled to Cobre, Nevada where a Skag sawmill was set up to process the logs into lumber. Pinyon pine, Utah juniper, and curleaf mountain mahogany are the prominent forest cover types while white fir, limber and bristlecone pine occur in smaller quantities.

Aspen are present along East Squaw Creek and a few aspen patches occur on north slopes north of Rocky Point in the Pequop Mountains north of Interstate 80. One stand of aspen occurs in the Pequop Mountains south of Interstate 80 in the Payne Basin area associated with lower Nanny Creek spring.

G. WILDERNESS STUDY AREA

The western slope of the Bluebell Wilderness Study Area (WSA) is within the Big Springs Allotment (see map 9, Appendix 1). The Bureau's WSAs are managed under the *Interim Management Policy for Lands Under Wilderness Review, Update Document, H-8550-1, Rel. 8-67, 7/5/95* (IMP). The objective of the IMP is "to continue resource uses on lands under wilderness review in a manner that maintains the area's suitability for preservation as wilderness". The IMP remains in effect, regardless of whether the area is recommended as suitable or not suitable as wilderness, until Congress designates an area as wilderness or releases the area to multiple use management. The IMP allows the "continuation of grazing, ... in the same manner and degree in which these uses were being done on October 21, 1976, as long as they do not cause unnecessary or undue degradation of the lands." Vehicle use in the WSAs is "limited" to those routes that were identified during the wilderness inventory.

The Bluebell WSA was evaluated in the Wells Final Wilderness Environmental Impact Statement (1987). The Bureau has recommended all 55,665 acres of the Bluebell WSA as not suitable for wilderness. No legislative action has been taken on this recommendation. IMP management will continue until a Congressional decision is made.

H. RECREATION

The Big Springs Allotment is located within the Wells Extensive Recreation Management Area (ERMA). The Wells RMP designated the former Wells Resource Area as "open" to vehicle use.

Competitive motorcycle and mountain bicycle events have occurred in the allotment since the 1980s. An effort is currently underway to identify competitive OHV routes and to more intensively manage this use. Outfitters and guides, primarily lion hunters, also use the Big Springs allotment during the fall and winter. The area also receives considerable use from mountain bikers; deer, antelope, and chukar hunters; bird watchers; firewood and Christmas tree cutters; pinenut gathers; and others. Season of use varies widely with the type of recreation - lion hunting during the winter, big game and bird hunting during the fall, while the lower elevations are accessible for year-round recreation.

I. FIRE OCCURRENCE, REHABILITATION AND MANAGEMENT PLAN

1. Fire Occurrence: The Big Springs allotment has one of the highest wildland fire occurrences in the Elko District. In the period from 1980 to 1996 there were 113 documented wildland fires within the boundaries of the allotment. There is no easily assessable data for the years 1997 to 1999, but based on prior history, there were probably an additional 30 to 40 wildland fires. The majority of these fires occur in the pinyon-juniper and mixed conifer vegetative areas on the Pequop Mountains, the Toano Range and Wood Hills. Most of these fires were small averaging less than ½ acre, with occasional fires of from 100 to 300 acres and from 1000 to 3500 acres. (See map 10 in Appendix 1 for the history of fire locations).

Within the past 10 years, several fires ranging from 1,700 to 3,350 acres are notable. In 1991, the Oasis Fire burned approximately 3,000 acres on the east bench of the Pequop Mountains south of the Big Springs Ranch. Following the Oasis Fire, The Elko Field Office broadcast seeded a small number of acres on the south end of the fire with forage kochia which successfully established. Much of the land involved in the Oasis Fire was private land (prior to the BSR Land Exchange of 1999) and was not seeded. The Oasis Fire area now has small patches of native perennial grasses; however, most of the area is occupied by sagebrush, rabbitbrush, annual mustards and cheatgrass.

In 1994, The Wood Hills Fire burned approximately 3,350 acres, most of which was public land. The public lands were aerielly re-seeded that winter with a variety of grasses and forbs which successfully established. Bitterbrush and mountain mahogany seedlings were also planted in the canyon portion of the burn. Approximately 600 acres of private lands also burned, but the private lands were not seeded.

The most recent wildland fire occurred in July 2000 and burned approximately 1,700 acres, most of which is now public land, on the east bench of the Pequop Mountains south of the Big Springs Ranch. This fire re-burned the northern tip of the 1991 Oasis Fire and rangeland to the north. Planned fire rehabilitation includes seeding a variety of shrubs/half-shrubs, perennial grasses and forbs. Bitterbrush seedlings would also be planted in the critical deer winter range area on the upper bench.

2. Fire Management Plan: Ten different fire management polygons from the 1998 Elko Field Office Fire Management Plan occur within this allotment. These polygons are shown on map __ in Appendix __ and include cultural areas (Cobre), low sage and desert shrub, big sagebrush, woodlands, mixed conifer, WSA, urban interface, and a small intrusion of cheatgrass. Taken as a whole, the allotment has complex fire suppression and prescribed fire objectives and goals.

a. Fire Suppression Objectives: Depending on the area, fire suppression strategies range from full suppression with minimal acreage loss to areas that natural ignitions could be allowed to burn to meet management goals.

b. Prescribed Fire Objectives: The goals and objectives range from no prescribed fire to areas in the mixed conifers and the WSA where prescribed fire is the primary tool to meet management objectives.

J. NOXIOUS AND INVASIVE PLANTS

A noxious weed inventory was conducted on the Big Springs Allotment in 1998 and supplemented with additional observations since then. In addition, invasive plants have been observed in the allotment. The following is a list of noxious and invasive plants in the allotment:

- Perennial Pepperweed (tall white-top)
- Hoary Cress (low white-top)
- Scotch Thistle
- Canada Thistle
- Bull Thistle
- Russian Thistle
- Halogeton
- Blue Mustard
- Tumbling Mustard
- Cheatgrass

Map 11 in Appendix 1 shows many of the locations of noxious and invasive plants in the allotment.

Many of the above plants occur only in small patches scattered around the allotment. Halogeton, a plant poisonous to livestock, has become less noticeable in recent years. Blue mustard, tumbling mustard and cheatgrass occupy larger areas as described below.

Cheatgrass - Relatively dense stands of cheatgrass grow on several areas on the east side of the Pequop Mountains. A dense stand of cheatgrass is present along with native vegetation just north of Interstate 80 associated with East (Upper) Beason Spring/Reservoir. Another area is in Payne Basin just south of Interstate 80 around the Nanny Spring area and north toward Interstate 80. A third area is located south of the Big Springs Ranch on the east bench of the Pequop Mountains. All these dense stands of cheatgrass are likely associated with previous burns where cheatgrass was able to invade openings in plant communities whose herbaceous vegetation had been depleted by livestock grazing and/or invaded plant communities that are inherently poor in herbaceous vegetation.

Blue and tumbling mustards - Blue mustard has invaded highly disturbed areas associated with stockwater locations, and is also common in the desert shrub ranges in Goshute Valley. Tumbling mustard is common in the desert shrub ranges in Goshute Valley and on the portion of the east Pequop bench that burned in the early 1990's.

K. KEY SPECIES IDENTIFICATION

Table 5 outlines the key species identified for each key area and Table 6 defines the scientific and common names for each key species code.

Table 5: Key Species by Key Area.			
Key Area	Key Species	Key Area	Key Species
4306-01	EULA5, STTH2, STCO4, ORHY	4306-11	FEID, PUTR2
4306-02	ELCI2	4306-12	AGSP, SIHY
4306-03	STTH2, ORHY, AGSP, PONE3	4306-13	AGSP, PUTR2
4306-04	STWE, ORHY AGSP, PONE3	4306-14	STTH2
4306-05	STTH2, AGSP, AGSM	4306-15	EULA5, ORHY, STCO4
4306-06	SIHY, ELCI2, ORHY	4306-16	AGSP
4306-07	AGSP, AGSM	4306-17	AGSP, AGSM
4306-08	AGSP	4306-18	FEID, AGSP, STCO4
4306-09	FEID, STCO4, AGSP, PUTR2	4306-19	STTH2, ORHY
4306-10	FEID, AGSP	4306-20	EULA5, ATNU2

Table 6. Species Names (Scientific and Common).		
Spp. CODE	SCIENTIFIC NAME	COMMON NAME
EULA5	<u>Eurotia lanata</u>	winterfat or white sage
STTH2	<u>Stipa thurberiana</u>	Thurber needlegrass
STWE	<u>Stipa webberi</u>	Webber needlegrass
STCO4	<u>Stipa comata</u>	Needle and thread grass
ORHY	<u>Oryzopsis hymenoides</u>	Indian ricegrass
ELCI2	<u>Elymus cinereus</u>	basin wildrye
AGSP	<u>Agropyron spicatum</u>	bluebunch wheatgrass
PONE3	<u>Poa Nevadensis</u>	Nevada bluegrass
AGSM	<u>Agropyron smithii</u>	western wheatgrass
SIHY	<u>Sitanion hystrix</u>	bottlebrush squirreltail
FEID	<u>Festuca Idahoensis</u>	Idaho fescue
PUTR2	<u>Purshia tridentata</u>	antelope bitterbrush
ATNU2	<u>Atriplex nuttallii</u> (Atriplex falcata)	saltsage, sickle saltbush

V. MANAGEMENT EVALUATION

A. PRECIPITATION

The weather cycles that had the most influence on plant community dynamics and grazing levels during the evaluation period span the years between 1982 and 2000. Generally, the area experienced above normal to normal precipitation from 1982 through 1986, followed by drought from 1987 through 1992. Then, above normal to normal precipitation returned to the area from 1993 through 1998, with a drying trend starting again in 1999 to the present. The two closest weather recording stations are located at Montello, Nevada approximately 24 miles northeast of the allotment, and Wells, Nevada about 12 miles west of the allotment.

B. SUMMARY OF STUDIES DATA

1. Livestock and Wild Horses

Actual Use, utilization, use pattern maps (UPMs), weight-estimate production, ecological status, and frequency data will be summarized and analyzed by key area. Actual use, utilization, and UPMs are short term indicators of what might be happening in relation to long-term range condition objectives. Long-term monitoring is measured through production, frequency, and ecological status.

Twenty livestock management key areas were established on this allotment in July and August of 1987. Table 7 identifies each key area by pasture. Most of the key areas have condition and trend studies as well as utilization; however, a couple of the key areas were established to monitor only levels of utilization. In 1990, an additional key area was established to monitor utilization by livestock and wild horses in the Shafter Pasture near Shafter Well #2. Map 12 in Appendix 1 shows the location of these key areas within the allotment. Summaries of the data collected at these key areas are presented in matrix form (Key Areas 4306-01 through 4306-21) as an appendix to this report (Appendix 4). Because each of the monitoring methods has been summarized in matrix form, the original data collection sheets and Use Pattern Maps have not been included within this document, but are available within the Big Springs Monitoring File located at the Elko Field Office.

Ecological Status Inventories (ESI) were also performed on the Big Springs Allotment during the summer of 1991 and 1992. ESI involved an intensive inventory of the various range sites found within the allotment and developed a condition rating for those sites based on existing species compositions as compared to potential natural communities. This information is available at the Elko Field Office.

Following is a discussion of actual use, utilization, use pattern maps, ecological status inventories, production, ecological condition, and frequency data for the upland key area(s) within each pasture.

Table 7. Key Areas within each pasture for the Big Springs Allotment.	
Pasture	Key Area
Independence Valley	4306-01
	4306-02
Holborn	4306-03
	4306-04
	4306-06
North Pequop Mountain	4306-05
	4306-07
	4306-08
	4306-09
	4306-10
	4306-11
	4306-12
	4306-13
Railroad Field	---- ¹
Windmill Field	---- ¹
East Squaw Creek	4306-14
Collar and Elbow	4306-15
East Pequop Bench	4306-18
	4306-19
Shafter	4306-20
	4306-21
North Home Ranch	---- ¹
Payne Basin	4306-16
	4306-17
Six Mile	---- ¹
FOOTNOTES:	
¹ No key areas exist within this pasture.	

a. Independence Valley Pasture (Key Areas 4306-01 and 4306-02)

Actual Use

Livestock - Actual Use figures were submitted by the livestock permittee(s) for 9 of the 13 years being evaluated and reflect pasture-wide livestock numbers rather than geographical use areas within this pasture. The typical seasons of use for this pasture have been fall/winter/ spring. There are no internal fences within this relatively large pasture; however, there are at least six different use areas within the pasture with cattle also able to move between different use areas. Actual use by use area is very limited making interpretations about carrying capacity difficult.

Livestock actual use in this pasture ranged from 983 AUMs to 2,753 AUMs with the average use level during the evaluation period being 1,820 AUMs.

Wild Horses - Actual use data for the Big Springs Allotment for wild horses is estimated from census flights. Only animals counted on the allotment during a particular census flight were considered to be using the allotment at that given time.

The Wells RMP Wild Horse Amendment deleted the Independence pasture from wild horse management. Data from this pasture is presented to show past wild horse use and how wild horses have contributed to the current recorded utilization and ecological status in the pasture. The study summary matrix in appendix 4 for key area 4306-01 includes actual use for wild horses. The matrix for key area 4306-02 does not include wild horse data because this key area did not receive any notable wild horse use.

Tables in Appendix 3 present wild horse numbers observed in the Spruce-Pequop and Goshute HMAs, number of horses observed in the Big Springs Allotment, and percent of the HMA herd inhabiting the specific pastures of the allotment.

Because of the year-round water flows offered by Warm Springs, the Wood Hills have also provided habitat and cover for seasonal deer use and wild horses. These mountains have been identified as summer and winter range (some crucial) for deer. Although the Wood Hills have not been identified as a horse herd management area, considerable use has occurred in the past and continued incidental use is expected to occur as wild horses migrate west from the Pequop Mountains.

Utilization

Refer to the individual key area studies summary matrices in Appendix 4 for a complete yearly listing of the utilization results. Table 8 below summarizes the high, low and average readings of utilization data collected during the evaluation period.

Table 8. Key area utilization summary results for the Independence Valley Pasture.				
Pasture	Key Area	High Use Reading (%)	Low Use Reading (%)	Average (%)
Independence Valley	4306-01	EULA5 - 85%	EULA5 - 0%	17% (Spring) 50% (Winter)
		ORHY - 64% STIPA - 60%	ORHY - 0% STIPA - 0%	ORHY - 31% STIPA - 30%
	4306-02	ELCI2 - 16%	ELCI2 - 5%	ELCI2 - 11%

Use Pattern Maps

Table 9 reflects the Use Pattern Map results completed in 1987 and 1988.

Table 9. Use Pattern Map results for the Independence Valley Pasture.												
Year	Not Mapped		Slight		Light		Moderate		Heavy		Severe	
	Acres	%	Acres	%	Acres	%	Acres	%	Acres	%	Acres	%
1988	97,494	60	11,055	29	4,821	5	3,245	4	1,301	2	--	--
1987	70,215	83	34,687	9	5,623	4	4,761	3	2,630	1	--	--

During the evaluation period, 1987 and 1988 are the only two years of use pattern mapping available. These maps reveal that:

- 1) the location of key area 4306-01 appears to be representative within an area of highly concentrated combined use by livestock, wildlife, and wild horses;
- 2) the vicinity around key area 4306-02 appears to receive limited use when water is not available from Johnson Well, thereby not providing consistent representative information about utilization or potential stocking rates;
- 3) the predominant moderate and heavy use areas occur to the west and southwest of the Warm Springs Ranch which correlates with the best forage areas, wild horse use areas, deer seasonal ranges; and water sources with year-round availability.
- 4) Substantial portions of the pasture receive slight use or no use, providing an opportunity to expand current livestock distribution through water developments.

Livestock distribution in the Independence Valley Pasture has been expanded in the past several years through the addition of two new water sources. A new well was developed on the east side of the valley by a mining exploration company, and a pipeline was installed at the north end of the valley which transports water from a well just north of Interstate 80. These and other water developments are shown on the pasture maps in Appendix 1.

ESI

Table 10 summarizes the results of the ecological status inventory.

Table 10. Ecological Status Inventory results for the Independence Valley Pasture.								
Early Seral		Mid Seral		Late Seral		PNC		
Acres	%	Acres	%	Acres	%	Acres	%	
4,654	4	52,833	45	55,506	47	4,923	4	

The results showed that the majority of the valley bottom within Independence Valley is in early to mid seral condition while the uplands of the Wood Hills and Pequop Mountains are principally in late seral condition. Several areas within the Wood Hills and Pequop Mountains have achieved a Potential Natural Community (PNC).

Key Area 4306-01

Weight-Estimate Production Data

The weight-estimate production data indicates that total production decreased from 690 lbs/acre to 513 lbs/acre between 1987 and 1990. Collectively, the grass component which includes the key species declined from 24% composition by weight to 6%. A greater percentage of annual forbs (halogeton) increased the forb component from 2% to 11% while the shrub component increased from 74% to 84%. Although the overall percentage of shrubs increased, EULA5, a key shrub species, declined from 20% composition by weight to 8% between 1987 and 1990. Weight-estimate production data has not been collected since 1990; however, frequency trend data was collected in 2000, the results of which are summarized below.

Ecological Condition

The component shifts mentioned above resulted in a reduced ecological condition rating, down from 34% of PNC (mid seral) in 1987 to 19% of PNC (early seral) by 1990. Several key grass species, such as Indian ricegrass and Sandberg bluegrass remained static.

Frequency

The frequency data between 1987 and 1990 correlates with the weight-estimate production data indicating a downward trend during the drought by showing an overall statistically significant decrease in EULA5 (46.5% in 1987 to 36% in 1990). However, by the year 2000, the frequency of EULA5 had rebounded to 41.5%, a statistically significant increase from 1990, but similar to the frequency found in 1987. ORHY didn't change significantly between any of the readings; however, by the year 2000, the STIPA species (needlegrasses) increased significantly compared to both 1987 and 1990.

Key Area 4306-02

Weight-Estimate Production Data

The weight-estimate production data indicates that total production declined slightly from 1,133 lbs/acre in 1987 to 1,046 lbs/acre in 1990. Individually, production of great basin wildrye declined from 233 lbs/acre to 117 lbs/acre, while rabbitbrush increased production from 783 lbs/acre to 859 lbs/acre. Weight-estimate production data has not been collected since 1990.

Ecological Condition

Species composition showed the grass component declined from 21% to 11%. The shrub component indicated an increase from 79% to 89% between 1987 and 1990. This resulted in a lower ecological condition class rating by 1990. In 1987, the condition rating for the site located at key area 4306-02 was 36% of PNC (mid seral), and by 1990 the site appeared to decline to 23% of PNC (early seral).

Frequency

Frequency data was only gathered on ELIC2 while monitoring this key area during 1990. Because of this, recognition of long term community dynamics are limited. The frequency data shows a statistically non-significant increase in great basin wildrye. ELIC2 increased from 39.5% in 1987 to 44% in 1990. Frequency data has not been collected at this key area since 1990.

b. Holborn Pasture (Key Areas 4306-03, 4306-04, and 4306-06)

Actual Use

The Holborn Pasture was rested in 1987, 1989, 1992, 1994, 1995 and 1997. The remaining years reflect actual use ranging from 256 AUMs to 941 AUMs with an average use of 518 AUMs. Each actual use figure represents pasture-wide livestock numbers. The typical periods of use were from late spring to early summer.

Utilization

Refer to the individual key area studies summary matrices in Appendix 4 for a complete yearly listing of the utilization results. Table 11 below summarizes the high, low and average readings of utilization data collected during the evaluation period.

Table 11. Key area utilization summary results for the Holborn Pasture.				
Pasture	Key Area	High Use Reading (%)	Low Use Reading (%)	Average (%)
Holborn	4306-03	AGSP - 50% STTH2 - 34% ORHY - 32% PONE3 - 27%	AGSP - 0% NO DATA NO DATA PONE3 - 0%	AGSP - 22% STTH2 - 34% ORHY - 32% PONE3 - 9%
	4306-04	STWE - 54% AGSP - 47% ORHY - 20% PONE3 - 42%	NO DATA 0% NO DATA 0%	54% 24% 20% 11%
	4306-06	SIHY - 50% ELCI2 - 50% ORHY - 42%	3% NO DATA 7%	17% 50% 29%

Use Pattern Maps

Table 12 reflects Use Pattern Map results from 1988 to 1993.

Table 12. Use Pattern Map results for the Holborn Pasture.												
Year	Not Mapped		Slight		Light		Moderate		Heavy		Severe	
	Acres	%	Acres	%	Acres	%	Acres	%	Acres	%	Acres	%
1993	2,357	14	7,638	47	4,964	30	1,513	9	0	--	0	--
1991		37		14		15		22		12		--
1990	9,706	58	639	4	4,062	25	1,596	10	468	3	0	--
1988	2,994	18	6,238	38	4,193	25	2,454	15	592	4	0	--

Four years of use pattern mapping are available for this pasture. Mapping for each year reflects differences in distribution patterns and appears to be a function of water availability. Sources of water within the Holborn Pasture are fenced private springs along Independence Creek, Independence Well, Ralph's Spring, a spring near Moor Summit on the west side of the pasture, and a well near the Interstate 80 exchange associated with a Nevada Department of Transportation operation.

1988 indicates most of the moderate to heavy use was concentrated around Independence Creek while 1990 and 1991 indicate the moderate to heavy use occurred in the Independence Well area trending southwest all the way to Independence Creek. 1990 mapping also showed moderate to heavy grazing due south of Ralphs Spring. Although each map illustrated different use patterns between years, they also show that existing waters can provide for complete grazing access throughout the pasture.

ESI

Table 13 summarizes the results of the ecological status inventory.

Table 13 Ecological Status Inventory results for the Holborn Pasture.							
Early Seral		Mid Seral		Late Seral		PNC	
Acres	%	Acres	%	Acres	%	Acres	%
1,239	7	9,489	58	5,247	32	495	3

The results show that the early and mid seral areas are principally located along the drainages within the pasture while the late and PNC areas are located within the higher elevational zones.

Key Area 4306-03

Weight-Estimate Production Data

The weight-estimate production data shows a decline in overall production levels between 1987 and 1990. Percent composition of grasses and forbs combined declined by 11% with a commensurate increase occurring in the shrub composition. In particular, this study showed grasses declining in both productivity and diversity. Three species present in 1987 were not identified in 1990 - STTH2, AGSP, and ORHY. Resulting from the decreased productivity and diversity of grasses, shrubs composed a greater percentage of the community, increasing from 76% to 87% between years.

Ecological Condition

Due to fewer species present, as mentioned above, a decline in ecological condition was realized. The site was found to have declined from 44% of PNC (mid seral) in 1987 to 34% of PNC (mid seral) in 1990 .

Frequency

Between 1987 and 1990, western wheatgrass showed no significant change from 31.5% to 23% while Nevada bluegrass showed no significant change from 4% to 3.5%. Indian ricegrass showed no significant change from 4.0% to 2.5%. Bluebunch wheatgrass and Thurber needlegrass were not found within the frequency frames in 1987 or 1990.

Key Area 4306-04

Weight-Estimate Production Data

The weight-estimate production data indicates that production fell on this site from 1,230 lbs/acre in 1987 to 673 lbs/acre by 1990. The study also showed the percent composition of grasses declined from 10% to 6%; forbs declined from 46% to 3%; and shrubs increased from 44% to 91% between years.

As mentioned above, the 1987 weight-estimate production data reflected a production level of 1,230 lb/acre in a below normal rainfall year. The range site description indicates annual production for this site to be 800 lbs/acre during a favorable year. The 1987 data also showed that Phlox spp. produced 520 lbs/acre (42% composition) which resulted in a higher production level than sagebrush (39% composition) for that year.

The 1990 production data showed the site represented by Key Area 4306-04 consisted of 90% composition of sagebrush by weight. Field observations of this site suggest this figure may be too high. Clipped (green) weights indicate sagebrush composed 69% of the community by weight, however after multiplying that weight by a phenological adjustment factor of 15.06, sagebrush composed 91% of the total community.

Ecological Condition

As a result of the high percent composition of sagebrush in 1990, the ecological status for this site declined from 54% (late seral) in 1987 to 44% (mid seral) by 1990.

Frequency

Frequency monitoring indicated statistically significant changes occurred to two key species between 1987 and 1990. Western wheatgrass decreased from 56.5% frequency in 1987 to 38.5% in 1990. Conversely, Nevada bluegrass increased from 10% in 1987 to 19.5% in 1990. As in Key Area 4306-03, bluebunch wheatgrass was not found during frequency monitoring for either year.

The data collected in 1990 only shows frequency monitoring on the key species, thereby limiting further insight into community dynamics.

Key Area 4306-06

Weight-Estimate Production Data

The weight-estimate production data indicates that total production decreased from 683 lbs/acre in 1987 to 240 lbs/acre in 1990. The grass component consisting of key species decreased slightly from 12% composition by weight to 9% during this period. Forbs also declined slightly from 17% to 16%. The shrub component increased from 70% composition by weight in 1987 to 75% in 1990. In particular; grass species diversity was maintained, but production levels were down; forb production levels were maintained between years, however species diversity within this class declined; and the shrub community, consisting of rabbitbrush and sagebrush, increased 5% by weight.

Ecological Condition

In 1987, the Ecological Condition rating of this site was found to be 56% of PNC (late seral). A slight reduction in perennial grass production combined with reduced diversity within the forb community showed a slight downward trend. This was reflected during the 1990 Ecological Condition rating which showed the site at 52% of PNC (late seral).

Frequency

Frequency studies in 1990 only included the key species bottlebrush squirreltail and Indian ricegrass. The results found between 1987 and 1990 showed that bottlebrush squirreltail experienced a statistically significant decline from 68% to 53.5%, while Indian ricegrass remained static between the two years at 1%. Basin wildrye, identified as a key species for the key area, was not found within the frequency frames in either year. As mentioned previously, where frequency studies monitor only a few species, the data will only provide limited interpretation about community dynamics.

c. North Pequop Mountain Pasture (Key Areas 4306-05, 4306-07, 4306-08, 4306-09, 4306-10, 4306-11, 4306-12, and 4306-13)

Actual Use

In the early 1990's, a rangeline agreement was approved which split the allotment into two permitted use areas. Within the N. Pequop Mountain Pasture, the rangeline falls along the line that separates R. 65 E. from R. 66 E. which is approximately on the watershed divide. Prior to 1994, the North Pequop Mountain Pasture was grazed by one permit holder who had the permit for both sides of the allotment. During this time, actual use ranged from 932 AUMs to 3,098 AUMs. The typical period of use fell between May and November. Each actual use figure presented up to 1994 represents pasture-wide livestock numbers.

Beginning in 1994, there were two permit holders, one for the east side and one for the west side of the allotment; however, actual use during 1994 and 1995 represents use primarily on the east side of the pasture because the permittee on the west side did not make any use. From 1996 to the present, actual use displayed in the study summary matrix tables in appendix 4 are reflective of the actual use applicable to either the east or west sides of the pasture. For example, actual use on the westside of the pasture reflects actual use reported by the livestock operator with the permit for the westside and likewise actual use for the east side reflects actual use reported by the livestock operator with the permit for the east side. Since 1996, actual use on the west side has ranged from a low of 822 AUMs to a high of 1,703 AUMs with an average of 1,196 AUMs. On the east side, actual use has ranged from a low of 1,209 AUMs to a high of 1,379 AUMs with an average of 1,263 AUMs.

There are no internal fences within this relatively large mountain pasture; however, there are at least six different use areas within the pasture with cattle also able to move between different use areas. Actual use by use area is very limited making interpretations about carrying capacity difficult.

Utilization

Refer to the individual key area studies summary matrices in Appendix 4 for a complete yearly listing of the utilization results. Table 14 below summarizes the high, low and average readings of utilization data collected during the evaluation period. These averages do not include the years when the pasture or use area was rested.

Table 14. Key area utilization summary results for the North Pequop Mountain Pasture.

Pasture	Key Area	High Use Reading (%)	Low Use Reading (%)	Average (%)
North Pequop Mountain	4306-05 West Side- Independence Well Area	AGSP - 84% STTH2 - 66% AGSM - 27%	0% 23% 0%	36% 45% 11%
	4306-07 West Side- Ralph Spring Area	AGSP - 64% AGSM - 36%	36% 1%	50% 15%
	4306-08 West Side- W. Squaw Creek Area	AGSP - 60%	19%	40%
	4306-09 West Side- West Spring Area	AGSP - 62% FEID - 62% STCO4 - 70% PUTR2 - 75%	18% 4% 4% 24%	45% 37% 34% 50%
	4306-10 West Side- Pequop Spring Area	66%	36%	57%
	4306-11 West Side- Pequop Well Area	65%	45%	54%
	4306-12 West Side- Rocky Point Spring & Beacon Reservoir Area	43%	12%	28%
	4306-13 East Side- East Beacon Spring Area	69%	48%	59%

Use Pattern Maps

Table 15 reflects Use Pattern Map results between 1988 and 1990.

Year	Not Mapped		Slight		Light		Moderate		Heavy		Severe	
	Acres	%	Acres	%	Acres	%	Acres	%	Acres	%	Acres	%
1990	38,844	73	470	1	5,464	10	5,567	10	3,033	6	65	<1
1989	10,768	20	15,034	28	8,776	16	10,200	19	8,401	16	264	1
1987	25,352	47	10,305	19	6,913	13	6,103	12	4,354	8	416	1

All three years indicated heavy and severe use commonly occurring around streams, springs, their associated drainages, and wells due to the steep topography of the pasture indicating that grazing distribution is limited. Use pattern mapping also indicated that each key area within this pasture appears to represent average use around principle water sources.

ESI

Table 16 summarizes the results of the ecological status inventory.

Early Seral		Mid Seral		Late Seral		PNC	
Acres	%	Acres	%	Acres	%	Acres	%
--	--	4,819	9	37,278	70	11,346	21

Based on the Ecological Status Inventory estimates, the majority of this pasture is in late or PNC condition (91%).

Key Area 4306-05 (Independence Well Area)

Weight-Estimate Production Data

The weight-estimate production data indicates that total production declined from 739 lbs/acre in 1987 to 475 lbs/acre in 1990. The grass component declined by 12% while the forb component declined by 13% between years. Within the grass component, two of the predominant species found in 1987 (AGSP and AGSM) were found only in trace quantities by 1990. Within the forb component, 7 species were identified in 1987 and only 1 species was identified in 1990.

The range site description for this site suggests that above average rainfall production should fall between 450 and 600 lbs/acre while below average rainfall production should fall between 250 to 450 lbs/acre. The 1987 weight-estimate production data total of 739 lbs/acre reflect above average growth on a site during a below average rainfall year.

Ecological Condition

The Ecological Status Write-up indicates that between 1987 and 1990 the ecological condition has declined from 66% of PNC (late seral) to 42% of PNC (late seral). The downward trend in ecological condition can be attributed to the reductions in species diversity of the grass and forb components as mentioned above. Ecological condition data was not collected since 1990; however, frequency data was collected in 2000 and provides some insight into plant community dynamics since 1990.

Frequency

Frequency data indicates that a downward trend occurred at this key area between 1987 and 1990 for AGSP. The data indicated AGSP experienced a statistically significant decline from 5.5% to 1% between 1987 and 1990. At this time, only AGSP and AGSM were identified as key species. Frequency studies were performed only on these key species during the 1990 monitoring efforts so interpretations regarding community dynamics are limited.

In July 2000, frequency data was again collected on all species. A comparison of the 2000 data to the 1987 and 1990 data shows the following:

- A significant increase in STTH2, AGSM and SIHY in 2000 compared to both 1987 and 1990..
- No significant change in AGSP between 1987 and 2000.
- A significant but marginal decrease in ARTR2 between 1987 and 2000.

The dominant key species within the frequency transect is STTH2. AGSP is a relatively small component of this particular site. STTH2 is commonly the most preferred forage over AGSP.

Key Area 4306-07 (Ralph Spring Area)

Weight-Estimate Production Data

Not measured at this key area.

Ecological Condition

Not measured at this key area.

Frequency

Not measured at this key area.

Key Area 4306-08 (West Squaw Creek Area)

Weight-Estimate Production Data

The weight-estimate production data indicates that total production declined from 768 lbs/acre in 1987 to 635 lbs/acre by 1990. Grass species decreased from 85 lbs/acre to 59 lbs/acre, combined forbs decreased from 143 lbs/acre to 74 lbs/acre, and shrub species combined declined from 540 lbs/acre to 502 lbs/acre. Although production levels decreased within the grass component, species diversity improved. Conversely, both production and diversity were shown to decrease within the forb component.

Ecological Condition

The ecological condition rating for this site indicated a static trend at 43% of PNC between 1987 and 1990 (mid seral). Between years this site continued to maintain good plant diversity. Ecological condition data was not collected since 1990.

Frequency

The frequency data reflects no significant change in AGSP from 1987 to 1990. Frequency monitoring included only bluebunch wheatgrass in the 1990 data which would limit community dynamics between years. Frequency data was not collected since 1990 at this site.

Key Area 4306-09 (West Spring Area)

Weight-Estimate Production Data

The weight-estimate production data indicates that total production decreased from 1,401 lbs/acre in 1987 to 1,199 lbs/acre in 1990. The data indicates that the grass component (species present) decreased from 33% to 11% by 1990, the forb component increased from 9% to 13%, and the shrub component increased from 58% to 76%. In particular, the grass component tended to maintain species diversity with the decline a result of lowered production levels. Species diversity was also maintained within the forb component, the increase a result of higher production levels in arrowleaf balsamroot. The shrub component maintained the same species present but, with lower production levels occurring within the grass component, shrubs comprised a greater percent composition of the community by weight.

Range site production levels for this range site should vary from 900 to 1,200 lbs/ac in an unfavorable year and 1,200 to 1,500 lbs/acre in a favorable year.

Ecological Condition

The Ecological Status Write-up for this range site indicates that the trend moved downward slightly from 43% of PNC (mid seral) to 38% of PNC (mid seral). This is due to a 4% decline in allowable grass species and a 1% decline in allowable forb species between 1987 and 1990. Ecological condition data was not collected since 1990.

Frequency

Between 1987 and 1990, the frequency data indicated no significant changes in AGSP or STCO4; however, there was a significant decrease in the frequency of FEID. Frequency data collected in 1990 only included the key species. Frequency data was not collected since 1990.

Key Area 4306-10 (Pequop Spring Area)

Weight-Estimate Production Data

The weight-estimate production data indicates an increase in production from 1,041 lbs/acre in 1987 to 1,601 lbs/acre in 1990. Although the data indicates that production levels were up, grass species which produced 298 lbs/acre (26% composition) in 1987 were found to only produce 49 lbs/acre (3% composition) in 1990. Likewise, forb species which produced 206 lbs/acre (22% composition) in 1987 were found to produce only 44 lbs/acre (3% composition) in 1990. However, shrub species which produced only 539 lbs/acre (52% composition) were found to produce 1,509 lbs/acre (94% composition) in 1990. From the 1,509 lbs/acre produced by shrubs in 1990, the production data indicated that sagebrush alone comprised 1,482 of those pounds. The SCS Range Site Description for this site suggests that only in favorable years will this site be capable of producing from 1,200 to 1,500 lbs/acre.

Ecological Condition

The result of having incredibly high sagebrush production levels in 1990 has been a drastic reduction in percent compositions by weight for individual grass and forb species. Consequently, in 1987 this site was determined to be 50% of PNC (mid seral), but by 1990, was found to be 41% of PNC (mid seral). Ecological condition data was not collected since 1990.

Frequency

Frequency data indicates a statistically significant downward trend occurred between 1987 and 1990. Bluebunch wheatgrass declined from a 16.5% to 5% frequency of occurrence, while Idaho fescue declined from 36% to 12.5%. Frequency data was only collected on the two key species thereby limiting the scope of interpretation with regard to community dynamics. Frequency data was not collected since 1990.

Key Area 4306-11 (Pequop Well Area)

Weight-Estimate Production Data

The weight-estimate production data for this key area indicates that a significant decline in total production occurred during the monitoring period. The data shows that total production declined from 2,894 lbs/acre in 1987 to 985 lbs/acre in 1990.

A significant reason for the decline is a result of the production value found for sagebrush during 1987. Of a total production value of 2,894 lbs/acre, 2,032 pounds were comprised of sagebrush. The Range Site Description suggests that in favorable years this site is only capable of producing 1,400 lbs/acre which includes all species. As with key area 4306-10, the result is over-representation of sagebrush within the community.

However, based on the data as shown, the production levels of the grass community remained stable, producing 413 lbs/acre in 1987 (comprising 42% of the community) and producing 416 lbs/acre in 1990 (comprising 14% of the community). The forb component decreased from 207 lbs/acre (7% composition) to 44 lbs/acre (5% composition) between years, and the shrub component decreased from 2,273 lbs/acre (79% composition) to 525 lbs/acre (53% composition).

Ecological Condition

The ecological status, based on the over-representation of sagebrush in the 1987 data, has shown a significant improvement between years. In 1987, the ecological condition was found to be 44% of PNC (mid seral), and by 1990 was found to be 69% of PNC (late seral). Ecological condition information was not collected since 1990.

Frequency

Frequency data indicates a significant increase of Idaho fescue occurred between 1987 and 1990, increasing from 76% to 87%, while bitterbrush experienced no significant change. The data collected in 1990 only shows frequency monitoring on key species limiting the scope of interpretation of community dynamics between monitoring years. Frequency data was not collected at this site since 1990.

Key Area 4306-12 (Rocky Point Spring and Beacon Reservoir Area)

Weight-Estimate Production Data

The weight-estimate production data indicates that the total production of this key area declined slightly from 436 lbs/acre in 1987 to 408 lbs/acre in 1990.

Although the shrub component appeared to maintain production levels at 191 lbs/acre in 1987 and 188 lbs/acre in 1990 (44% and 46% composition, respectively), distinct changes occur in data between the grass and forb components. For example, grass production increased from 96 lbs/acre (22% composition) to 199 lbs/acre (44% composition) while forb production decreased from 149 lbs/acre (34% composition) to 21 lbs/acre (10% composition) between years.

Ecological Condition

Even though this site experienced significant change between the grass and forb components during the evaluation period, the ecological condition of the site remained static at 72% of PNC (late seral). This is a result of increased production levels and increased diversity on allowable grass species during the same period when forb species were experiencing a decline in productivity and diversity. Although several forb species which were identified in 1987 were not found during 1990 (reduced species diversity), the greatest change to the forb community can be attributed to eriogonum spp., which had been found to produce 103 lbs/acre (24% composition) in 1987 but had only produced 14 lbs/acre (3% composition) by 1990. Ecological condition data was not collected since 1990.

Frequency

The frequency data indicates a significant decrease occurred on AGSP between 1987 and 1990, declining from 28% to 7% during that period. Analysis also showed a statistically significant decrease occurring on SIHY which declined from 34.5% to 24.5%. Frequency data was not collected at this site since 1990.

Key Area 4306-13 (East Beacon Spring Area)

Weight-Estimate Production Data

The weight-estimate production data indicates that total production declined from 1,564 lbs/acre in 1987 to 524 lbs/acre in 1990. The Range Site Description suggests that production levels for this site should range from 400 - 600 lbs/acre during unfavorable years and range from 600 - 800 lbs/acre during favorable years. Both monitoring years appeared to be below normal rainfall years, yet the 1987 production data indicates a very high level of production while the 1990 data indicates a normal level of production for an unfavorable year.

The weight-estimate data indicates that, although the production values of the grass component varied significantly between years, the species composition of allowable grasses remained the same. Species diversity within the grass component declined between years, but were offset by a similar reduction in cheatgrass production (non-allowable).

The forb component experienced a significant decline in composition from 10% in 1987 to 4% in 1990. This was a result of decreased species diversity and production. The weight-estimate data also indicated that sagebrush and antelope bitterbrush comprised 43% and 17% of the shrub component, respectively, in 1987, but by 1990 sagebrush comprised 82% of the community while antelope bitterbrush was not represented. Other shrub species identified in 1987 were not represented within the 1990 data as well.

Ecological Condition

Based on the weight-estimate production data, the ecological condition rating in 1987 was determined to be 52% of PNC (late seral). Due to reduced species diversity within the grass, forb, and shrub components the condition rating for 1990 was determined to be 37% of PNC (mid seral). Ecological condition data was not collected since 1990.

Frequency

Frequency data shows that a statistically significant decrease had occurred on bluebunch wheatgrass, with no significant change on bitterbrush. Between 1987 and 1990 AGSP declined from 31% to 21.5% while PUTR2 increased slightly from 3% to 3.5%. Frequency data was not collected at this site since 1990.

d. East Squaw Creek Pasture (Key Area 4306-14)

Actual Use

The East Squaw Creek Pasture was rested in 1987 and 1993. In 1989 the actual use report was flagged as not corresponding with the dates and cattle numbers obtained during previous conversations between the permittee and range conservationist. The 1990 actual use data may be incomplete because of an unreported two month period and no data is available for the 1992 season.

However, the range of actual use was from 110 AUMs to 784 AUMs with an average use of 358 AUMs. The principle period of use has been April, May, and June.

Utilization

Refer to the key area studies summary matrix in Appendix 4 for a complete yearly listing of the utilization results. Table 17 below summarizes the high, low and average readings of utilization data collected during the evaluation period.

Table 17. Key area utilization summary results for the East Squaw Creek Pasture.				
Pasture	Key Area	High Use Reading (%)	Low Use Reading (%)	Average (%)
East Squaw Creek	4306-14	51%	6%	34%

The annual utilization objective for Key Area 4306-14 was exceeded in 1988 with 51% utilization. However, an average of 34% utilization (light) was achieved during the evaluation period which remained below the average objective level.

Use Pattern Maps

Table 18 reflects Use Pattern Map results from 1988 to 1990.

Table 18. Use Pattern Map results for the East Squaw Creek Pasture.												
Year	Not Mapped		Slight		Light		Moderate		Heavy		Severe	
	Acres	%	Acres	%	Acres	%	Acres	%	Acres	%	Acres	%
1990	5,555	40	1,577	11	3,815	27	690	5	2,393	17	--	--
1989	2,363	17	5,594	40	2,445	17	2,130	15	1,498	11	--	--
1988	1,211	9	3,561	25	3,623	26	3,162	22	2,364	17	109	1

The use pattern maps from 1988 to 1990 suggest that typical grazing patterns may occur throughout the pasture each year. They also suggest that the site represented by Key Area 4306-14 may not accurately reflect moderate use within this pasture. The maps indicated that the areas with moderate to heavy use tended to be found on or near the private crested wheatgrass seedings at the southern end of the pasture (refer to the pasture maps in Appendix 1 for the locations of these seedings) which may have reduced grazing pressures on the native vegetation represented by Key Area 4306-14.

ESI

Table 19 summarizes the results of the ecological status inventory. It should be noted that the figures below do not include the seedings located within the pasture, which comprise 672 acres or 5% of the pasture.

Table 19. Ecological Status Inventory results for the East Squaw Creek Pasture.							
Early Seral		Mid Seral		Late Seral		PNC	
Acres	%	Acres	%	Acres	%	Acres	%
--	--	6,340	45	7,018	50	--	--

Key Area 4306-14

Weight-Estimate Production Data

The weight-estimate production data indicates that total production declined from 520 lbs/acre in 1987 to 412 lbs/acre in 1990.

The production data also showed changes within the individual vegetative components. For example, the grass component increased production from 112 lbs/acre to 153 lbs/acre. Forbs decreased production from 87 lbs/acre to 47 lbs/acre and the shrubs, also experiencing a decline, decreased from 320 lbs/acre to 211 lbs/acre.

Ecological Condition

Increased grass production and decreased sagebrush production resulted in a slightly higher condition rating for this site. This site was found to be at 58% of PNC (late seral) in 1987 and had moved upward to 61% of PNC (late seral) by 1990. The data also indicated very little change to species diversity between monitoring years. Ecological condition information was not collected since 1990; however, frequency data was collected in 2000 as described below.

Frequency

The frequency data shows no significant change in Thurber needlegrass between 1987, 1990 and 2000; however, there was a marginally significant decline in sagebrush between 1987 and 2000.

e. **Collar and Elbow Pasture (Key Area 4306-15)**

Actual Use

The Collar and Elbow pasture was rested in 1987 and 1993.

Actual use reporting indicates a range of grazing levels between 251 AUMs to 1,417 AUMs during the evaluation period. The resulting average use for Collar and Elbow was found to be 1,038 AUMs during the fall/winter and 295 AUMs during the spring/summer for a total average of 1,333 AUMs. Between 1987 and 1994, the use period was generally spring/summer and between 1995 and the present, use has generally occurred from late summer through fall.

Utilization

Refer to the key area studies summary matrix in Appendix 4 for a complete yearly listing of the utilization results. Table 20 below summarizes the high, low and average readings of utilization data collected during the evaluation period.

Table 20. Key area utilization summary results for the Collar and Elbow Pasture.				
Pasture	Key Area	High Use Reading (%)	Low Use Reading (%)	Average (%)
Collar and Elbow	4306-15	EULA5 - 12% (SPG) 63% (Fall) ORHY/STCO4- 64%	3% 31% 15%	8% 47% 56%

Use Pattern Maps

Table 21 below reflects three years of Use Pattern Map results.

Table 21. Use Pattern Map results for the Collar and Elbow Pasture.												
Year	Not Mapped		Slight		Light		Moderate		Heavy		Severe	
	Acres	%	Acres	%	Acres	%	Acres	%	Acres	%	Acres	%
1990		82		11		6		1		<1		--
1989	37,414	54	13,692	19	7,176	10	5,982	9	5,466	8	180	<1
1988	60,898	88	4,303	6	1,563	2	695	1	2,273	3	178	<1

Use pattern mapping during 1988 and 1990 revealed:

- 1) heavy and moderate use occurred within a range of several miles of each water source used during the grazing season;
- 2) the majority of the pasture receives no use to slight use particularly within the Toano Range.
- 3) livestock distribution patterns do not correlate with the number of water sources shown to exist, suggesting that some water sources may not have been functional at those times;
- 4) Key Area 4306-15 represents use associated with the well at the north end of the pasture.

ESI

Table 22 summarizes the results of the ecological status inventory.

Table 22. Ecological Status Inventory results for the Collar and Elbow Pasture.							
Early Seral		Mid Seral		Late Seral		PNC	
Acres	%	Acres	%	Acres	%	Acres	%
2,077	3	11,556	17	39,974	57	16,302	23

The results show that the sites found to be in early and mid seral condition are limited to the lower elevations of the western and southwestern pasture boundaries. These areas are not represented by key area 4306-15.

Key Area 4306-15

Weight-Estimate Production Data

Not measured at this key area.

Ecological Condition

Not measured at this key area.

Frequency

Not measured at this key area.

f. Payne Basin Pasture (Key Areas 4306-16 and 4306-17)

Actual Use

During the eight year monitoring period the Payne Basin Pasture has been rested twice (1987 and 1993). No data is available for 1992. Actual use data has shown levels of use ranging from 212 AUMs to 802 AUMs with an average use level of 390 AUMs. The use levels reflected pasture-wide livestock numbers.

Use typically has occurred in the spring and summer.

Utilization

Refer to the key area studies summary matrix in Appendix 4 for a complete yearly listing of the utilization results. Table 23 below summarizes the high, low and average readings of utilization data collected during the evaluation period.

Table 23. Key area utilization summary results for the Payne Basin Pasture.				
Pasture	Key Area	High Use Reading (%)	Low Use Reading (%)	Average (%)
Payne Basin	4306-16	AGSP - 65%	27%	48%
	4306-17	AGSP - 73% AGSM - 65%	23% 3%	58% 39%

The annual utilization level at Key Area 4306-16 has been exceeded three times during the evaluation period. However, the average utilization level has remained below the objective level of 50%.

At Key Area 4306-17 the annual utilization level was exceeded each year between 1988 and 1991, and been at or below the objective since then. This has resulted in an average utilization level which has exceeded the average objective level for this key area.

Use Pattern Maps

Table 24 reflects Use Pattern Mapping results from 1988 to 1991.

Table 24. Use Pattern Map results for the Payne Basin Pasture.												
Year	Not Mapped		Slight		Light		Moderate		Heavy		Severe	
	Acres	%	Acres	%	Acres	%	Acres	%	Acres	%	Acres	%
1991	12,724	54	1,478	6	2,352	10	4,480	19	2,593	11	88	<1
1990	11,867	50	--	--	3,584	15	1,733	8	6,008	25	523	2
1989	9,452	40	--	--	3,725	16	4,590	19	5,275	22	673	3
1988	8,190	34	1,715	7	1,404	6	3,711	16	7,596	32	1,099	5

Each use pattern map reflected consistent grazing distribution patterns with varying degrees of utilization. Higher levels of use occurred along the drainages and near reservoirs with lesser degrees of use in the remainder of the pasture.

Use pattern mapping also revealed that Key Areas 4306-16 and 4306-17 represent average use within this pasture.

ESI

Table 25 summarizes the results of the ecological status inventory. The following figures include the Six Mile Pasture acreage and percentages.

Table 25. Ecological Status Inventory results for the Payne Basin Pasture.							
Early Seral		Mid Seral		Late Seral		PNC	
Acres	%	Acres	%	Acres	%	Acres	%
--	--	41	<1	18,592	79	5,082	21

Key Area 4306-16

Weight-Estimate Production Data

The weight-estimate production data indicates that total production declined from 695 lbs/acre in 1987 to 397 lbs/acre in 1990. However, this site had been identified as a woodland site and the 1990 data did not include tree species, which is an integral component of this site. The effect is a reduced total pounds per acre and a misrepresentation of percent composition by species within the 1990 data. For example, the 1987 data found that pinyon pine represented 12% of the plant community while Juniper represented 9%, with a combined production level of 147 lbs/acre. The 1990 data did not identify either species as contributing to the community production levels.

Specifically, the production levels of grasses and forbs declined while shrub weights increased. Grass production declined from 107 lbs/acre (15% composition) in 1987 to 37 lbs/acre (10% composition) in 1990. Forbs declined from 172 lbs/acre (25% composition) to 21 lbs/acre (6% composition), while, conversely, shrubs (not including Pinyon and Juniper) increased from 269 lbs/acre (39% composition) to 304 lbs/acre (84% composition).

According to the weight-estimate production data, species diversity within the forb and shrub components was significantly reduced by 1990. In particular, forb diversity had declined 6 species by 1990 - from 14 species to 8 species. The data identified only 4 species of shrubs in 1990 when 7 species had been originally identified in 1987.

Ecological Condition

Due to a decline in species diversity within the grass, forb and shrub components, increased shrub production, and lack of production levels identified for Pinyon and Juniper by 1990, the ecological condition for this site had declined from 89% of PNC (PNC) in 1987 to 74% of PNC (late seral) by 1990. Ecological condition data was not collected since 1990.

Frequency

Between 1987 and 1990 the frequency data indicates a statistically significant decrease of bluebunch wheatgrass from 33.5% to 18.5%. Frequency data was collected only on bluebunch wheatgrass precluding further evaluation of community dynamics. Frequency data was not collected at this site since 1990.

Key Area 4306-17

Weight-Estimate Production Data

The weight-estimate production data indicates that total production increased from 599 lbs/acre in 1987 to 1,264 lbs/acre in 1990. The Range Site Description suggests that this site is only capable of producing between 800 and 1,000 lbs/acre in favorable years and 600 to 800 lbs/acre during unfavorable rainfall years. Both monitoring years appeared to be below normal rainfall years, yet the 1990 production data indicates a very high level of production occurring during an unfavorable year.

In addition, significant differences in percent composition appear within some species between years. For example, western wheatgrass comprised 19% of the community in 1987, but had declined to 1% of the community by 1990. Bottlebrush squirreltail was not identified in 1987 but comprised 6% of the community by 1990. Cheatgrass comprised 8% of the community in 1987, but was not identified as a component in 1990. Sagebrush (big sagebrush and low sagebrush) comprised 43% of the community in 1987, but in 1990 only big sagebrush was identified comprising 76% of the community.

Ecological Condition

Although the data indicated a significant species variation between years, allowable grass and forb species maintained similar percent compositions. But the significant increase in percent composition of big sagebrush in the 1990 data modified the ecological condition downward from 36% of PNC (mid seral) to 33% of PNC (mid seral). Ecological condition data was not collected since 1990.

Frequency

The frequency data indicates a statistically significant decline in both key species (AGSP and AGSM). Between 1987 and 1990 bluebunch wheatgrass decreased from 21.5% to 3% and western wheatgrass decreased from 54% to 38%. Frequency data was not collected at this site since 1990.

g. East Pequop Bench Pasture (Key Areas 4306-18 and 4306-19)

Actual Use

Livestock - The East Pequop Bench Pasture was rested in 1987 and 1991 (year of the Oasis Fire). No data is available for 1992. Actual use data has shown that livestock numbers have ranged between 178 AUMs and 2,546 AUMs removed with an average use of 1,221 AUMs from the pasture .

From 1988 to 1990, the periods of use were generally during the fall and winter. Since 1993, use has generally been late winter and spring.

Wild Horses - Actual use by wild horses ranged from 36 AUMs to 871 AUMs with an average of 196 AUMs. There was no data for the years 1983 to 1986, and 1998/99. This area is part of the Spruce/Pequop herd area, but the portion of the herd area in the Big Springs Allotment was designated to be managed as horse free through the Well RMP Wild Horse Amendment in 1993. Most of the horses were removed from this area soon after with the remaining horses making relatively modest amounts of actual use since then. Wild horse actual use for this area is shown on tables in Appendix 3. Wild horse actual use data is not included on the key area study summary matrices for this pasture because these key areas were found to not represent use by wild horses.

This pasture covers a relatively large area that includes the east Pequop bench area as well as a portion of valley bottom in Goshute Valley encompassing the lower end of Hardy Creek below the Big Springs Ranch up to Interstate 80 east of the ranch. The bench area is primarily sagebrush/grass although the area that burned in the 1991 Oasis Fire is now sagebrush/rabbitbrush and mustards/cheatgrass; the Hardy Creek area is greasewood and grass; much of the area east of the Big Springs Ranch is a mixture of greasewood/grass, whitesage/grass and some shadscale, with big sagebrush nearer Interstate 80. There are at least several different use areas within this large pasture; however, actual use by use area is very limited.

Utilization

Table 26. Key area utilization summary results for the East Pequop Bench Pasture.				
Pasture	Key Area	High Use Reading (%)	Low Use Reading (%)	Average (%)
East Pequop Bench	4306-18 ¹ Long Canyon Area	FEID - 1% STCO4 - 1% AGSP - 0%	No Data No Data No Data	1% 1% 0%
	4306-19 ¹ E. Pequop Bench	STTH2 - 70% ORHY - 53%	0% 0%	35% 27%

FOOTNOTES:
¹ Only 1 year of utilization data is available for this key area which shows grazing use.

Within the period being evaluated, Key Area 4306-18 has only two years where utilization data was collected. For many of the year, the area associated with Long Canyon Spring was not used because the spring development was in disrepair and/or only flowed intermittently.

On Key Area 4306-19, no data is available between 1992 and 1994 following the Oasis Fire. Of the remaining 5 years, 1990 showed 70% utilization on Thurber needlegrass, which exceeds the annual utilization objective for this key area, while the other years reflect no grazing use or no data collected. During 1989 and 1990, utilization studies document the fact that the well in the vicinity of this key area was not in service.

Use Pattern Maps

Table 27 reflects Use Pattern Mapping results from 1988 to 1990.

Table 27. Use Pattern Map results for the East Pequop Bench Pasture.												
Year	Not Mapped		Slight		Light		Moderate		Heavy		Severe	
	Acres	%	Acres	%	Acres	%	Acres	%	Acres	%	Acres	%
1990	66,974	92	2,546	4	1,625	2	1,590	2	40	<1	--	--
1989	36,003	49	21,677	30	7,477	10	6,343	9	1,275	2	--	--
1988	52,421	72	12,948	18	4,374	6	2,231	3	801	1	--	--

Three years of use pattern mapping are available for this pasture. Use pattern mapping has revealed that:

- 1) grazing distribution patterns are predominantly localized around the limited available water sources within this pasture;
- 2) the majority of this pasture remains outside of the limited livestock distribution patterns and that additional water developments may help expand these patterns;
- 3) the area represented by Key Area 4306-18 does not reflect average grazing use.

ESI

Table 28 summarizes the results of the ecological status inventory..

Table 28. Ecological Status Inventory results for the East Pequop Bench Pasture.							
Early Seral		Mid Seral		Late Seral		PNC	
Acres	%	Acres	%	Acres	%	Acres	%
11,199	15	29,521	41	30,270	42	1,785	2

Key Area 4306-18 (Long Canyon Spring Area)

Weight-Estimate Production Data

Not measured at this key area.

Ecological Condition

Not measured at this key area.

Frequency

Not measured at this key area.

Key Area 4306-19 (East Pequop Bench Area)

Key Area 4306-19 was involved in a wildland fire in 1991 (Oasis fire) and in 2000 (Big Springs Fire) which removed all vegetation and negated all short and long term trend studies previously collected at this key area. This data is no longer applicable and will not be used within this evaluation.

h. Shafter Pasture (Key Area 4306-20 and 4306-21)

Actual Use

Livestock - The Shafter Pasture has been grazed each year during the evaluation period. Actual use has ranged from 395 AUMs to 4,195 AUMs. Historic use is from November through February, with several years having been extended into March and April. Actual Use figures reflect pasture-wide livestock numbers rather than geographical use areas within this pasture. The typical seasons of use for this pasture have been fall/winter/early spring. There are no internal fences within this relatively large pasture and there are at least three different use areas within the pasture; however, the two key areas established in this pasture represent the principal grazing areas.

Wild Horses - Actual use data for the Big Springs Allotment for wild horses is estimated from census flights. Only animals counted on the allotment during a particular census flight were considered to be using the allotment at that given time.

The Wells RMP Wild Horse Amendment determined that the only area to be managed for wild horses in the Big Springs Allotment is that portion of the Goshute Herd Management Area located in the Shafter Pasture. The two key areas in the Shafter Pasture that are used to monitor wild horse use and these are key areas 4306-20 and 21. Data has been collected on pre-livestock use by wild horses as well as combined cattle and wild horse use by the end of winter.

Actual use for wild horses in this pasture is split into two different use periods during the year. One use period represents wild horse use during the spring/summer/early fall (4/1 - 10/31) prior to the entry of livestock into the area (See the study summary matrix covering pre-livestock use for key area 4306-21 in Appendix 4). The second use period represents the late fall and winter period (11/1 - 3/31) when both wild horses and livestock graze the area (See the study summary matrices for key areas 4306-20 and 21 for combined livestock/wild horse use at the end of winter in Appendix 4). Actual use by horses has ranged from 919 AUMs to 2,125 AUMs during the spring/summer/early fall period, with an average of 1,444 AUMs. Actual use by horses during the combined cattle/horse use period ranged from 69 AUMs to 1,228 AUMs with an average of 678 AUMs. The Shafter pasture is considered a year-long use area, with the highest number of horses generally observed during the spring.

Appendix includes the study summary matrices for key areas 4306-20 & 21 that display actual use, utilization and calculated capacity ratings based on the combined use by cattle and wild horses at the end of the winter use periods. Appendix 4 also includes a study summary matrix for key area 4306-21 which displays actual use, utilization and calculated capacity ratings based on only wild horse use prior to the entry of livestock. Key Area 4306-21 is most representative of wild horse use prior to the entry of livestock on this winter use area.

Tables in Appendix 3 present wild horse numbers observed in the Spruce-Pequop and Goshute HMAs, number of horses observed in the Big Springs Allotment, and percent of the HMA herd inhabiting the specific pastures of the allotment.

Utilization

Refer to the key area studies summary matrix in Appendix 4 for a complete yearly listing of the utilization results. Table 29 below summarizes the high, low and average readings of utilization data collected during the evaluation period.

Table 29. Key area utilization summary results for the Shafter Pasture.				
Pasture	Key Area	High Use Reading (%)	Low Use Reading (%)	Average (%)
Shafter	4306-20 Shafter Well #1	EULA5 - 74% (end of winter - livestock & horses)	29%	52%
		ATNU2 - 69% (end of winter - livestock & horses)	23%	55%
	4306-21 Shafter Well #2	ORHY - 63% (wild horse use prior to livestock use)	20%	45%
		EULA5 - 31% (wild horse use prior to livestock use)	27%	29%
		EULA5 - 58% (end of winter - livestock & horses)	25%	46%
		ATNU2 - 74% (end of winter - livestock & horses)	30%	56%

Use Pattern Maps

Table 30 reflects Use Pattern Mapping results for 1988, 1989, and 1994.

Table 30. Use Pattern Map results for the Shafter Pasture.												
Year	Not Mapped		Slight		Light		Moderate		Heavy		Severe	
	Acres	%	Acres	%	Acres	%	Acres	%	Acres	%	Acres	%
1994 ¹	16,838	16	7,734	8	7,653	7	11,169	11	9,104	9	6,574	6
1989	39,272	38	32,424	32	20,007	19	7,100	7	4,337	4	--	--
1988	52,820	51	29,383	29	12,650	12	7,088	7	1,152	1	47	<1

FOOTNOTES:
¹ 43% of the Shafter pasture (or 44,299 acres) was identified as incidental use areas in 1994. These areas included alkali playas and greasewood flats which contain only limited grass production and periodic free water (during certain periods), but are not primary grazing use areas by livestock or wild horses.

Use pattern mapping shows grazing distribution patterns are associated with the stockwater wells during winter use. When temperatures rise in the early spring there can be water available in the valley drainages that livestock and wild horses can make use of and when water rises at Goshute Pond which is used almost exclusively by wild horses. Water available in Goshute Pond, and in the valley drainages at times, allows the horses to remain in the valley areas after the livestock leave. Key area 4306-21 is located east of Goshute Pond and is most representative of wild horse use prior to entry by livestock. Information collected at key area 4306-20 has not shown to represent wild horse use prior to entry by livestock and is due to the lack of water near this area when the stockwater wells are not operating. Use pattern mapping has also revealed that:

- 1) the area represented by Key Area 4306-20 reflects average grazing use during the winter;
- 2) the majority of this pasture consistently receives slight to light use; and
- 3) additional water developments should help improve grazing distribution patterns.

ESI

Table 31 summarizes the results of the ecological status inventory.

Table 31. Ecological Status Inventory results for the Shafter Pasture.							
Early Seral		Mid Seral		Late Seral		PNC	
Acres	%	Acres	%	Acres	%	Acres	%
2,988	3	55,494	54	44,658	43	--	--

Key Area 4306-20

Weight-Estimate Production Data

The weight-estimate production data indicates that total production increased from 334 lbs/acre to 674 lbs/acre during the evaluation period between 1987 and 1990. White sage increased from 81 lbs/acre to 168 lbs/acre while salt sage increased from 249 lbs/acre to 506 lbs/acre.

Ecological Condition

Although the production data indicates an increase in production occurred, percent composition by species remained static at 80% PNC. For example: salt sage maintained a 75% composition between 1987 and 1990, white sage increased its composition by only 1%, from 24% to 25%, between years. Ecological condition data was not collected since 1990; however, frequency data was collected in 1999 and provides valuable information regarding plant community dynamics. The frequency data is discussed below.

Frequency

The frequency data showed a statistically significant decline occurred in white sage and salt sage between 1987 and 1990; however, by 1999 the data showed both these species increased to the point that there was no significant change between 1987 and 1999. The figures show a reduction in white sage frequency from 32% to 15.5% between 1987 and 1990 with an increase to 25.5% in 1999. Salt sage also showed a reduction from 30% to 17% between 1987 and 1990 followed by an increase to 24% in 1999.

Some additional differences between data collections showed the following:
 (1.) In 1987, halogeton and Russian thistle were found within the transect; however, neither were found in 1999.
 (2.) The first time squirreltail, Indian ricegrass and cheatgrass were recorded within the transect was during 1999.

i. Railroad Field

Actual Use and Utilization

Five years of actual use data are available for this pasture (see Railroad Field matrix in Appendix 4). These years reflect a range of 21 to 324 AUMs removed with an average removal of 149 AUMs.

A key area has not been established within this pasture precluding any long or short term monitoring.

Use Pattern Maps

Table 32 reflects Use Pattern Mapping results for 1990. Additional observations of use patterns and levels of use were made in 1997 but not reflected in the table below.

Table 32. Use Pattern Map results for Railroad Field.												
Year	Not Mapped		Slight		Light		Moderate		Heavy		Severe	
	Acres	%	Acres	%	Acres	%	Acres	%	Acres	%	Acres	%
1990	--	--	--	--	323	10	487	15	2,369	75	--	--

Use pattern mapping during 1990 revealed predominantly heavy use throughout the pasture. The mapping also indicated that good distribution patterning was occurring. In 1997, the predominate level of use was light use (30% midpoint). This pasture is a big sagebrush/grass area and the key species for this pasture in Thurber needlegrass (STTH2).

ESI

Table 33 summarizes the results of the ecological status inventory.

Table 33. Ecological Status Inventory results for the Railroad Field.							
Early Seral		Mid Seral		Late Seral		PNC	
Acres	%	Acres	%	Acres	%	Acres	%
--	--	935	29	2,244	71	--	--

j. Windmill Field

Actual Use and Utilization

The actual use data for Windmill Field shows use levels ranging from 47 AUMs to 442 AUMs with an average use level of 296 AUMs. This pasture was rested in 1987, 1993 and 1998. No data is available for 1991 and 1992.

A key area has not been established within this pasture precluding any long or short term monitoring.

Use Pattern Maps

Table 34 reflects the Use Pattern Mapping results for 1988 and 1989. Additional observations of utilization and use patterns were made in 1997.

Year	Not Mapped		Slight		Light		Moderate		Heavy		Severe	
	Acres	%	Acres	%	Acres	%	Acres	%	Acres	%	Acres	%
1989	439	14	720	22	884	28	602	19	534	17	--	--
1988	--	--	1,396	44	751	23	689	22	254	8	89	3

Both use pattern maps indicated that the heaviest grazing occurred around the well with progressively lighter grazing usage forming in near concentric circles from that point outward. Much of the grazing in this field occurs on Russian wildrye and crested wheatgrass which was plants in the area around the well. Sagebrush/grass is also present away from the well and tends to receive lesser degrees of use.

ESI

Table 35 summarizes the results of the ecological status inventory. It should be noted that the figures below do not include the seedings located within the pasture, which comprise 760 acres or 24% of the pasture.

Early Seral		Mid Seral		Late Seral		PNC	
Acres	%	Acres	%	Acres	%	Acres	%
--	--	1,085	34	1,334	42	--	--

k. North Home Ranch Field

Actual Use and Utilization

Four years of actual use is available for this pasture (see North of Home Pasture in Appendix 4) which ranged from 17 AUMs to 59 AUMs and an average of 43 AUMs.

A key area has not been established within this pasture precluding any long or short term monitoring. Based on field observations this field has generally been used as a transitional area for cattle in preparation for being moved northward across Interstate 80 or into other pastures. The only source of available water for this pasture is located adjacent to the Big Springs Ranch where several small springs surface and immediately run off into the private meadows. As a result, grazing distribution tends to be varied, season of use is not definable, and the grazing period tends to be short in duration while being repeated on several occasions.

Use Pattern Maps

Table 36 below reflects Use Pattern Mapping results from 1988 and 1989.

Year	Not Mapped		Slight		Light		Moderate		Heavy		Severe	
	Acres	%	Acres	%	Acres	%	Acres	%	Acres	%	Acres	%
1989	1,451	36	1,843	46	593	15	84	2	45	1	--	--
1988	1,633	40	1,557	39	826	21	--	--	--	--	--	--

This pasture showed predominantly slight to light use throughout.

ESI

Table 37 summarizes the results of the ecological status inventory.

Early Seral		Mid Seral		Late Seral		PNC	
Acres	%	Acres	%	Acres	%	Acres	%
--	--	680	17	3,336	83	--	--

l. Six Mile Pasture

This pasture has been identified as a separate pasture but no boundaries exist which would exclude any grazing. Therefore, during this segment of the evaluation Six Mile Pasture has been considered an extension of the Payne Basin Pasture.

2. Wild Horse Removals

Claiming Period

In February 1974, the BLM opened the claiming period allowing those with branded horses and off-spring of branded horses to claim and gather their animals. Claimants were notified that any animals left on the range after the claiming period ended would be declared wild and free-roaming horses protected under the Wild and Free-Roaming Wild Horse and Burro Act of 1971. The claiming period came to a close on February 28, 1978. A total of 3,936 claims were filed by various parties with the Elko District Office, 400 of these being in the Big Springs Allotment (Shafter Pasture).

In March, 1978, the first complete helicopter census after the closure of the claiming period was conducted. 129 horses remained in the Goshute herd area after the claiming period and became designated as wild and free-roaming horses under the Wild Horse and Burro Act of 1971. If a herd area was found to contain wild horses after the claiming period ended and also had documented wild horse use in 1971, it retained the status of a herd area and was formally recognized in the Wells RMP in 1985. The Wells RMP Wild Horse Amendment delineated the Goshute, Antelope Valley, Maverick-Medicine and Spruce-Pequop Herd Management Areas. The Amendment also deleted the Toano Herd Area and the Pequop Mountains from wild horse management due to the numerous requests from the public to remove wild horses from their private lands.

BLM Removals

Beginning after the end of the claiming period, the BLM conducted periodic removals in both the HMAs falling within the Big Springs Allotment. Data from the removals within the Goshute HMA show that in July of 1988, 168 horses were removed, October of 1993, 106 horses were removed, October and December of 1996, 214 horses were removed and in January of 1999, 312 horses were removed from the HMA. The gather in 1999 removed 298 horses specifically from the Shafter pasture of the Big Springs Allotment.

In the Spruce-Pequop HMA, removals have been conducted in July of 1988, removing 105 horses, in October of 1993, removing 80 horses and in January of 1999, removing 128 horses. The gather which took place in October of 1993 focused on the Pequop Mountains, and all 80 horses came from the newly designated "horse-free" area, as per the Wells RMP Wild Horse Amendment. Since 1993, wild horses have moved back into the horse-free area; the most recent census flight of August, 2000 found 63 horses in the Wood Hills, Independence Valley and the west bench of the Pequops.

The tables found in Appendix 3 reflect changes in horse numbers and actual use due to the periodic removals.

Once the AML is established for an HMA, policy states that future removals will be conducted on a four year rotational basis to keep the numbers within a range of the designated AML.

3. Wildlife

a. Mule Deer:

Eleven big game habitat condition studies have been established within mule deer winter range, representing approximately 28,836 acres of habitat. See Map 13 in Appendix 1 for all key area locations. Data from Cole Browse studies indicate the most limiting factor on mule deer winter range in the Big Springs Allotment is the unsatisfactory age structure of bitterbrush (Table 38). Cole Browse Data which compares the amount of seedlings/young plants to mature/decadent plants was collected from 1977/80 up to 1992. No additional data has been collected since 1992. Bitterbrush Canopy Cover data are presented in Table 39.

Two studies located within the Wood Hills deer winter range (DW-09-T-01; DW-09-T-03) indicate this habitat to be in good condition with stable trends (Table 40). Eight studies located within the Pequop Mountains deer yearlong range indicate habitat conditions ranging from fair to excellent. Studies DW-10-T-(4306-09), DW-10-T-(4306-11), and DW-10-T-(4306-13) are located north of Interstate 80 in the Pequop Mountains. These studies have been read one time in 1991 and indicate habitat conditions from fair to good. Study DW-10-T-01B, also located north of Interstate 80, was read in 1980, 1984, and 1992. Habitat condition ranged from fair to good, with a downward trend in 1992. Studies DW-10-T-01A, DW-10-T-02, DW-10-T-03, and DW-10-T-04 are located south of Interstate 80 on the Pequop Mountains. These studies show good to excellent conditions. Study DW-10-T-04 is in good to fair condition with a downward trend between 1980 and 1984. One study (DW-11-T-01) located on the Toano/Goshute Mountains' deer winter range indicated this habitat to be in good condition between 1980 and 1984 with a stable trend.

In general, habitat conditions, and parameters such as seedling/young bitterbrush plants and canopy cover, remained the same or improved as a result of an above normal precipitation cycle (1982 - 1986 and 1993 - 1998) and remained the same or declined as a result of a below normal precipitation cycle (1987 - 1992).

Table 38. Bitterbrush/Cliffrose Cole Browse Data.

Key Area	Year	Number of Samples	Number of Seedlings/ Young Plants	Species	% Seedlings/ Young Plants
*DW-09-T-01	1985	31	3	PUTR2	9.7
	1980	135	11	PUTR2	8.1
*DW-09-T-03	1985	67	7	COME5	10.4
DW-10-T-01A	1992	25	0	PUTR2	0.0
	1984	50	8	PUTR2	16.0
	1980	50	12	PUTR2	24.0
DW-10-T-01B	1992	25	0	PUTR2	0.0
	1990	25	0	PUTR2	0.0
	1984	50	8	PUTR2	16.0
	1980	50	11	PUTR2	22.0
DW-10-T-02	1992	25	0	PUTR2	0.0
	1984	50	17	PUTR2	34.0
	1980	50	2	PUTR2	4.0
DW-10-T-03	1992	25	0	PUTR2	0.0
	1984	50	1	PUTR2	2.0
	1980	50	1	PUTR2	2.0
*DW-10-T-04	1984	50	2	COME5	4.0
	1980	125	11	COME5	8.8
DW-10-T-(4306-09)	1992	25	0	PUTR2	0.0
	1991	25	0	PUTR2	0.0
	1990	25	0	PUTR2	0.0
DW-10-T-(4306-11)	1992	25	0	PUTR2	0.0
	1991	25	0	PUTR2	0.0
	1990	25	0	PUTR2	0.0
DW-10-T-(4306-13)	1992	25	0	PUTR2	0.0
	1990	25	0	PUTR2	0.0
DW-11-T-01	1989	25	0	PUTR2	0.0
	1984	51	4	PUTR2	7.8
	1980	102	4	PUTR2	3.9
	1977	20	0	PUTR2	0

*These sites are in critical deer winter range and the rest are in deer year-long range due to re-delineation of the range lines.
 PUTR2 - Bitterbrush; COME5 - Cliffrose

Table 39. Bitterbrush Canopy Cover Data.

Key Area	Year	Total Intercept Distance (ft.)	Percent Composition
*DW-09-T-01	1985	12	5.0
	1980	20	4.9
*DW-09-T-03	1995	0	0.0
	1985	0	0.0
DW-10-T-01A	1993	45.5	13.0
	1984	46	10.3
	1979	5	1.4
DW-10-T-01B	1992	25	9.2
	1984	17	5.2
	1980	26	5.3
DW-10-T-02	1992	41.7	8.3
	1984	44	9.4
	1980	21	5.4
DW-10-T-03	1984	37	8.4
	1980	23	4.0
*DW-10-T-04	1992	4.5	4.4
	1984	0	0.0
	1980	0	0.0
DW-10-T-(4306-09)	1990	43	21.2
DW-10-T-(4306-11)	1999	57	12.7
	1990	53	11.1
DW-10-T-(4306-13)	1990	11	2.5
DW-11-T-01	1992	14	7.9
	1984	25	8.5
	1980	12	2.0

* These sites are in critical deer winter range and the rest are in deer year-long range due to re-delineation of the range lines.

Table 40. Mule Deer Habitat Condition Summary.

Key Area	Year	Habitat Condition	Habitat Rating	Percent of Area
*DW-09-T-01	1985 1982	Good Good	70.6 61.7	50%
*DW-09-T-03	1995 1985	Good Good	76.4 70.6	50%
DW-10-T-01A	1992 1984 1979	Good Excellent Good	74.4 82.3 79.4	12.5%
DW-10-T-01B	1992 1984 1980	Good Fair Good	67.6 55.9 64.7	12.5%
DW-10-T-02	1992 1984 1980	Excellent Excellent Excellent	94.1 94.1 85.3	12.5%
DW-10-T-03	1984 1980	Excellent Excellent	82.3 82.3	12.5%
*DW-10-T-04	1984 1980	Fair Good	58.8 76.4	12.5%
DW-10-T-(4306-09)	1991	Fair	51.0	12.5%
DW-10-T-(4306-11)	1991	Good	63.0	12.5%
DW-10-T-(4306-13)	1991	Fair	57.0	12.5%
DW-11-T-01	1984 1980	Good Good	67.6 70.6	100%

10-50% = Poor; 51-60% = Fair; 61-80% = Good; 81-100% = Excellent

* These sites are in critical deer winter range and the rest are in deer year-long range due to re-delineation of the range lines.

Beginning in 1988, utilization of bitterbrush was measured in the fall (following removal of livestock and prior to the influx of migrant deer herds) and spring (after deer leave and prior to spring growth and cattle use). This cycle of deer moving into the area in the fall/winter and leaving in the spring has been altered for at least the past few years as explained in the paragraph below. Seven bitterbrush utilization key areas exist within the Pequop Mountains' deer yearlong range. Data from these areas indicate that the utilization average for cattle was 19% (when cattle come off in the fall) and utilization by deer at the end of winter averaged an additional 12% for a total average use of about 30% (Table 41).

Although the above averages fall within the levels of acceptable use, the utilization data collected in 1997 shows several readings at the end of the cattle use period that substantially exceeded the 25% target level for livestock use. However, observations of deer numbers and levels of utilization from 1997 through 1999 during and soon after the cattle use period ended indicates that deer were making most of the use on bitterbrush during the time that cattle were in the pasture (comparisons in use levels were made between areas used by cattle and deer compared to areas only used by deer). Also during these years, the winters were milder in temperature which allowed deer to remain in the higher parts of the Pequop Mountains considered deer summer range where they continued to browse on bitterbrush longer periods of time compared to those years when winter snow accumulations would force the deer to the lower elevations.

Table 41. Pequop Deer Winter Range Bitterbrush Utilization Studies.

Key Area	Season	1988	1989	1990	1991 ¹	1992 ²	1993 ³	1994
DW-10-T-01A	Fall Spring*	ND 27%	21% 47%	15% 43%	19% 25%	10% 23%	19% 16%	8% 18%
DW-10-T-01B	Fall Spring*	ND ND	ND 42%	5% 24%	28% 30%	14% 3%	1% 6%	17% 18%
DW-10-T-02	Fall Spring*	ND ND	ND 32%	3% 9%	5% 17%	12% 10%	2% 13%	5% 5%
DW-10-T-03	Fall Spring*	ND ND	23% 38%	8% 13%	6% 25%	10% 17%	4% 11%	9% 11%
DW-1-T-(4306-09)	Fall Spring*	ND ND	ND 65%	13% 46%	24% 27%	21% 8%	22% 47%	30% 40%
DW-10-T-(4306-11)	Fall Spring*	ND ND	ND 40%	25% 32%	18% 22%	11% 5%	14% 13%	19% 19%
DW-10-T-(4306-13)	Fall Spring*	ND ND	ND 75%	18% 52%	24% 22%	12% 9%	12% 17%	28% 35%
Annual Average Cattle Use (Fall)		ND	22%	12%	17%	10%	8%	17%
Annual Average Total Use (Spring)		27%	48%	31%	24%	20%	19%	21%
Winter Deer Use (Total Use - Cattle Use)		ND	26%	19%	7%	10%	11%	4%

* = Spring of the following year.
 ND = No Data.

1 = Transect DW-10-T-(4306-13) was not included in average calculations due to discrepancies in the data.

2 = Transects DW-10-T-01B, DW-10-T-02, DW-10-T-(4306-09), DW-10-T-(4306-11), DW-10-T-(4306-13) were not included in average calculations due to discrepancies in the data.

3 = Transects DW-10-T-01A, DW-10-T-(4306/11) were not included in average calculations due to discrepancies in the data

Table 41. (Continued) Pequop Deer Winter Range Bitterbrush Utilization Studies.

Key Area	Season	1995	1996	1997	1998	1999
DW-10-T-01A	Fall Spring*	10% 26%	10% ND	29% ND	% 29%	ND ND
DW-10-T-01B	Fall Spring*	19% 5%	72% ND	9% ND	ND 12%	ND ND
DW-10-T-02	Fall Spring*	8% 8%	ND ND	19% ND	ND 12%	ND ND
DW-10-T-03	Fall Spring*	14% 10%	ND ND	32% ND	ND 13%	ND ND
DW-1-T-(4306-09)	Fall Spring*	21% 63%	ND ND	48% ND	ND ND	ND ND
DW-10-T-(4306-11)	Fall Spring*	4% 8%	57% ND	22% ND	ND 17%	ND ND
DW-10-T-(4306-13)	Fall Spring*	24% 28%	33% ND	38% ND	ND 19%	ND ND
Annual Average Cattle Use (Fall)		14%	43%	28%	ND%	ND
Annual Average Total Use (Spring)		21%	ND	ND%	17%	ND
Winter Deer Use (Total Use - Cattle Use)		7%	ND	ND%	ND%	ND

* = Spring of the following year.
 ND = No Data.

b. Antelope:

Twelve big game habitat studies have been established within the antelope range within the Big Springs Allotment.

Four of these twelve studies are within the Independence Valley antelope yearlong range (AY-5-T-(4306-01), AY-5-T-(4306-02), AS-4-T-(4306-03), AS-4-T-(4306-06)). Data from these studies rate this habitat in fair condition (Table 42). A common limiting factor on this yearlong range is poor forage diversity. Forb and grass composition averages only 6% and 11% respectively (Table 43).

Two of the twelve studies are within the Goshute Valley antelope yearlong range (AY-4-T-(4306-19), AY-4-T-(4306-20)). Data from these studies rate this habitat in fair condition. Forb and grass composition averages 0.61 and 0.0% respectively.

Six of the twelve studies are within the Pequop Mountain/Goshute Valley antelope summer range. Studies AS-4-T-(4306-04), AS-4-t-(4306-05), and AS-4-T-(4306-10) are located in the extreme northern section of Big Springs Allotment and represent 50% of the Pequop Mountain/Goshute Valley antelope summer range. These studies indicate this habitat to be in fair condition. Forb and grass composition averages 16% and 21% respectively. Studies AS-4-T-(4306-08), AS-4-T-(4306-12), AS-4-T-(4306-14) are located north of Interstate 80 and represent 50% of the Pequop Mountain/Goshute Valley antelope summer range. These studies indicate this habitat to be in good condition. Forb and grass composition averages 17% and 23% respectively.

Table 42. Antelope Habitat Condition Summary.

Key Area	Year	Habitat Condition	Habitat Rating	Percent of Area
AY-5-T-(4306-01)	1991	Fair	49	25%
AY-5-T-(4306-02)	1991	Fair	43	25%
*AS-4-T-(4306-03)	1991	Fair	44	25%
AS-4-T-(4306-06)	1991	Fair	54	25%
AS-4-T-(4306-19)	1991	Fair	47	50%
AY-4-T-(4306-20)	1991	Fair	31	50%
AS-4-T-(4306-04)	1991	Fair	44	16.6%
AS-4-T-(4306-05)	1991	Fair	52	16.6%
*AS-4-T-(4306-08)	1991	Good	62	16.7%
AS-4-T-(4306-10)	1991	Fair	45	16.7%
AS-4-T-(4306-12)	1991	Good	68	16.7%
*AS-4-T-(4306-14)	1991	Good	65	16.7%

Poor; 5-30; Fair; 31-60 = Good; 61-105
 AS - Antelope Summer use area
 AY - Antelope Yearlong use area
 * These areas have been redefined and are now AY use areas.

Table 43. Forage Composition on Antelope Range Within the Big Springs Allotment.							
Key Area	Year	Grasses		Forbs		Shrubs	
		% Comp.	# Spp.	% Comp.	# Spp.	% Comp.	# Spp.
AY-5-T-(4306-11)	1990	5.36	3	.18	1	83.28	3
	1987	8.47	4	2.36	1	74.10	3
AY-5-T-(4306-02)	1990	11.21	1	0.00	0	88.79	2
	1987	20.56	1	0.00	1	79.44	2
AS-4-T-(4306-05)	1990	12.29	6	4.58	1	83.12	2
	1987	29.19	5	26.64	8	44.16	3
AS-4-T-(4306-06)	1990	9.34	2	15.58	2	75.07	2
	1987	11.68	2	17.83	4	70.50	2
AS-4-T-(4306-08)	1990	9.25	6	11.71	6	79.04	2
	1987	11.03	4	18.64	8	70.30	2
AS-4-T-(4306-12)	1990	37.55	5	9.93	5	46.25	1
	1987	21.25	4	34.21	10	43.79	2
AS-4-T-(4306-14)	1990	37.23	5	11.54	4	51.24	2
	1987	21.60	6	16.79	4	61.63	2
AY-4-T-(4306-20)	1990	0.00	0	0.00	0	100.00	2
	1987	0.00	0	1.22	1	98.77	2

In general, it appears that composition declined between 1987 and 1990.

c. Bighorn Sheep:

Although no data is available for bighorn sheep, the Goshute Mountains have been identified as historic bighorn sheep range by Nevada Division of Wildlife (NDOW). NDOW has proposed to reintroduce bighorn sheep into the Goshutes, and this proposed reintroduction has been included in the Division's Big Game Release Plan since 1988. The Goshute Mountains have also been identified by the Wells RMP as a potential reestablishment area. Currently, the west benches of the Goshute Mountains are grazed by cattle in the winter and the east benches (outside the allotment) by sheep in the winter.

d. Elk:

Numbers of elk have been increasing since elk pioneered into this area many years ago. The largest number of elk in this allotment occupy the portion of the Pequop Mountains north of Interstate 80. The most recent estimate of numbers in this area is 225 elk. These elk use this area part of the year and spend part of the year in the Windemere/Black Mountain area to the north. Three wildlife guzzlers were installed in June 2000 in the north Pequop Mountain area with the intention of attracting elk to areas little used by livestock. Since the number of elk inhabiting the north Pequop Mountain area has increased substantially only in the past few years, no specific data is available on the levels of use or effects of use made by elk; however, the livestock permittees have reported substantial elk use in the areas associated with West Spring, Ralph Spring, Pequop Spring and Pequop Well and concerns about competition between elk and cattle at these water sources. Data on the use of resources will be collected when their specific use areas are more clearly defined.

Elk have also been observed on the other mountainous areas in the allotment as well as on private ranch lands.

E. Sage Grouse

There is little information other than the location of sage grouse strutting grounds on this allotment. Based on the location of the strutting grounds, nesting areas are most likely to be within a two mile radius of the strutting areas although birds are known to nest beyond this distance. Since young sage grouse broods are often attracted to the forbs and insects associated with riparian areas, the riparian areas are likely to be important habitat areas particularly in the East Squaw Creek area north of Interstate 80 and the private ranch lands associated with the Big Springs Ranch.

The strutting grounds located on the east Pequop bench south of the Big Springs Ranch were within or near the Big Springs Fire of July 2000. This fire likely burned nesting habitat and possibly brood rearing habitat; however, since the meadows on the Big Springs Ranch lay just to the north of these strutting grounds, it is likely these private ranch lands provide important brood rearing habitat. Proposed fire rehabilitation plans for the Big Springs Fire include seeding a combination of shrub species including sagebrush and forage kochia as well as several grass species and forbs to help improve the area for sage grouse habitat as well as for other resource uses.

4. Riparian Habitat

The streams/springs and associated riparian habitats are described below, by pasture:

a. Independence Valley Pasture

Seep at Warm Springs Ranch - This seep is located on public lands and is associated with a much larger network of water flows that originate on private lands at the Warm Springs Ranch. This seep is undeveloped providing a temporary water source and forage (sedges and meadow grasses) for livestock and wildlife during the spring. This seep tends to dry by summer time.

Hogan Spring/Seep - This spring/seep originates on the west flank of the Pequop Mountains east of Boxcar Well and is the only known surface water on the west side of the Pequop Mountains south of Interstate 80. This water had been piped to a water trough in the past, but no improvement exists at the present time. The flows from this seep are relatively small, drying to a puddle/moist area in the summer and currently supports only a few wild rose shrubs.

b. Holborn Pasture

Moor Summit Spring/Seep - This spring/seep is located on the western edge of this pasture and is a developed water source with water piped to a trough. This is the only spring/seep on public lands in this pasture. The flow of water from this source is relatively small and tends to dissipate further during the summer. This water development captures all of the water produced by this seep/spring and there is little out flow from the trough, therefore there is no riparian habitat.

c. North Pequop Mountain Pasture

Beacon Spring/Reservoirs - This spring is located just north of Pequop Summit and flows westerly into two reservoirs below it. This spring produces relatively strong perennial flows, but riparian vegetation is absent due to the reservoirs disrupting the spring flow channel and the effects of concentrated livestock use.

Rocky Point Spring - This spring is located in the upper portion of the West Squaw Creek drainage. This spring is developed with all of the water from the spring captured by the water collection system and piped to a trough. There is no riparian habitat at the spring source because all the water is piped to the trough; however, a narrow corridor of riparian vegetation is present up to one-half mile below the trough supported by excess water flowing out of the water trough. Livestock use at and below the trough keeps this riparian zone disturbed to where it supports only a meager population of vegetation.

Pequop Spring - This spring is located at the north end of the Pequop Mountains. This spring is developed with all of the water from the spring captured by the water collection system and piped to water troughs below. Excess water flowing out of the troughs flows into a pond. The water from this spring source is perennial and flows strong enough to fill the troughs and pond below. Since all of the water is being piped to the troughs, there is no riparian vegetation at the spring source. The pond below the troughs could support some riparian vegetation around its edge and along the outflow from the pond, but grazing impacts currently preclude this expression.

Baker Spring/Pipeline - This spring is now on public lands, but was on private lands prior to the BSR Land Exchange completed in 1999. This spring source is located on the northwest portion of the Pequop Mountains. This spring is developed, with all of the water from the spring collected and piped to water troughs at two locations on a pipeline below. There is no riparian vegetation at the spring source because all the water is piped away. The only riparian vegetation observed were a few willows near the first troughs.

Pencil Lead Spring (NWSE section 32, T. 38 N., R. 66 E.) - This spring is developed with all of the water collected at the spring source and piped to a trough and pond below. The flows from this source are relatively small but appear to be perennial. The immediate area around the spring source is an upland meadow that dries out in the summer.

Short Pipe Spring/seep in NW1/4 section 4, T. 37 N., R. 66 E. - This spring is in the drainage just north of East Squaw Creek. A piece of black pipe is connected to this seep which produces only a trickle of water. A small patch of sedge is the only riparian vegetation present.

North Fork of East Squaw Creek Spring in the NE1/4 of section 7, T. 37 N., R. 66 E. - This spring originates in the north fork of the East Squaw Creek drainage. This spring is developed and water piped to a steel trough and a tractor tire trough immediately below. Just above the spring source there appears to have been a diversion dike built years ago that diverts runoff from the drainage above and directs it to the west and around the spring development where it rejoins the primary channel below. Water from this spring source normally flows into the main channel of East Squaw Creek during the spring; however, flows stop short of reaching the main channel during the summer. The riparian zone near the spring source is highly disturbed from livestock use and therefore supports only small patches of herbaceous vegetation. However, a narrow corridor of herbaceous riparian vegetation becomes common beyond the immediate area of the spring source and extends downstream the length of the perennial water flow.

Spring Complex on the upper middle fork of the East Squaw Creek drainage - There are three springs near the top of this fork of the drainage as described below:

- One spring flows from a north slope south of the drainage. It has been developed with water piped to a trough; however, this development is in disrepair and no longer functioning. Water at the spring has created a small wet meadow which has been highly disturbed by livestock use. This spring flows to the middle fork channel in the spring but not during the summer.

- One spring originates near the top of the middle fork drainage and had a portion of its water piped to a trough immediately below; however, this development is in disrepair and no longer functional. The water flowing from this spring has created a narrow corridor of herbaceous riparian vegetation, but livestock disturbance has punched the soft soils creating hummocks and some bare ground allowing the water to gain energy and carry away some of the soil. Soil depth to a gravel/hardpan is about 6 inches. This head spring has lost only a few inches of soil because water flows are modest and water energies this high in the drainage have less erosive force.

- One spring originates about 100 yards downstream from the head spring described above. This spring also rises in the drainage bottom and had a portion of its water piped to a trough about thirty yards below; however, this development is in disrepair and no longer functional. The water flowing from this spring has created a narrow corridor of herbaceous riparian vegetation, but livestock disturbance has punched these shallow soft soils creating hummocks and some bare ground allowing the water to gain energy and carry away some of the soil. This spring has lost only a few inches of soil because water flows are relatively modest and energies this high in the drainage have less erosive force. Also associated with this spring is a dike installed years ago that diverts water flowing from the spring above to the south of this spring. The water from above flows along this diversion channel to where the water flow has created a headcut as it flows back into the primary channel near the old trough. Summer surface water flows from these springs are joined by spring flows from a side channel on the south as described below.

Spring in the SW1/4 of section 7, T. 37 N., R. 66 E. - This spring originates in an channel about 1/4 mile to the south of the middle fork channel and its flows join the flows in the middle fork channel. This spring does not appear to have been developed. Livestock disturbance has punched the shallow soils creating hummocks. Herbaceous riparian vegetation is growing on the hummocks in the channel. This head spring/channel has lost only a few inches of soil because water flows are modest and water energies this high in the drainage have less erosive force. However, when the flow energies from this channel join with the flow energies in the middle fork channel, energies are strong enough to erode the six inches of soil in the stream channel to a gravel/rock streambed with riparian vegetation growing along the narrow margin.

Lower Spring on the Middle Fork of East Squaw Creek - This spring rises on the northern edge of the channel with a gentle gradient. During the summer, water from the springs above sink into the soil about 80 yards above this spring. Water from this lower spring flows about 100 - 200 yards in the summer. This spring does not appear to have been developed. Livestock disturbance has punched the soft soils creating hummocks and some bare ground allowing the water to gain energy and carry away some of the soil. This portion of the channel has deeper soils compared to the steeper channel above and has lost a few more inches of soil compared to the channel above. Herbaceous riparian vegetation is growing on the hummocks at the spring source but is heavily grazed by livestock.

Upper Wally Spring - This spring originates high in the south fork of East Squaw Creek. This spring was developed; however the development is in disrepair and no longer functioning. The water at this upper spring are relatively small and flows from a gravel/rock bed but cuts through deeper soils about half way to the main Wally Spring. There is no riparian vegetation along this portion of the spring flow.

Wally Spring - This is the main spring in this fork of East Squaw Creek and its water rises in this narrow canyon about half-way down the channel. There was a reservoir built just below this spring some years ago, but water has cut through the reservoir wall leaving a deep cut in the channel. Water from the spring now flows over the steep embankment into the empty reservoir and is slowly eroding the lip of the streambank and may eventually downcut the remaining water channel to this spring. This spring produces a good flow of water which flows almost to the mouth of this fork. There is a stand of aspen trees against the hill on the south side of the channel with the understory much disturbed by cattle use. There are a few old aspen trees and some younger trees. There is also a large willow just above the spring source and a few large willows about 100 yards downstream. Herbaceous riparian vegetation is well established at the spring source which has a rail fence around it, and patches/stringers in the channel below, but the channel has been substantially disturbed by livestock use.

Seep above Wally Spring- This seep rises on a steep north slope above Wally Spring. It was developed and had water piped to trough at one time, but is in disrepair and not functioning. This seep has hummocks from livestock disturbance with herbaceous riparian vegetation growing on the hummocks.

East Fork of Squaw Creek (Main Channel) -

There are three springs at the head of the main channel. Just above these springs is a diversion dike that deflects water coming from the channel above and sends it around the south side of the springs. The water flowing in the diversion channel has carved a deep channel into which the three springs now flow. The water flowing from the springs goes over the lip of this channel which, along with livestock hummocks, has produced headcuts that are slowly eroding the water channels to the springs. One of the three springs has been developed which has captured all the water and piped it to a tractor tire trough. It is unknown whether this development is functional. Water from the overflow pipe below the trough flows into the diversion channel. Willows are present in the immediate vicinity just north of the springs. Aspen is also present along the diversion channel to the south of the springs. Several elk scrapings had broken a few aspen branches. Herbaceous riparian vegetation is present, mainly associated with the springs although these wet areas have hummocks from cattle use. Surface disturbance from livestock has left a substantial amount of bare ground in this area.

About 50 yards below the main springs is where the north fork channel joins the main channel. There is some water that surfaces in the north fork channel just above which adds to the flow of the head springs. This juncture is deeply incised although the channel becomes only modestly incised 50 yards below. Aspen and willow drop out of the picture about 1/4 mile below the head springs.

About one mile below the head spring is a reservoir that has been cut through by water flows. The channel through the reservoir, and for a ways above the reservoir, is deeply incised and supports little if any riparian vegetation; however, the actual drop in the water channel is about two feet below what it would have been had the reservoir not be installed. The gentle area adjacent to the stream channel below this dam has a substantial amount of bare ground from livestock disturbance.

Lower Beacon Spring - is also a spring located in the NE1/4 of section 17, T. 37 N., R. 66 E in a drainage about 1/4 mile south of the main East Squaw Creek channel. This spring was developed and at one time water was piped to a trough, but the trough portion of the development is in disrepair. There is a reservoir below the spring and it holds water with the overflow from the reservoir flowing to the main East Squaw Creek channel. Herbaceous riparian vegetation is present between the spring source and the reservoir but is hummocked from cattle use. The gradient between the spring source and the reservoir is relatively gentle which has prevented any substantial downcutting but there is still potential for some additional cutting. There are also a few willows just below the reservoir as well a good covering of herbaceous riparian vegetation.

East (Upper) Beacon Spring - is a spring located to the east of Pequop Summit in the SW1/4 of section 17, T. 37 N., R. 66 E. This spring has been developed although the steel trough and the tractor tire trough don't appear to be functional. There is a reservoir just below the spring source and it holds water. Water is also piped from this spring to a trough location about a mile below. The spring area has some herbaceous riparian vegetation but much of the area is highly disturbed from cattle use. The gradient from the spring to the reservoir is relatively steep and the disturbance to the riparian vegetation has allowed water energies to erode the soils.

d. Squaw Creek Ranch Field (Above Ranch House)

At the lower end of East Squaw Creek there is a fence that encloses about 1,000 acres of land associated with the Squaw Creek Ranch. This pasture and the irrigated field below became public lands through the BSR land Exchange completed in 1999. Willow shrubs and willow trees are common in this field although heavily browsed by cattle. Several elk scrapings had broken some of the willow branches. The water flows during the summer end about half-way through this field. At the bottom of this field is another reservoir that appears to hold water, although it goes dry in the summer. A patch of tall white top (a noxious weed) was observed growing on the edge of this reservoir. Just above the reservoir is a headcut about one foot deep just below a road that crosses through the pasture. The stream channel has braided through this area. Water surfaces again just below this dam and flows toward the irrigated field below. Water flows don't reach the irrigated field in the summer.

e. Lower Squaw Creek Ranch Irrigated Field

The field below the Squaw Creek Ranch house has commonly been irrigated to grow meadow grasses for livestock use in the summer. Some willow patches are present in the middle of this field. When spring flows cease to flow into the upper part of this field, the only water present in this field is at the lower end which flows into a reservoir. This is the lowest water point on East Squaw Creek. The field fence runs through the reservoir to provide water on both sides of the fence. Herbaceous riparian vegetation grows in association with the water flows at the lower end of this field which is moderately disturbed from livestock use. The gradient between the spring and reservoir is gentle and this along with the herbaceous riparian vegetation allows this water channel to be stable.

f. Payne Basin

Adele Spring - this spring is located on the north side of Payne Basin just above the highway maintenance station. This is a herbaceous riparian spring/meadow that is broad and has a gentle slope. The upper edge of the spring source has some bare ground due to livestock trailing and the meadow has hummocks from cattle use. The meadow is generally covered with sedges and, considering the gentle slope below the spring, is adequate to hold the meadow soils in place.

Milk House Spring - This spring is located below the highway maintenance station. This spring flows for several hundred yards. A trough has been installed but it is in disrepair and not functional. There are a few willow patches along the water course and there is herbaceous riparian vegetation all along the water course but it is hummocked from cattle use. The herbaceous riparian vegetation is generally holding together the meadow soils, but the gradient of the water course is moderate. Although the riparian area is stable at this time, the gradient of this water course along with the hummocking creates some risk of water erosion if this area becomes more disturbed.

Upper and Lower Nanny Springs - Both the upper and lower springs have reservoirs. Both reservoirs hold water. Water from the upper reservoir flows to the lower spring/reservoir. The upper spring has only herbaceous riparian vegetation with reeds growing in the reservoir. The spring channel leading into the reservoir is generally covered with herbaceous riparian vegetation. The riparian vegetation and the fact that water in the reservoir sits nearly level with the spring source effectively prevents erosion between the spring and reservoir.

Lower Nanny Spring has aspen trees surrounding it and herbaceous riparian vegetation throughout the wet areas. The water course from this spring to the reservoir below has a gentle gradient. The herbaceous riparian vegetation has been hummocked by cattle use, but the vegetation that is present, along with the gentle gradient, minimizes water energies between the spring source and reservoir. The aspen stand at the lower spring has mostly older trees; however, some younger trees are also present.

Deer Spring - This spring is located in the SE1/4 of section 31, T. 37 N., R. 66 E. This spring source is developed. All the water from the spring has been captured by the development and piped to a trough 20 yards below. Riparian vegetation grows below the trough from overflow water and is hummocked from cattle use.

Spring in the NENE of section 7, T. 36 N., R. 66 E. - This spring is developed. All the water from the spring source has been captured by the development and piped to water troughs below. There is no riparian vegetation associated with this development.

g. East Pequop Bench

Long Canyon Spring - This spring rises in Long Canyon south of the Big Springs Ranch and is the only spring known to exist on public lands in this pasture. This spring is developed with all the water captured and piped to troughs. The water flow from this spring is relatively small. There is no riparian vegetation associated with this development.

h. Shafter

Goshute Seep/Pond - This seep is located on the valley floor west of Shafter Well #2 and is used primarily by wild horses. This is a wet weather water that rises in the spring and usually dries completely in the late spring or summer. There are remnants of old fencing around this pond.

5. Water Quality

a. East Squaw Creek

East Squaw Creek is the only perennial stream on public lands in the Big Springs Allotment. Although the water quality standard for this stream falls under the unclassified standard for the State of Nevada, the Bureau initiated water quality sampling on this stream in July 2000 to monitor changes in water quality as the stream improves as a result of proposed changes in management described in this evaluation.

One water quality sample was collected on July 24, 2000 and analyzed. The results of the laboratory analysis showed that turbidity was very high for a stream during low flow conditions and that dissolved oxygen was low at 4.24 mg/l. Other parameters that were high included color and total suspended solids. The specific results of the water quality analysis are available at the Elko Field Office.

b. Springs/Seeps

Ocular assessments of water quality were made during trips to the allotment to document riparian habitat conditions and water development conditions, and to monitor other resource conditions and uses. The conclusion(s) regarding water quality are included under the conclusions regarding the riparian/wetland habitat standard for rangeland health below.

6. Carrying Capacity Analysis

Actual use and utilization data were compared to the desired utilization level for each key area in each pasture. The mathematical formula used was as follows:

$$\text{Capacity} = \frac{\text{Actual Use (AUMs)} \times \text{Desired Utilization}}{\text{Measured Utilization}}$$

The carrying capacity for each pasture along with stocking rate recommendations are summarized in Technical Recommendation B in Section VII of this evaluation.

VI. CONCLUSIONS

A. STANDARDS AND GUIDELINES FOR RANGELAND HEALTH

Standard 1. Upland Sites: Upland soils exhibit infiltration and permeability rates that are appropriate to soil type, climate and land form.

Met. Observations of soil stability and movement were made at the key areas and other upland locations. These observations generally found no problems with water infiltration or permeability rates. Observations also found little evidence of accelerated soil erosion (soil movement off site that would be above natural levels) that would indicate problems with water infiltration.

Some soil movement was observed in the inter-spaces between plants in areas where the soil had been well wetted. The movement of heavy animals over the soils at this time can create depressions and uplifting of soil around the edge of the depressions. Over time, rainfall impact, snow melt and the movement of heavy animals over the area when the soil is firm, tends to move the soils and fill-in the depressions resulting in soil movement in the spaces between plants; however, observations in these areas did not detect soil movement or accumulations within the site or off site beyond the natural level of erosion. However, areas burned in wildfires are likely to have had some accelerated erosion on steeper slopes and drainage ways within the first years following the burn(s). In addition, accelerated erosion has occurred in spots where roads, off road vehicle paths and stock trails run down slopes/drainages.

Standard 2. Riparian and Wetland Sites: Riparian and wetland areas exhibit a properly functioning condition and achieve state water quality criteria.

a. **Functioning Condition - Partially Met/ Partially Not Met.** Table 44 below lists the springs and seeps in the allotment, by pasture, along with the ratings of their functioning condition. The full wording of the acronyms/abbreviations used in the table below are as follows:

- PFC - Proper Functioning Condition
- FAR(S) - Functioning-at-Risk (Static Trend)
- NF - Nonfunctional
- DEV - Due to the Water Development Design
- GRZ - Due to Cattle Use
- WH - Due to Wild Horse Use

Table 44. Riparian Habitat - Functioning Condition Ratings		
PASTURE	RIPARIAN AREA NAME	CONDITION RATING
Independence Valley	Seep at Warm Springs Ranch NWNE Sec. 28, T. 36 N., R. 64 E.	PFC
	Hogan Spring/Seep NE1/4 Sec. 10, T. 34 N., R. 65 E.	NF - WH
Holborn	Moor Summit Spring NESE Sec. 6, T. 37 N., R. 64 E.	NF - DEV
North Pequop Mountain	Beacon Spring (Pequop Summit) SWSW Sec. 18, T. 37 N., R. 66 E.	NF - DEV
	Rocky Point Spring NESW Sec. 12, T. 37 N., R. 65 E.	NF - DEV
	Pequop Spring	NF - DEV
	Baker Spring	NF - DEV
	Pencil Lead Spring NWSE Sec. 32, T. 38 N., R. 66 E.	NF - DEV
	Short Pipe Spring/Seep NW1/4 Sec. 4, T.37N., R.66E.	NF - DEV & GRZ
	North Fork of East Squaw Creek NE1/4 Sec. 7, T. 37 N., R. 66 E.	NF - GRZ at Spring Source FAR(S) below Spring Source
	Upper Middle Fork (3 Springs) - East Squaw Creek NWSW Sec. 7, T. 37 N., R. 66 E.	FAR(S) - GRZ

Table 44. Riparian Habitat - Functioning Condition Ratings		
PASTURE	RIPARIAN AREA NAME	CONDITION RATING
	South Spring - Middle Fork - East Squaw Creek SESW Sec. 7, T. 37 N., R. 66 E.	FAR(S) - GRZ
	Lower Spring - Middle Fork East Squaw Creek NESE Sec. 7, T. 37 N., R. 66 E.	FAR(S) - GRZ
	Upper Wally Spring NENE Sec. 18, T. 37 N., R. 66 E.	FAR(S) - GRZ
	Wally Spring SESE Sec. 7, T. 37 N., R. 66 E.	NF - DEV & GRZ
	Seep Above Wally Spring NENE Sec. 18, T. 37 N., R. 66 E.	FAR(S) - GRZ
	East Squaw Creek (Main Channel Above Ranch Fields) NWSE Sec. 8, T. 37 N., R. 66 E. and below.	NF - GRZ
	Lower Beacon Spring NENE Sec. 17, T. 37 N, R.66E.	FAR(S) - GRZ
	East (Upper) Beacon Spring SWSW Sec.17, T. 37 N, R.66E.	NF - GRZ
Squaw Creek Ranch	East Squaw Creek	FAR(S) - GRZ
Lower Squaw Creek Ranch	East Squaw Creek	PFC
Payne Basin	Adele Spring	PFC
	Milk House Spring	PFC
	Upper Nanny Spring	PFC
	Lower Nanny Spring	PFC
	Deer Spring SWSE Sec. 31, T. 37 N.,R.66E.	NF - DEV
	Spring NENE Sec. 7, T. 36 N., R. 66E.	NF - DEV
East Pequop Bench	Long Canyon Spring	NF - DEV
Shafter	Goshute Pond	PFC

b. Water Quality

Met. The springs and seeps on public lands in the Big Springs Allotment are unclassified waters. Unclassified waters are waters which the State of Nevada has not designated beneficial uses, and therefore has not established specific water quality standards. Unclassified waters have minimum standards applicable to all waters of the State. Ocular assessments made during routine monitoring of the allotment conclude these waters are meeting State standards.

Standard 3. Habitat: Habitats exhibit a healthy, productive, and diverse population of native and/or desirable plant species, appropriate to the site characteristics, to provide suitable feed, water, cover and living space for animal species and maintain ecological processes. Habitat conditions meet life cycle requirements of threatened and endangered species.

a. Upland Habitats - Partially met with progress made toward attainment of this objective.

Seasonal mule deer habitat conditions vary from fair to excellent (See item 4. under the RPS Objectives for additional information). Data from the studies indicate the most limiting factor on mule deer winter range in the Big Springs Allotment is the unsatisfactory age structure of bitterbrush. Definite conclusions regarding the reason(s) for the unsatisfactory age structure have not been made here. The dynamics associated with bitterbrush plant communities are complex. A variety of factors can affect the growth and survival of young plants. Utilization of bitterbrush by livestock generally fell within acceptable levels. The last bitterbrush age class studies were read in 1992 at the end of a relatively dry precipitation cycle. The results of this work raised concerns about the recruitment of bitterbrush seedlings. Certainly, the dry cycle would have been very stressful to seedlings as well as mature plants. Since that time, the area experienced an extended cycle of above normal precipitation which would have been more beneficial to the germination and survival of bitterbrush seedlings. Since trends in other key species were upward as a result of the above normal precipitation cycle, it is likely there was some increase in the bitterbrush seedling population as well.

Available data throughout yearlong antelope habitats in the Big Springs Allotment indicate habitat conditions are fair to good. The most common limiting factors are lack of vegetation diversity, and water availability. As discussed in the ecological condition conclusions below, conditions would have been expected to improve where site potential allowed. New waters also came into operation as a result of developments for livestock use; however, these waters would generally only be available during livestock use. Livestock grazing during the evaluation period is not considered a causal factor responsible for a lack of vegetation diversity.

Collomia renata is a Nevada BLM Sensitive Plant Specie located in the Pequop Summit area. The last field investigation of this area showed this plant continues to exist in one location. Available information about uses/disturbances in the area lead to the conclusion that the population found during the last field investigation should be stable.

b. Riparian Habitats - Partially met/partially not met (See Table 44 above).

Some springs are in proper functioning condition which meets the standard. Some springs are functioning-at-risk (stable trend) or in nonfunctional condition which does not meet the standard. Many of the springs are in nonfunctional condition because of water development design (e.g. all the surface water is captured by the spring development and placed in a trough). Most of the riparian areas in nonfunctional condition or functional-at-risk due to livestock grazing are associated with the East Squaw Creek area. Hogan spring/seep is the only riparian habitat in nonfunctional condition due to wild horse use.

Standard 4. Cultural Resources: Land use plans will recognize cultural resources within the context of multiple use.

Met. Based on evaluation of actions taken within the Big Springs Allotment, this standard has been met. All range improvements that cause surface disturbance have been subject to cultural resources review and modification by BLM or contract archaeologists, as required by standard operating procedures specified in the Wells RMP Record of Decision.

B. WELL RESOURCE MANAGEMENT PLAN OBJECTIVES, AS AMENDED:

1. Livestock Grazing

a. Public rangelands are managed to: enhance the productivity of the rangelands by preventing overgrazing and soil deterioration; stabilize the livestock industry dependent on public range; provide for inventory and categorization based on conditions and trends; and provide for orderly use, improvement and development.

b. To provide for livestock grazing consistent with other resource uses...

Attainment or non-attainment of the general objectives above are based on the conclusions for the more specific Rangeland Program Summary, Monitoring Plan, and Key Area Objectives listed below.

2. Wild Horses (As Applicable to the Big Springs Allotment)

a. Manage wild horses outside of checkerboard areas where land ownership patterns are not a problem for management.

b. Manage wild horses within HMAs and maintain a thriving natural ecological balance consistent with other resource needs.

c. Construct approximately eighteen miles of new fence to prevent the return of wild horses to checkerboard land patterns.

Specific objectives for wild horse management in the Big Springs Allotment have been developed based on the objectives above. These objectives and the conclusions regarding these objectives are included under the Allotment Specific Objectives below.

3. Terrestrial Wildlife habitat

a. Conserve and enhance wildlife habitat to the maximum extent possible.

b. Eliminate all of the fencing hazards in crucial big game habitat and most of the fencing hazards in noncrucial big game habitat.

c. Eliminate all of the high and medium priority terrestrial riparian habitat conflicts in coordination with other resource uses.

Attainment or non-attainment of the general objectives above are based on the conclusions under the Standards and Guidelines for Rangeland Health, and Allotment Specific Objectives below.

d. Manage public lands in the Wells Resource Area on a sustained yield basis to support elk populations at a level consistent with other resource needs, while minimizing impacts to adjacent private and public land resources. Manage elk habitat in good or better condition within six management areas within the resource area to provide forage to sustain a total resource area target population level of 1,980 - 2,420.

The Big Springs Allotment falls within three larger elk management areas. The portion of the allotment north of Interstate 80 and west of the highway to Montello, Nevada falls within the Goose Creek Management Area. The portion of the allotment south of Interstate 80 falls within the Spruce/Pequop Management Area. The portion of the allotment north of Interstate 80 and east of the highway to Montello, Nevada falls within the Pilot Mountain Management Area. The conclusions pertaining to these three elk management areas are described under the allotment specific objectives below.

4. Riparian/Stream Habitat

Note: This RMP objective was directed at improving riparian/stream habitat for fish and thus improve riparian habitat for other resources. However, there is only one stream in this allotment (East Squaw Creek) and it is not classified as nor supports a fishery. Therefore, the conclusions related to riparian habitat objectives in this allotment are addressed through the Standards and Guidelines for Rangeland Health, and objectives for terrestrial riparian habitat.

C. ALLOTMENT SPECIFIC OBJECTIVES:

The following objectives are tiered down from the more general RMP objectives.

1. *"Improve livestock distribution in the following pastures: North Pequop Mountains (02), Collar and Elbow (06), Shafter (08), East Squaw Creek (05), Independence Valley (12), and Holborn (01)."*

Progress had been made in all the above areas with the exception of East Squaw Creek. Additional progress is possible.

North Pequop Mountains - The current livestock operators that graze the east and west sides of this pasture have implemented practices such as riding and rotations in use areas that have improved distribution patterns. In 1998 and 1999 for example, cattle belonging on the west side were first moved to the north/northwest end of the pasture in an effort to curtail use on bitterbrush and key grasses at the south end. A rider was also stationed with these cattle and this rider moved bunches of cattle away from concentration areas. Although some cattle placed at the north end drifted to the south, and some cattle from the east side drifted into the West Squaw Creek area (there are no fences to prevent drift between the east and west sides), most of the cattle were not moved to the

south end (West Squaw Creek and Pequop Summit areas) until later in the season. These practices improved distribution as well as reduced livestock use on bitterbrush at the south end of the pasture (deer were still making moderate use of bitterbrush on the summer range during these years). By the end of the second year of the north to south rotation of cattle use, bitterbrush at the south end was beginning to show robust outward/upward branching on plants that had previously been sculptured by heavy livestock use. Additional water sources on the north end of this pasture, on both the east and west sides, would improve distribution and enhance the ability to hold cattle in this area and defer use in other areas.

On the east side of this pasture, the current permittee has improved cattle distribution by periodically breaking up concentrations and moving bunches of cattle to other areas. In addition, the current permittee has rotated use areas at times by first placing cattle either on the north end or the south end and deferring use on either area until later in the season. However, most of the water sources on the east side of this pasture are located in the East Squaw Creek watershed and, without fences to prevent cattle drift, the cattle are drawn back to the East Squaw Creek area.

Collar and Elbow - There are no new permanent waters in this pasture; however, the permittee has at times hauled water up Loray Canyon to expand livestock use. Distribution in the valley/low foothill portion of this pasture is adequate when all the water wells are operated. Livestock use within the Toano Range in this pasture is limited by the lack of water. In addition, much of the mountain area has heavy stands of trees (pinyon/juniper) which would limit livestock distribution if there were water available. Loray Wash on the north does have an abundance of grass in the drainage and lower slopes and may be an area in which livestock use could be expanded. The upper portion of the Toano Mountains has a mixture of trees and open areas that could support additional cattle use if water were available; however, this area is an important migration route for mule deer and receives moderate to heavy use on bitterbrush without cattle use.

Shafter - This pasture is grazed by livestock from late fall to early spring. The principal grazing area is the valley and low bench areas associated with the four stock water wells. One well provides water at the north end (Silver Zone area), and three wells provide water for the Shafter/southern Shafter area. There are no waters in the Goshute Mountains within this pasture although some old reservoirs were built in some of the drainages to catch snow melt but are generally ineffective. The portion of the pasture generally west of Shafter Knoll (center of pasture) lacks permanent water although water is temporarily available in the spring when snow melt and rains cause water to flow and puddle in this area. The current permittee has improved distribution by turning off the wells at the end of February and moving the cattle into the area west of Shafter Knoll when the spring runoff water is available. The addition of wells in this area would improve distribution especially during the years when runoff water is lacking.

East Squaw Creek - There are three water sources in this pasture. There is a well associated with the seeding at the south end; a reservoir at the bottom of the East Squaw Creek channel; and a well on the east side towards Cobre. The seeding at the south end of this pasture generally incurs much of the grazing use because it produces abundant forage. When the well at the seeding is not operating, the area associated with the reservoir on East Squaw Creek is the principal area of use. The area associated with the well on the east side of this pasture south of Cobre tends to receive lesser amounts of use because the amount of forage in this area is less than around the other two waters. Distribution could be expanded by adding a water source in the central/north central part of this pasture; however, the costs may be high in relation to forage availability.

Independence Valley - Two new water sources have been added to this pasture in the past few years. One of the new waters is a well in the east central part of the valley. This well is associated with a mining exploration company that allows the livestock operator to place water in a trough at the well for livestock use. The second new water is located near the Interstate 80 exit. This water is piped from a well on the north side of the highway to the south side. With the addition of these two new water, the principal dry area is now located in the northwest portion of the pasture.

Holborn - One new water source is available in this pasture. This new water provided by a well at the Nevada Department of Transportation work site just north of Interstate 80 exit. With the addition of this stockwater to the other water sources in this pasture, livestock use can be distributed throughout the pasture.

East Pequop Bench Pasture - Although the above objective did not list this pasture, additional water sources have been added to this pasture to improve distribution. Several water troughs have been installed on the pipeline east of the Big Springs Ranch. This pipeline also provides water to Wendover, Nevada. Providing permanent water a few miles south of the pipeline and in the southern part of this pasture in the lower Hardy Creek area would also improve distribution.

2. *"Improve ecological status in the following pastures: North Pequop Mountains (02), North Home Ranch (09), East Pequop Bench (07), Independence Valley (12), East Squaw Creek (05), Collar and Elbow (06), and Holborn (01)."*

Plant populations in arid shrublands are highly responsive to the effects of both precipitation cycles and grazing. Plant establishment is often related to periods of above normal precipitation during certain seasons, while conversely, mortality is correlated with prolonged periods of low precipitation. Heavy grazing, particularly in the spring during early and rapid growth, can compound the stress effects within plant populations.

The Big Springs Allotment experienced above normal precipitation between 1982 and 1986. Between 1987 and 1992, a drought cycle prevailed. Between 1993 and 1998, above normal precipitation returned to the area, with a drying trend since then. Most of the initial data collections on upland key area conditions occurred in 1987. Although 1987 was the start of a dry cycle, plant frequencies and ecological conditions would still have been relatively high due to the effects of the above normal precipitation cycle that had just ended. Frequency and condition data were collected again in 1990, which was several years into the dry cycle, and showed key species frequencies and conditions declining. In 1999 and 2000, data on plant frequencies were again collected at four of the key areas, most of which were key areas that received some of the highest levels of use in a pasture. Analysis of the 1999 and 2000 frequency data shows that the frequencies of key grass species in sagebrush sites and the frequencies of white sage and saltsage in the valleys increased during the above normal precipitation years following the drought. By 1999/2000, the frequencies of the key species increased to the point where there was either no significant difference compared to the relatively high frequencies found in 1987, or some of the key species had increased significantly compared to either 1987 and 1990. Recent analysis on other allotments over the same time frame have found the same rise in key species as a result of above normal precipitation cycles, and declines as a result of a dry cycle.

Rangeland research studies conducted elsewhere have concluded that frequent episodes of heavy grazing use during the critical growing season causes a decline in the health of forage plants and the condition of the plant community. In the Big Springs Allotment, heavy use was recorded at some key areas; however, the data available for analysis shows that heavy use was infrequent followed by modest levels of use or deferment or rest from grazing which, along with normal to above normal precipitation, allowed the plants to recover. During the years when above normal precipitation was received, observations of grazing use and regrowth following the removal of livestock showed that utilization levels were generally lower because plant productivity was much higher and growth extended for a longer period of time compared to dry years. Plants grazed during the spring/early summer growing season fully regrew the same year after grazing use had ended. Adequate soil moisture for regrowth was still present or was received after the grazing animals had been moved to other pastures. Therefore, in the absence of frequent high levels of grazing use on this allotment during the evaluation period, the changes in plant frequencies and ecological conditions were largely the result of above normal and below normal precipitation cycles.

North Pequop Mountains - Adequate progress is being made. With the exception of key area 4306-05, recent trend data were not collected at the key areas in this pasture; therefore, conclusions are based on the conclusions drawn from key area 4306-05 and other key areas where more recent trend data were collected. Analysis of the frequency data shows that frequencies were relatively high in 1987 following an above normal precipitation cycle, then declined during the ensuing dry cycle, and increased again as a result of another above normal precipitation cycle. Analysis of the data collected between 1987 and 2000 shows that the frequencies of key grass species in sagebrush sites remained the same or increased to the point where the key species had increased significantly by 2000 compared to either 1987 and 1990. This trend is also expected to apply to this pasture.

North Home Ranch - Adequate progress is being made. ESI data was collected in 1991 which concluded most of this pasture was in late seral condition. No key areas have been established within this pasture; however, this area received little grazing use therefore it seems logical to conclude that ecological conditions improved where site potential allowed.

East Pequop Bench - Adequate progress made on part, inadequate progress made on part. Condition and trend data are not available for this pasture. The Oasis Fire burned one of the two key areas (4306-19) in this pasture in 1991 and it was not read afterwards, and there were no condition or trend studies established at the other key area in Long Canyon. ESI data was collected in 1991 which concluded that most of the pasture was in mid and late seral condition. Since trend data is lacking on this pasture, conclusions are based on the analysis of data collected at other key areas. In general, conditions would have been expected to improve where site potential would allow. Conversely, recent observations show the area that burned in 1991 is in a lower condition than before the burn. There are few herbaceous perennial plants and most of the vegetation in the burn consists of sagebrush, rabbitbrush, mustards and cheatgrass.

Independence Valley - Adequate Progress is being made. Analysis of trend data at key area 4306-01 shows no significant change in white sage or Indian ricegrass; however, there was a significant increase in the needlegrass species by 2000. This key area was subject to the highest levels of grazing use in this pasture during the evaluation period. The increase in needlegrass species indicates that ecological conditions have improved at this key area, therefore, conditions are expected to have improved elsewhere in the pasture where site potential allowed.

East Squaw Creek - Adequate Progress is being made. Ecological status and trend information for this pasture shows that this pasture is in a stable to upward trend. Analysis of the trend data collected between 1987 and 2000 shows that the frequency of the key grass species remained the same between 1987 and 1990. Although key species frequencies didn't increase at this key area, analysis of the utilization at this key area along with the conclusions drawn from other trend studies leads to the conclusion that conditions likely improved where site potential allowed. The potential of the key area to change may require a longer period of time.

Collar and Elbow - Adequate Progress made on part, inadequate progress on part. Condition and trend data are not available for this pasture. Since trend data is lacking on this pasture, conclusions are based on the analysis of data collected at other key areas in other pastures. Between 1987 and 1992, a previous permittee commonly grazed this pasture during the growing season. Analysis of the utilization levels during this time indicate that levels of use were satisfactory. Also during this use period, white sage was used little because the grasses were more attractive to the cattle. Between 1995 and the present, the current permittee has grazed this pasture in the fall/winter. This period of use would allow the key forage plants to be in high vigor because there was no grazing pressure during the critical growing season. Use since 1995 along with the likelihood that ecological conditions would have improved (where site potential allowed) as a result of the last above normal precipitation cycle, result in the conclusion that adequate progress is being made. However, this does not hold true for the white sage located at the only key area in this pasture (4306-15) as explained below.

Key area 4306-15 was established in one of the few white sage sites in this pasture. This site is in the wide drainage channel low in Loray Wash on the north end of the pasture. A water well operates about one-half mile below this key area. Although use on white sage was light when cattle grazed this pasture in the spring, cattle use became heavy when the use period shifted to later in the year. Although use later in the year is generally more beneficial for native vegetation than during the spring/early summer, the location of this white sage site between the well below and abundant grasses in Loray Canyon above, has resulted in white sage fading from the site as cattle graze it in the fall/winter traveling up and down Loray Canyon. This same result is evident in adjacent areas that were once white sage sites, but have become low diversity sagebrush sites from excessive livestock use in the distant past. The white sage in this drainage channel has now been reduced to a point where sagebrush is taking over the site and, at best, the white sage could remain a minority species in this site or eventually disappear. The area immediately below the well in Loray Wash supports vegetation composed mainly of saltsage. Since saltsage is able to withstand heavy use, at least in the fall/winter, it still occurs in solid stands and invasive weeds are not present.

Holborn - Adequate Progress is being made. Recent condition and trend data are not available for this pasture. Since trend data is lacking on this pasture, conclusions are based on the analysis of data collected at other key areas in other pastures. In general, conditions would have been expected to improve where site potential would allow.

3. *"Maintain ecological status in the following pastures: Payne Basin (10), Six Mile (11), and Shafter (08).*

Payne Basin - Adequate Progress is being made. Since recent condition or trend data were not collected at the key areas in this pasture, conclusions are based on the conclusions drawn from other key areas where more recent trend data was collected. Analysis of the frequency data shows that frequencies were relatively high in 1987 following an above normal precipitation cycle, then declined during the ensuing dry cycle, and increased again as a result of another above normal precipitation cycle. Analysis of the data collected between 1987 and 2000 shows that the frequencies of key grass species in sagebrush sites remained the same or increased to the point where the key species had increased significantly by 2000 compared to either 1987 and 1990. This trend is also expected to apply to this pasture.

Six-mile - Adequate Progress is being made. ESI information has identified this pasture to be in late seral condition. No key areas have been established within this pasture; however, this area received little grazing use therefore it seems logical to conclude that ecological conditions were maintained.

Shafter - Adequate Progress is being made. Frequency data shows that the key species dominate this site and that there was no significant change in the frequency of occurrence of the key species between 1987 and 1999. Ecological status was not determined for 1999; however, ecological conditions are expected to have also been maintained during the evaluation period.

4. *"Improve or maintain all seasonal big game habitat in the Big Springs Allotment to good or excellent condition to provide forage and habitat capable of supporting the following reasonable numbers by 2005: 4,834 mule deer - 6,211 AUMs; 76 antelope - 182 AUMs; 22 bighorn sheep - 53 AUMs."*

Mule Deer - Adequate Progress is being made. Seasonal mule deer habitat condition vary from fair to excellent. All habitat within the Wood Hills deer winter range is rated in good condition. 37.5% of deer yearlong range within the Pequop Mountains is in excellent condition. 25% of this same area is rated in good condition with an upward trend. 37.5% of this area is in fair condition. All habitat within the Toano/Goshute Mountains deer winter range is rated in good condition with a static trend. Data from the studies indicate the most limiting factor on mule deer winter range in the Big Springs Allotment is the unsatisfactory age structure of bitterbrush.

Antelope - Adequate Progress is being made. Available data throughout yearlong antelope habitats in the Big Springs Allotment indicate Habitat conditions are fair to good. The most common limiting factors are lack of vegetation diversity, and water availability. As discussed in the ecological condition conclusions above, conditions would have been expected to improve where site potential allowed. New waters also came into operation as a result of developments for livestock use; however, these waters would generally only be available during livestock use.

5. *"Facilitate big game movements by modifying existing fences to Bureau standards where necessary (17 miles)."*

Inadequate Progress is being made. The Wells RPS provides for 17 miles of fence to be modified within the Big Springs Allotment. None has been modified.

Although an inventory of many of the fences in this allotment has not yet been completed, the fence separating the Holborn Pasture from the North Pequop Mountain Pasture has been identified as needing modification. This is a three and four barbed wire fence with the top wire commonly at 50" above ground (BLM specifications call for 38 - 42" above ground). Substantial numbers of mule deer travel across this fence on their way between summer and winter ranges and high wire heights can unnecessarily cause difficulty for deer passing over it. In addition, elk travel across this fence between the Windemere Mountains and access points to the Pequop Mountains north of Ralph Spring and have broken steel posts and unhooked the barbed wire in a couple locations. This and other fences may need to be further modified to reduce maintenance costs and accommodate elk movements.

6. *"Improve, enhance, or develop 5 springs in the Big Springs Allotment to good or excellent condition."*

Inadequate Progress is being made. Spring developments or enhancement projects to meet this objective have not been completed to date.

7. *"Improve crucial deer winter habitat by: cutting (thinning) within 17,000 acres of the pinyon/juniper forest type; chaining or burning and seeding 2,500 acres of sagebrush."*

Adequate Progress is being made. Some progress has been made toward the attainment of this objective. Approximately 320 acres of Pinyon/Juniper woodlands on the east side of the Pequops was chained and seeded during 1969. The Bureau has been maintaining this chaining on a yearly basis by selling firewood and Christmas trees from it. The Bureau has also been harvesting fuelwood and posts from a 640 acre selective cut unit located on the northeast side of the Wood Hills. There are also about 400 commercial and 500 individual Christmas trees harvested annually for the east side of the Wood Hills, Pequops, and the west side of the Toano Range, equating to about 36 acres thinned per year through this practice.

Several wildfires (Wood Hills, Oasis, and Rocky Point) have occurred within the allotment, burning approximately 3,600 acres of public lands. Some of these burned acres may have improved mule deer winter habitat or transition (spring/fall migration) range. The approximate 1,650 acres of public land within the Wood Hills fire was seeded in the fall of 1994 and seed species designed for wildlife habitat were included in the seed mixture. In the spring of 1995 the Bureau also planted 1,140 Mountain mahogany and 1,200 bitterbrush seedlings within this burn. Additional plantings were made in 1996.

8. *"Reintroduce bighorn sheep into the Goshute Mountains."*

Inadequate Progress is being made. No bighorn sheep have been reintroduced. The principal limiting factor is the presence of domestic sheep on the east side of the Goshute Mountains in the winter raising concerns that the bighorn sheep could suffer substantial fatalities from diseases that could be transmitted to them from domestic sheep.

9. *"Elk -*

(a.) Manage elk habitat in good or better condition within the Goose Creek Management Area to support a target elk population level of 1,070 plus or minus 10 percent. (Note: Some of the elk are expected to utilize habitat in the Big Springs Allotment.)

(b.) Manage elk habitat in good or better condition within the Spruce/Pequop Management Area to support a target elk population level of 340 plus or minus 10 percent. (Note: Some of the elk are expected to utilize habitat in the Big Springs Allotment.)

(c.) Manage elk habitat in good or better condition within the Pilot Mountain Management Area to support a target elk population level of 250 plus or minus 10 percent. (Note: Some of the elk are expected to utilize habitat in the Big Springs Allotment.)"

Adequate Progress is being made within all upland elk management areas; inadequate progress associated with riparian habitat. In addition to the conclusions that upland ecological conditions are improving where site potential has allowed, recent elk population estimates show that elk numbers are increasing. Previous conclusions regarding habitat conditions show that some riparian habitats are in unsatisfactory condition.

10. *"Manage for a wild horse herd size which will maintain a thriving ecological balance consistent with other multiple uses while remaining within the wild horse herd management area."*

Not Met. The Wells RMP Wild Horse Amendment deleted the checkerboard area of the Goshute and Pequop Mountains from wild horse management. Although the Rockland Fence was extended and a complete removal of wild horses was conducted in the Pequop Mountains, the BLM has been unable to prevent wild horses from occupying these areas in the years subsequent to the passage of the Amendment.

Utilization data indicates that there is an overpopulation of wild horses in the Goshute HMA, thus a thriving ecological balance is not being maintained consistent with other multiple uses.

11. *Remove sufficient wild horses to attain the initial herd size and maintain populations at a level which will maintain a thriving natural ecological balance consistent with other resource values.*

Not Met. Gathers have taken place in the Goshute HMA in 1988, 1993, 1996 and 1999, yet the HMA has remained over initial herd size set in the Wells RMP Wild Horse Amendment. This is largely due to the inability to ship the required number of horses to reach the initial herd size. This restriction has been placed on the Field Office by the National Wild Horse and Burro Program because of insufficient program funding, inadequate holding space in preparation facilities and a slow-down in the adoption program. The establishment of an AML which is represented as a range (calculated with the goal of a four year gather cycle) together with sufficient program funding to remove enough horses to reach the low end of the AML range should result in the achievement of this objective.

12. *Construct approximately eighteen miles of new fence to prevent the return of wild horses to checkerboard land patterns.*

Adequate Progress is being made. The construction of Rockland Fence (9 miles) between the Spruce-Pequop HMA and the checkerboard land to the north was completed in the summer of 1995. Fencing to separate the Goshute HMA from checkerboard lands to the north has not been completed.

D. KEY AREA OBJECTIVES:

As each of the following objectives are analyzed, the results will either be "Met" or "Not Met", due to the fact that these objectives are designed to evaluate attainment or non-attainment within the evaluation period.

1. Short Term Objectives:

The specific short term objectives for each key area are summarized in Appendix 4. Table 45 below summarizes the utilization data for each of the key areas during the evaluation period to determine whether or not each of the objectives were met.

The average utilization figures presented in Table 45 represent the average of the highest utilization figures for the most heavily utilized key species, and the range shows the highest and lowest readings taken during the evaluation period.

Table 45. Short Term Key Area Objectives.

Short Term Key Area Objectives (Utilization)						
Key Area	Key Species	Objective Level		Actual Utilization		Objective (Met or Not Met)
		Annual	Average	Average	Range	
4306-01	EULA5	60	55	50%	0 - 85%	Avg.. MET; Annual NOT MET
	STIPA/ORHY	55	50	30%	0 - 64%	Avg.. MET; Annual NOT MET
4306-02	ELCI2	55	50	13%	5 - 19%	MET
4306-03	AGSP/PONE3/AGSM/ STTH2	55	50	22%	0 - 50%	MET
4306-04	AGSP/PONE3/AGSM/ STWE/ORHY	55	50	24%	7 - 42%	MET
4306-05	STTH2/AGSP/AGSM	55	50	45%	23 - 66%	Avg.. MET; Annual NOT MET
4306-06	SIHY/ELCI2/ORHY	55	50	29%	3 - 50%	MET
4306-07	AGSP/AGSM	55	50	50%	36 - 64%	Avg.. MET; Annual NOT MET
4306-08	AGSP	55	50	40%	19 - 60%	Avg.. MET; Annual NOT MET
4306-09	FEID/STCO4/AGSP	55	50	45%	18 - 62%	Avg.. MET; Annual NOT MET
	PUTR2	N/A	25	50%	24 - 75%	NOT MET
4306-10	AGSP/FEID	55	50	49%	10 - 66%	Avg.. MET; Annual NOT MET
4306-11	FEID	55	50	40%	17 - 65%	Avg.. MET; Annual NOT MET
	PUTR2	N/A	25	13%	10 - 18%	MET
4306-12	AGSP/SIHY	55	50	26%	6 - 43%	MET
4306-13	AGSP	55	50	57%	48 - 69%	NOT MET
	PUTR2	N/A	25	43%	18 - 81%	NOT MET
4306-14	STTH2	55	50	34%	6 - 51%	MET
4306-15	EULA5	60	55	47%	3 - 63%	Avg.. MET; Annual NOT MET
	ORHY/STIPA			56%	15 - 60%	NOT MET
4306-16	AGSP	55	50	48%	27 - 65%	Avg.. MET; Annual NOT MET
4306-17	AGSP/AGSM	55	50	57%	23 - 73%	NOT MET
4306-18	FEID/STCO4/AGSP	55	50	1% ¹	N/A	MET
4306-19	STTH2/ORHY	55	50	NA ¹	0 - 70%	Avg. undetermined; Annual NOT MET
4306-20	EULA5/ATNU	60	55	52%	29 - 74%	Avg.. MET; Annual NOT MET
4306-21	EULA5/ATNU	60	55	46%	25 - 58%	MET
	ORHY	N/A	10 ²	48%	20 - 63%	NOT MET

¹ This figure is based on only 1 year of data and does not constitute an average.

² This figure is based on use by wild horses prior to the entry of livestock on winter range.

2. Long Term Objectives:

The specific long term objectives for each key area have been listed below.

4306-01 *"Improve the ecological condition as measured in 1987 from 34% to 40% of Potential Natural Community (PNC) by 1996."*

Adequate progress made. Monitoring data between 1987 and 1990 indicated a decline in ecological condition from 34% to 19%. Frequency data collected in 2000 showed that key species frequency increased between 1990 and 2000 to the point that EULA5 and ORHY experienced no significant change between 1987 and 2000. In addition, frequency data showed a significant increase in STIPA (needlegrasses) by 2000 compared to both 1987 and 1990 readings which would result in an improvement in the ecological condition rating.

"Achieve a statistically significant upward trend on the key species ORHY, STIPA, and EULA5 by 1996."

Met for STIPA; Not met for ORHY and EULA5. There was a significant increase in STIPA by recorded in 2000; however, frequencies of ORHY and EULA5 did not increase significantly since the first data collections at this key area in 1987.

4306-02 *"Improve the ecological condition as measured in 1987 from 36% to 40% of PNC by 1996."*

Undetermined. This area has a high density of rabbitbrush indicating substantial disturbance such as fire or plowing in the past. There are remnant crested wheatgrass plants in the area indicating that attempts may have been made to reseed the area but were unsuccessful. During the evaluation period, the prolonged drought period had the biggest impact on grasses. Shrubs, which have deeper root systems, were able to maintain, to a greater degree, production levels. The larger presence of shrub production created a greater dominance within the vegetative community by shrubs, which resulted in a decline of the ecological condition rating from 36% of PNC (mid-seral) in 1987 to 23% of PNC (early seral) by 1990. Although additional readings beyond 1990 were not completed at this key area, ecological conditions would have had the opportunity to increase if site potential allowed; however, the potential for an increase in basin wildrye is stymied by the high density of rabbitbrush which may not have allowed improvement to occur.

"Achieve a statistically significant upward trend on the key specie ELCI2 by 1996."

Undetermined. The frequency data between 1987 and 1990 has shown a statistically non-significant increase in the key species. As stated above, the potential for a significant increase in basin wildrye is questionable due to the high density of rabbitbrush.

4306-03 *"Improve the ecological condition as measured in 1987 from 40% to 45% of PNC by 1996."*

Adequate progress made. Data on ecological condition were last collected in 1990. Analysis of condition and trend data at this key area along with utilization and actual use information and the results of more recent data collected from other key areas in the allotment, results in the conclusion that ecological condition at this key area would have improved by 2000 if site potential allowed.

"Achieve a statistically significant upward trend on the key species AGSP, PONE3, and AGSM by 1996."

Adequate progress made. Data on trend were last collected in 1990. Analysis of trend data at this key area along with utilization and actual use information and the results of more recent data collected from other key areas in the allotment, results in the conclusion that trends at this site would be upward if site potential allowed. PONE and AGSM occur within the frequency transect; however, AGSP does not. Even if frequency data had been collected recently, we wouldn't be able to analyze the status of AGSP or other key species such as STTH2 that occur in the area but not within the frequency transect. The density of perennial plants within the frequency transect is high which would support a continued high density of the present plants with little room for significant invasion of the other key species.

4306-04 *"Improve the ecological condition as measured in 1987 from 34% to 40% of PNC by 1996."*

Adequate progress made. Analysis of condition and trend data at this key area along with utilization and actual use information and the results of more recent data collected from other key areas in the allotment, results in the conclusion that ecological condition at this key area would have improved by 2000 if site potential allowed.

"Achieve a statistically significant upward trend on the key species AGSP, PONE3, and AGSM by 1996."

Adequate progress made. Analysis of trend data at this key area along with utilization and actual use information and the results of more recent data collected from other key areas in the allotment, results in the conclusion that trend at this key area would be upward by 2000 if site potential allowed.

4306-05 *"Maintain the ecological condition as measured in 1987 at 66% of PNC by 1996."*

Adequate progress made. Monitoring data between 1987 and 1990 indicated a decline in ecological condition from 66% to 42%. Frequency data collected in 2000 showed that the key species frequency for STTH2 and AGSM had increased significantly by 2000 compared to both 1987 and 1990 which would result in at least maintenance of conditions and possibly an improvement in the ecological condition rating.

"Achieve a statistically significant upward trend on the key species AGSP, AGSM and STTH2 by 1996."

Adequate progress made. Analysis of trend data at this key area along with utilization and actual use information results in the conclusion that trend at this key area was upward by 2000. Both STTH2 and AGSM has increased significantly by 2000 compared to 1987 and 1990. AGSP showed no significant change between 1987 and 1990. AGSP is a relatively small component of this range site coming into the transect on the upper edge of a north slope. STTH2 is the dominant grass on this site and generally preferred by cattle over AGSP; therefore, STTH2 should be the key species on this site.

4306-06 *"Maintain the ecological condition as measured in 1987 at 56% of PNC by 1996."*

Met. The weight-estimate production data showed a decline in ecological condition for this key area. By 1990, the condition rating had declined from 56% of PNC to 52% of PNC (late seral condition). This decline is attributed to drought. Analysis of condition and trend data at this key area along with utilization and actual use information and the results of more recent data collected from other key areas in the allotment, results in the conclusion that ecological condition at this key area would have remained stable between 1987 and 2000.

"Maintain a static or stable trend on the key specie SIHY, ELCI2 and ORHY by 1996."

Met. Analysis of trend data at this key area along with utilization and actual use information and the results of more recent data collected from other key areas in the allotment, results in the conclusion that trend at this key area would have been stable by 2000.

4306-08 *"Improve the ecological condition as measured in 1987 from 43% to 50% of PNC by 1996."*

Adequate progress made. The ecological condition of this site reflects a static trend at 43% of PNC (mid-seral) between 1987 and 1990 (see note below). Frequency data indicates a stable to slightly upward trend. Analysis of condition and trend data along with utilization and actual use information and the results of more recent data collected from other key areas in the allotment, results in the conclusion that ecological condition at this key area would have improved by 2000 if site potential allowed.

"Achieve a statistically significant upward trend on the key species AGSP by 1996."

Adequate progress made. Analysis of trend data at this key area along with utilization and actual use information and the results of more recent data collected from other key areas in the allotment, results in the conclusion that trend at this key area would be upward by 2000 if site potential allowed.

4306-09 *"Improve the ecological condition as measured in 1987 from 43% to 50% of PNC by 1996."*

Adequate progress made. The weight-estimate production data, supported by the frequency data, showed a decline in ecological condition for this key area between 1987 and 1990. By 1990, the condition rating had declined from 43% of PNC to 38% of PNC (mid-seral condition). Analysis of condition and trend data at this key area along with utilization and actual use information and the results of more recent data collected from other key areas in the allotment, results in the conclusion that ecological condition at this key area would have improved by 2000 if site potential allowed.

"Achieve a statistically significant upward trend on the key species FEID, STCO4, AGSP, and PUTR2 by 1996."

Adequate progress made. Analysis of trend data at this key area along with utilization and actual use information and the results of more recent data collected from other key areas in the allotment, results in the conclusion that trend at this key area would be upward by 2000 if site potential allowed.

4306-10 *"Improve the ecological condition as measured in 1987 from 50% to 55% of PNC by 1996."*

Adequate progress made. An ecological condition rating could not be determined in 1990. The condition rating in 1987 was determined to be 50% of PNC (mid seral). Although trend could not be determined based on production data, frequency data indicated significant declines are occurring in the key species at this key area between 1987 and 1990. The decline is attributed to drouth. Analysis of condition and trend data at this key area along with utilization and actual use information and the results of more recent data collected from other key areas in the allotment, results in the conclusion that ecological condition at this key area would have improved by 2000 if site potential allowed.

"Achieve a statistically significant upward trend on the key species AGSP by 1996."

Adequate progress made. Analysis of trend data at this key area along with utilization and actual use information and the results of more recent data collected from other key areas in the allotment, results in the conclusion that trend at this key area would be upward by 2000 if site potential allowed.

"Maintain a stable or static trend on the key species FEID by 1996."

Met. Analysis of trend data at this key area along with utilization and actual use information and the results of more recent data collected from other key areas in the allotment, results in the conclusion that trend at this key area would be stable and possibly upward by 2000 if site potential allowed.

4306-11 *"Maintain the ecological condition at 69% of PNC by 1996."*

Met. An ecological condition rating could not be determined in 1987. The condition rating in 1990 was determined to be 69% of PNC (late seral). Although trend could not be determined based on production data, frequency data indicated significant increases are occurring in the key grass species at this key area. Because the frequency data has shown significant improvement, and the production data, as presented, has shown significant improvement, this objective has been determined to have been met.

"Maintain a stable or static trend on the key specie FEID by 1996."

Met. The frequency data for this species indicated a statistically significant increase from a 76% to 87% occurrence between 1987 and 1990. Analysis of this data along with the results from other key areas supports the conclusion that this objective has been met.

"Achieve a statistically significant upward trend on the key specie PUTR2 by 1996."

Adequate progress made. Analysis of trend data at this key area along with utilization and actual use information and the results of more recent data collected from other key areas in the allotment, results in the conclusion that trend of this key species would be upward by 2000 if site potential allowed.

4306-12 *"Maintain the ecological condition as measured in 1987 at 72% of PNC by 1996."*

Met. The ecological condition on this site between 1987 and 1990 remained static at 72% of PNC (late seral). Analysis of condition and trend data at this key area along with utilization and actual use information and the results of more recent data collected from other key areas in the allotment, results in the conclusion that ecological condition at this key area would have remained stable between 1987 and 2000.

"Maintain a stable or static trend on the key species AGSP and SIHY by 1996."

Met. Analysis of this data along with the results from other key areas supports the conclusion that this objective has been met.

4306-13 *"Improve the ecological condition as measured in 1987 from 52% to 60% of PNC by 1996."*

Inadequate progress made. The 1990 data was determined to not reflect a fair representation of species composition on the site and was consequently not used to determine ecological condition for that year or to determine trend between years. However, the 1987 production data indicated that the site was at 52% of PNC (late seral). Analysis of condition and trend data at this key area along with utilization and actual use information and the results of more recent data collected from other key areas in the allotment indicates that ecological condition would have improved by 2000 if site potential allowed. However, the area associated with this key area has a substantial amount of cheatgrass in the community which likely gained prominence following a burn in this area some time prior to the evaluation period. The abundance of cheatgrass in this area would tend to prevent increases in the key grass species and bitterbrush and therefore stymie an improvement in ecological conditions.

"Achieve a statistically significant upward trend on the key species AGSP and PUTR2 by 1996."

Inadequate progress made for the same reasons stated for the ecological condition objective above.

4306-14 *"Maintain the ecological condition as measured in 1987 at 58% of PNC by 1996."*

Met. The weight-estimate production data showed that the site represented by Key Area 4306-14 maintained good species diversity with an increased production of grasses between 1987 and 1990. The result was an improvement in the ecological condition rating for this key area. By 1990, the condition rating had increased from 58% of PNC to 61% of PNC (late seral condition). Analysis of condition and trend data at this key area along with utilization and actual use information and the results of more recent data collected from other key areas in the allotment, results in the conclusion that ecological condition at this key area would have at least been maintained by 2000.

"Maintain a stable or static trend on the key species STTH2 by 1996."

Met. The frequency data collected between 1987 and 2000 has shown no change in the frequency of STTH2.

4306-16 *"Maintain the ecological condition as measured in 1987 at 89% of PNC."*

Met. Only the 1987 data was used to determine an ecological condition rating for the site - at 89% of PNC. Reduced production levels and reduced species diversity within the production data indicated a downward trend had occurred between 1987 and 1999 and is attributed to drought. Analysis of condition and trend data at this key area along with utilization and actual use information and the results of more recent data collected from other key areas in the allotment, results in the conclusion that ecological condition at this key area would have at least been maintained by 2000.

"Maintain a stable or static trend on the key specie AGSP by 1996."

Met. Analysis of trend data at this key area along with utilization and actual use information and the results of more recent data collected from other key areas in the allotment, results in the conclusion that trend at this key area would be stable by 2000.

4306-17 *"Improve the ecological condition as measured in 1987 from 36% to 45% of PNC by 1996."*

Adequate progress made. An ecological condition rating could not be determined in 1990. The condition rating in 1987 was determined to be 36% of PNC (mid seral). Analysis of condition and trend data at this key area along with utilization and actual use information and the results of more recent data collected from other key areas in the allotment, results in the conclusion that ecological condition at this key area would have had the opportunity to improve by 2000 if site potential allowed.

"Achieve a statistically significant upward trend on the key specie AGSP by 1996."

Adequate progress made. Analysis of condition trend data at this key area along with utilization and actual use information and the results of more recent data collected from other key areas in the allotment, results in the conclusion that trend at this key area would have been upward by 2000 if site potential allowed..

4306-19 *"Improve the ecological condition as measured in 1987 from 39% to 45% of PNC by 1996."*

Undetermined. The Oasis wildland fire of 1991 modified the vegetative composition of this site, negating the ecological conditional status found in 1987 and 1990. The Big Spring Fire of 2000 burned this key area again. Fire rehabilitation for this recent fire plans to seed some grass species not present on the site before. New objectives will need to be developed following monitoring of the fire rehabilitation actions. Therefore, the ecological condition rating for this site remains undetermined and the long term objective, as written, is no longer valid.

"Achieve a statistically significant upward trend on the key species STTH2 and ORHY by 1996."

Undetermined. Due to the vegetation modification as a result of the wildfires, this objective is no longer valid.

4306-20 *"Maintain the ecological condition as measured in 1987 at 80% of PNC by 1996.*

Met. The weight-estimate production data showed that the site represented by Key Area 4306-20 remained stable at 80% of PNC between 1987 and 1990. The frequency trend data shows there was no significant change in the key species between 1987 and 1999.

"Maintain a stable or static trend on the key species EULA5 and ATNU2 by 1996."

Met. The frequency data showed no significant change in either species between 1987 and 1999.

Summary for All Key Areas

The result of the key area condition and trend analysis indicates that most objectives were met or adequate progress has been made. Table 46 summarizes the results of each study as they pertain to the established objectives.

Table 46. Summary of Ecological Condition and Trend Objectives		
Status Category	Number of Objectives for Ecological Condition	Number of Objectives for Trend
Met or Adequate Progress	14	16
Not Met or Inadequate Progress	1	2
Undetermined	2	2
Total	17	20

VII. TECHNICAL RECOMMENDATIONS

- A. **Divide the Big Springs Allotment into two separate allotments called East and West Big Springs Allotments with the dividing line as shown on Map 13 in Appendix 1. This line falls on the crest/watershed divide, or nearly so, of the Pequop Mountains. Please note that the boundary line immediately south of Interstate 80 encloses a portion of the west side within the East Big Springs Allotment, and a portion of the area immediately north of Pequop Summit and east of the R. 65/66 E. line is included within the West Big Springs Allotment. If fences are constructed to separate all or a portion of these two allotments, the dividing line created by the new fence(s) would be considered the actual allotment boundary.**

Rationale: The division line is based on the Rangeline Agreement authorized on September 5, 1990 with modifications as noted above. Currently the east and west sides of the Big Springs Allotment are identified as separate grazing use areas, under separate management regimes, by two permittees. This would establish this rangeline as the official allotment boundary.

The small area on the west side just south of Interstate 80 is included in the use area for the east side because this area is most easily grazed by cattle using the east side/Payne Basin area and will preclude the need for a fence to split cattle use by the two permittees in this area. The area immediately north of Pequop Summit and east of the R. 65/66 E. line associated with the Beacon Reservoir area is included within the West Big Springs Allotment because this area is part of the watershed on the west side and most conducive to livestock management when included within the west side.

- B. **Establish the Total Number of AUMs of Permitted Use for Livestock, and the Appropriate Management Level (AML) for Wild Horses within the Big Springs Allotment as follows:**

Table 47. Proposed Livestock AUMs and Wild Horse AML

Pasture	Pre-Evaluation Stocking Rates		Post-Evaluation Stocking Rates/AML	
	Livestock Permitted Use (AUMs) ¹	Wild Horse Initial Stocking Level (AUMs) ¹	Livestock Permitted Use (AUMs)	Wild Horse AML (AUMs)
Independence Valley	3,651	N/A	3,050 (2,750) ²	N/A
Holborn	450	N/A	550	N/A
North Pequop Mountain	1,866	N/A	1,168 (West Side)	N/A
			1,244 (East Side)	N/A
Upper Squaw Creek Riparian	Part of the North Pequop Mtn. Pasture	N/A	To Be Determined	N/A
Squaw Creek Ranch	55 ⁴	N/A	55	N/A
Lower Squaw Creek Ranch	6 ⁴	N/A	100	N/A
East Squaw Creek	320	N/A	180	N/A
Windmill Seeding	68 ³	N/A	390	N/A
Railroad Field	63	N/A	230	N/A
Collar and Elbow	2,243	N/A	1,181	N/A
Shafter	6,633	768	3,193	672
East Pequop Bench	2,424	N/A	2,424 ⁵	N/A
North of Home	90	N/A	90	N/A
Payne Basin & Six-Mile Canyon	422	N/A	350	N/A
Fenced Federal Range (FFR)	20 (West Side) 17 (East Side)	N/A	20 (West Side) 17 (East Side)	N/A

¹ Livestock AUMs based on adjudications from the 1937 - 40 range surveys.

The initial herd size for the Goshute Herd Management Area (HMA) was 160 wild horses or 1,920 AUMs for 12 months. Approximately 40% of the horses in the HMA use the Shafter Pasture of the Big Springs Allotment for a total of 768 AUMs for 12 months.

² 3,050 AUMs authorized if stockwater is hauled to the northwest portion of the valley or a new water source is developed in this area.

³ AUMs based on range survey data prior to seeding.

⁴ This pasture was all private land prior to the BSR Land Exchange of 1999. AUMs based on range survey data.

⁵ Subject to temporary reductions due to closure during the Big Springs Fire Rehabilitation.

Based on Table 47 above, livestock permitted use for the West and East Big Springs Allotments would be as shown in Table 48 below:

Table 48. Summary of Changes to Livestock Permitted Use		
Livestock Permittee	Pre-Evaluation Permitted Use (AUMs)	Post-Evaluation Permitted Use (AUMs)
Egbert Livestock LLC (West Side)	5,385 ¹	4,788 ^{1,3}
Parasol Ranching LLC (East Side)	12,887 (16,598) ^{1,2}	9,454 (12,175) ^{1,2,3}
<small>1 Includes FFR AUMs. 2 All of the stocking rates were evaluated with actual use data reported prior to the change in AUMs prompted by the BSR Land Exchange and therefore do not reflect the increase in permitted use following the BSR Land Exchange. The numbers in parenthesis (-) show permitted use adjustments as a result of the BSR Land Exchange. 3 The AUMs credited to owned and leased private lands intermingled with public lands would be reduced by the same percentage as public land permitted use.</small>		

Based on Table 47 above, the Appropriate Management Level for Wild Horses in the Shafter Pasture within the East Big Springs Allotment is shown in Table 49 below:

Table 49. Summary of Changes to Wild Horse Management Levels		
Pasture	Pre-Evaluation Initial Management Level (AUMs/Animal Numbers)	Post-Evaluation AML (AUMs/Animal Numbers)
Shafter	768 AUMs = 64 Horses for 12 Months	672 AUMs = 56 Horses for 12 Months

Rationale: Independence Valley Pasture - The recommended stocking rate for this pasture was based primarily on the actual use and utilization data from 1997, 1998 and 1999. Data was available to calculate carrying capacities for these years. In addition, these years are most representative of stocking levels following the development of two new water sources (Miners Well and the Honor Camp Troughs) and the increase in AUMs following reseeded of the Wood Hills Burn.. The calculations of stocking rates from 1997 and 1999 represent spring use while the data from 1998 best represents fall/winter use. Spring and fall/winter use were combined to represent the capacity of this pasture. The 1997 calculated capacity was 1,724 AUMs and the capacity calculated for 1999 was 840 AUMs. The average between these two years is 1,282 AUMs for spring use. The 1998 calculations show a capacity of 1,760 AUMs for fall/winter use. The combination of 1,282 AUMs for spring use plus 1,760 AUMs from fall/winter use equals 3,042 total AUMs; however, some adjustments were made to account for the kinds of precipitation years from which the data was derived and the availability of additional forage due to water hauling. The data from 1997 and 1998 represent above average production years, therefore the capacity in an average precipitation year would be somewhat less. Conversely, additional forage is available in the northwest portion of this pasture that is not represented in the calculated capacities. Taking into account these two factors, it is recommended permitted use be authorized up to 3,050 AUMs if the permittee hauls water to the northwest use area, or a new permanent water is developed; however, if water is not provided to the northwest use area, permitted use would be authorized up to 2,750 AUMs.

Holborn Pasture - The information available from 1999 was used as the basis for the recommended stocking rate. Use patterns during 1999 reflected pasture wide use during an average forage production year. The calculated capacity for 1999 ranged from 552 AUMs at key area 4306-04 to 876 AUMs at key area 4306-03. The limiting factor was 552 AUMs and therefore 550 AUMs was proposed as the recommended stocking rate.

North Pequop Mountain Pasture - The information available for 1997 and 1999 was used as the basis for the recommended stocking rate(s).

On the west side of the pasture, data from key areas 4306-8 and 4306-9 in 1997 were most representative of pasture capacities when the south end is used first under a deferred rotation strategy, and data from key areas 4306-5 and 4306-10 from 1999 were most representative of pasture capacity when the north end is used first under a deferred rotation strategy. The capacity of the west side of the pasture based on grazing the south end first was 1,396 AUMs and the capacity based on using the north end first 940 AUMs. The average of these two values is 1,168 AUMs which was the recommended stocking rate.

On the east side of the pasture, there was only data from 1999. The calculated capacity from 1999, an average precipitation year, was 1,244 AUMs which was the recommended stocking rate.

Upper Squaw Creek Riparian Pasture - Under the interim grazing plan, this area would be part of the North Pequop Mountain pasture. This pasture would be created by fencing described under the final grazing plan for the East Big Springs Allotment. This pasture would be rested initially until proper functioning condition is achieved and then be opened for grazing under stubble height/utilization limits. It is recommended that the AUMs in this pasture be defined through monitoring once it is authorized for grazing use.

Squaw Creek Ranch Field - This was a separate private pasture prior to completion of the BSR Land Exchange in 1999 and there is no capacity data; therefore, the capacity assigned to this acreage by the range survey is being recommended until the capacity can be defined through monitoring.

Lower Squaw Creek Ranch Field - This field was also a separate private pasture prior to the BSR Land Exchange. This field is irrigated and grows an abundance of grasses. This field is approximately 50 acres in size and it is estimated that this irrigated pasture would be rated at ½ acre/AUM which results in the recommended capacity of 100 AUMs.

East Squaw Creek Pasture - The average capacity, based on two widely divergent years, was 179 AUMs. This was considered a reasonable stocking level based on the fact that the 640 acres of seeding on the south end supports most of the use in this pasture. Assigning a 5 acre/AUM average value to the capacity of this seeding results in a seeding capacity of 120 AUMs. The difference between the 120 AUMs provided by the seeding and the average calculated capacity of this pasture leaves a 60 AUM capacity to the remainder of the pasture. This falls short of the range survey capacity, however livestock do not prefer to stay in the northern part of this pasture. A conservative approach to stocking this pasture during the growing season is prudent considering there is a sage grouse strutting ground in the area and it would be important to leave much of the native grass growth for nesting cover. If the proposed drift fence is constructed within this pasture, livestock use of much of the native range would likely expand to the north and also be easier to manage for periods of use separate from the seeding on the south end.

Windmill Seeding - The recommended capacity of 390 AUMs for this seeding is based on high levels of utilization. When the cattle graze this pasture, they graze the relatively small area of Russian wildrye south of the well first, and graze it heavily before making much use of the larger seeding consisting of Russian wildrye and crested wheatgrass. Observations of the density and health of the Russian wildrye indicate it has remained healthy under heavy use when periodically deferred from use during all or a portion of the growing season. Therefore, continuing in this manner is expected to be compatible with meeting objectives.

Railroad Field - The two years of actual use and utilization data show widely differing estimates of capacity which average 291 AUMs. Recent observations of use in this pasture indicate the range survey rating of 63 AUMs is low; however, the high calculated capacity of 540 AUMs in 1997 would be high considering it was an above average precipitation year. The recommended stocking rate of 230 AUMs is considered a reasonable estimate of the average capacity considering the acreage in this pasture.

Collar and Elbow Pasture - The recommended capacity is based on data from 1999. In 1999, all the wells were operated whereas it is unclear from previous years. Therefore, the capacity of 1,181 is recommended.

Shafter Pasture - The appropriate management level for wild horses was based on data from utilization and actual use and the objective of 10% use prior to the entry of livestock. The recommended stocking rate for livestock is also based on actual use and utilization. The AML for wild horses and livestock stocking level total the average capacity calculations for end of winter use.

East Pequop Bench Pasture - The recommended stocking rate is based on the range survey ratings. There was insufficient information collected during the evaluation period to analyze capacity.

North of Home Pasture - The recommended stocking rate is based on grazing privileges adjudicated following the range surveys. There was insufficient information collected during the evaluation period to analyze capacity.

Payne Basin & Six Mile Pastures - The recommended stocking rate is based on the average calculated capacity of the two key areas. The average for key area 4306-16 was 382 AUMs, and the average for key area 4306-17 was 315 AUMs. The average of these two numbers is 350 AUMs. When stocking this pasture, the levels of use need to be balanced between the areas represented by the two key areas. More data is needed to draw any conclusions about stocking rates for the Six-Mile Canyon area.

Fenced Federal Range - The AUM values for the FFR parcels are based on the range survey ratings.

C. Implement Livestock Grazing Management Systems within the West and East Big Springs Allotments as follows:

1. West Big Springs Allotment

Deferred rotation grazing would be applied to all pastures. The key management practices to be applied would limit use so as not to exceed the utilization objectives and allow the preferred forage plants in each pasture/use area to frequently complete their growth stages and disseminate seed. The final grazing system incorporates new water sources to expand grazing distribution and seedings to increase forage and habitat around the water sources. The interim and final grazing plans are described below.

Interim Grazing Plan

Independence Valley Pasture - Implement deferred rotation grazing practices amongst use areas within this pasture. Some *use areas* would be grazed in the spring/early summer and the remaining use areas grazed in the late summer/fall/winter/early spring. Generally, areas grazed in the spring/early summer of one year would be grazed in the late summer/fall/winter/early spring of the next year, and areas grazed in the fall/winter of one year would be grazed in the spring/early summer the following year. Use areas would be associated with the water sources in this pasture. The permittee plans to pipe water from Wadel Spring, located west of the allotment boundary in the northwest part of the pasture, and place a trough on the West Big Springs Allotment side of the boundary fence (this will all be done on leased private lands). The permittee also plans to haul water to the northwest portion of the valley/bench and on the bench in the northeast corner. The southeast part of Independence Valley associated with Boxcar Well would normally be reserved for late fall/winter use annually. *Each year, prior to spring use, the permittee would meet with the Elko Field Office to plan when the different use areas would be grazed for the year.* An example of the rotation is shown in Table 50 below. The locations of water sources are shown on the pasture map in Appendix 1.

Table 50. Example of the Independence Valley Pasture Rotation

USE AREAS	YEAR 1	YEAR 2
Boxcar Well	Late Fall/Winter (12/01 - 03/31)	Late Fall/Winter (12/01 - 03/31)
North Boxcar Well Miners Well Rattlesnake Well NE Water Haul Site Honor Camp Troughs	Spring/Early Summer (04/01 - 06/30)	Late Summer/Fall/Winter/Early Spring (09/01 - 03/31)
Section 12 Well Warm Springs Johnson Well NW Water Haul Site	Late Summer/Fall/Winter/Early Spring (09/01 - 03/31)	Spring/Early Summer (04/01 - 06/30)
The private field at the Warm Springs Ranch is often grazed in the late summer/fall offering an additional use area. This field is currently leased by the permittee.		

Holborn Pasture - Between mid May and early July, cattle would be moved from the Independence Valley Pasture into the Holborn Pasture north of Interstate 80. The deferred rotation plan calls for two years of use beginning as early mid May followed by two years of use beginning in July. During years one and two, the cattle would be moved into the pasture as early as mid May. In years three and four, the cattle would be moved into the pasture in early July.

The years the cattle are moved into this pasture in early July are considered the years of deferment as most of the forage plants would be at seedripe or seed dissemination.

Cattle may remain in this pasture for only a short period of time (two weeks) and then moved to the North Pequop Mountain Pasture and/or cattle may remain in this pasture until late September. The length of time the cattle would remain in this pasture would partly depend on the availability of water from snow runoff/rain which enhances distribution, and the amount of forage growth in any one year. If the cattle remain in the pasture for a short period of time, some water sources may not be operated resulting in no use in some areas; however, if the cattle remain in the pasture for an extended period of time, most/all water sources would be operated so as not to exceed the utilization objectives in any one use area. Table 51 below displays the planned rotation in use periods.

Table 51. Holborn Pasture Rotation of Use Periods	
YEAR 1 & 2	YEAR 3 & 4
05/15 - 09/30	07/01 - 09/30

North Pequop Mountain Pasture - This pasture is the primary summer range for the cattle operation as well as a major use area and travel corridor for mule deer. The elk population has also been increasing, and there is sage grouse habitat. Controlling the use levels on the forage grasses and bitterbrush (important shrub for deer browse) are primary considerations.

This pasture would receive deferment from livestock use in two ways. Cattle use would be rotated between the north and south ends of this pasture, and secondly, cattle would remain in the Holborn Pasture until some time in July in some years before moving into the North Pequop Mountain Pasture.

The deferred rotation plan calls for the cattle to begin their use at the south end for two years in a row. This area is associated with Ralph Spring, West Spring, Rocky Point Spring, Beacon Spring, and West Squaw Creek Well. The permittee would move cattle drifting into the north end back to the south end in a timely manner; however, the cattle don't tend to drift to the north end since there is only one spring at the far north end and it is somewhat lower in elevation. Some of the cattle grazing the south end would likely drift onto the east side of this pasture where the adjoining permittee would graze; therefore, the livestock operator on the west side would be responsible for monitoring his cattle drift and move his cattle back onto the west side in a timely manner. Removing cattle drifting into the East Squaw Creek and Upper Beacon Spring areas would be particularly important the first year or two prior to the installation of riparian management fences in these areas. On 8/1 or later, cattle would be spread across the northern part of the west side. The permittee would make a good faith effort to move all of the cattle to the northern use areas at this time to reduce the potential of cattle drifting onto the east side of this pasture. By the end of September, the cattle are moved out of this pasture.

During the third and fourth years, the cattle would begin their grazing on the north end for two years in a row. This area is associated with Independence Well, Pequop Spring and Pequop Well. The cattle tend to drift into the south end where there are several springs and higher elevation country; therefore, the permittee would move cattle drifting into the south end back to the north end in a timely manner. Beginning on 8/1 or later, most of the cattle would be spread across the south part of the pasture. Some of the cattle grazing the south end would likely drift onto the east side of this pasture where the adjoining permittee would graze; therefore, the livestock operator on the west side would be responsible for monitoring cattle drift and move the cattle back onto the west side in a timely manner.

Table 52 below displays the planned rotation in use periods.

USE AREA	YEARS 1 & 2	YEARS 3 & 4
North	08/01 - 09/30	05/15 - 09/30
South	05/15 - 09/30	08/01 - 09/30

Final Grazing Plan

The final grazing plan would continue the deferred rotation practices described under the interim systems above. The final grazing plan differs from the interim grazing plan only by the proposed addition of permanent water locations and seedings in various locations along with an allotment boundary fence on a portion of the North Pequop Mountain Pasture. The allotment boundary fence and additional water developments and seedings are described below by pasture.

Independence Valley Pasture -

- a. Develop a new water location in the northwest part of the valley, between Interstate 80 and Johnson Well. Perennial grasses are common along the upper bench and mountain.
- b. Seed up to 4,000 acres of public land associated with existing and proposed water locations. The seed mix would include forage grasses, shrubs/half-shrubs and forbs. The areas to be seeded would be lower bench and valley big sagebrush and rabbitbrush areas poor in grasses and other forage. The locations of areas and acres to be seeded would be specifically identified following this evaluation.
- c. Monitor the use and condition of Hogan Spring/seep located on the west bench of the Pequop Mountains and determine if protective measures should be taken protect the water source if wild horses continue to occupy this area or from cattle use.

Holborn Pasture -

Seed up to 1,000 acres of public land associated with the NDOT well adjacent to the Interstate 80 exit. The seed mix would include forage grasses, shrubs/half-shrubs and forbs. The areas to be seeded would be the big sagebrush area poor in grasses and other forage.

North Pequop Mountain Pasture -

a. Construct a boundary fence between the East and West Big Springs Allotments within the North Pequop Mountain Pasture. The fence would be approximately three miles long and run along the boundary line from Interstate 80 at Pequop Summit to Rocky Point, with a short gap fence in the canyon immediately north of Rocky Point. This fence would be designed as a let-down fence to be let-down by 9/30 and put back up prior to the entry of livestock the following year. This fence would also be part of an interior pasture fence proposed for the east side of this pasture as described under the grazing management practices for the East Big Springs Allotment below. The livestock permittees would be responsible for letting the fence down and putting it back up in a timely manner.

b. Develop a new water location on the north Pequop Mountain bench a couple of miles west of Pequop Spring. Perennial grasses are common in this area.

c. Develop a new water location on the north Pequop Mountain bench one to two miles east of Pequop Spring. Perennial grasses are common in this area. *Sage grouse strutting grounds are located near this new proposed use area; therefore, this water would not be operated earlier than July 1 so that all of the grass growth each year is available for hiding cover for sage grouse nesting and brood rearing activities.*

d. Add a water storage tank to Pequop Well so there is adequate storage to water both cattle and elk.

e. Evaluate the water development designs of the spring developments on public lands in this pasture and determine if the spring developments warrant modification to encourage the growth of riparian vegetation. Nearly all of the springs in this pasture were developed by capturing all of the water from the spring source and piping it to a trough which precludes the growth of riparian habitat at or near the spring source.

The Nevada Division of Wildlife and the interested public would be consulted prior to the approval of the above proposed projects. Required National Environmental Policy Act (NEPA) documentation would be completed prior to development of the proposed projects on public lands.

Rationale: Deferred rotation grazing is intended to help the forage plants remain healthy, provide seed to populate the plant communities for watershed stability and long-term sustainable use for livestock, wildlife and other multiple uses.

The deferred rotation plan for the N. Pequop Mountain Pasture in particular is also intended to lessen the use of bitterbrush on the south end where cattle prefer to be in the summer.

The proposed boundary fence that would separate the West Big Springs Allotment from the East Big Springs Allotment in the North Pequop Mountain Pasture would prevent the drift of cattle between the two allotments and also serve as part of the pasture management fences proposed for the east side. The fence would be designed as a let-down fence to be let down before the opening of the rifle hunting season on mule deer. Dropping down the fence wire is necessary to allow deer free movement through the area during the hunting season as well as reduce the need for some fence repairs from elk passing through the area.

The proposed water developments would expand grazing use and offer more use areas with which to plan deferred rotation strategies. In addition, by not operating the proposed water development east of Pequop Spring before July 1, new grass growth each year would be available as hiding cover for sage grouse nesting and brood rearing activities. Adding to the water storage capability at Pequop Well would improve the ability of this water source to support both cattle and elk use.

The proposed seedings would increase forage production and diversity for livestock and wildlife, particularly antelope, and provide a forage reserve to lessen the need for reductions in livestock use during dry precipitation cycles.

2. East Big Springs Allotment

Deferred rotation grazing would be applied to all pastures receiving grazing use during the critical growing season. Pastures receiving only fall or winter use would be deferred from grazing during the growing season every year. The key management practices to be applied would limit use so as not to exceed the utilization objectives and allow the preferred forage plants in each pasture/use area to frequently complete their growth stages and disseminate seed. The final grazing system incorporates new water sources to expand grazing distribution, new seedings to increase forage and habitat around the water sources, and additional fencing to protect riparian habitat and new seedings and improve the management of cattle under the deferred rotation practices. The interim and final grazing systems are described below.

Interim Grazing System(s)

Table 53. Periods-Of-Use By Pasture		
PASTURE/USE AREA	YEARS 1 & 2	YEARS 3 & 4
Shafter	10/01 - 4/15	10/01 - 4/15
East Pequop Bench North Bench South Bench/Hardy Creek Pipeline	03/01 - 06/30 ¹ Period of use within each use area to be defined on an annual basis.	03/01 - 06/30 ¹ Period of use within each use area to be defined on an annual basis.
Payne Basin/Six-Mile Canyon	05/16 - 09/30	07/01 - 09/30
East Squaw Creek	04/01 - 10/15 Period of use to be defined on an annual basis.	04/01 - 10/15 Period of use to be defined on an annual basis.
North Pequop Mountain East Beacon/Upper Squaw Creek Baker Spring	05/01 - 07/31 07/01 - 09/30	05/01 - 07/31 07/01 - 09/30
Windmill Seeding	07/01 - 10/31	07/01 - 10/31
Railroad	07/01 - 10/31	07/01 - 10/31
Squaw Creek Ranch	Up to 3 Weeks 05/01 - 07/31	Up to 3 Weeks 05/01 - 07/31
Lower Squaw Creek Ranch	Up to 3 Weeks 08/01 - 10/31	Up to 3 Weeks 08/01 - 10/31
Collar & Elbow	08/15 - 01/31	08/15 - 01/31
North of Home	Period of use to be defined on an annual basis.	Period of use to be defined on an annual basis.
¹ A fire rehabilitation seeding is proposed for a portion of the North Bench use area. The rehabilitation area would be closed to livestock use for two growing seasons or until seeding establishment criteria have been met..		

Shafter Pasture - This is the primary pasture for winter/early spring use. Cattle would graze this pasture beginning in November. Many of the cattle graze the northern part of this pasture in November called the Silver Zone area and are then moved south to the use areas associated with Shafter Well #1, Shafter Well, and Shafter Well #2. The cattle remain in the Shafter Wells area up to mid April.. However, if snowmelt/rains provide enough water in the late winter/early spring, the Shafter Wells would be turned off and the cattle moved to the west side of the Shafter Pasture into the greasewood plains and sagebrush draws to graze. The cattle are moved out of the Shafter Pasture and into the East Pequop Bench Pasture in March to mid April.

East Pequop Bench Pasture - Proposed fire rehabilitation actions following the Big Springs Fire of 2000 are to install a fence on the south end of the fire and seed the burn area. The fence would separate the northern part of the east Pequop bench from the remainder of the pasture. The fire rehabilitation seeding would be within this North Bench use area and would be closed to livestock grazing for at least two growing seasons or until the seeding establishment criteria have been met. While the North Bench use area is closed to livestock use, the South Bench/Hardy Creek use area and the Pipeline use area (east of the Big Springs Ranch) would be available for livestock use.

The grazing of each use area would be planned annually. The permittee would meet with Elko Field Office personnel prior to use in this pasture to discuss and gain the Bureau's concurrence on the planned grazing schedule. Planned use would be directed at deferring grazing use in one of the use areas during the critical growing season and/or managing for a utilization level on key forage grasses not to exceed the light use category (21 - 40% use of current years growth). When the North Bench use area is opened to livestock use following fire rehabilitation, this area would be included in the annual plan for grazing use in this pasture.

Payne Basin/Six Mile Canyon Pasture - This pasture would receive two years of use which includes the critical growing season followed by two years of deferred use.

East Squaw Creek Pasture - The grazing in this pasture would be planned annually. The permittee would meet with Elko Field Office personnel prior to use in this pasture to discuss and gain the Bureau's concurrence on the planned grazing schedule. Planned use would be directed at deferring grazing use in the native part of the pasture during the critical growing season and/or managing for a utilization level on key forage grasses not to exceed the light use category (21 - 40% use of current years growth).

The South Seeding portion of this pasture would be grazed each year between 04/01 and 10/15. The South Seeding would commonly be grazed in the spring prior to the cattle being moved into the North Pequop Mountain Pasture, and grazed again in the late summer/fall as the cattle come off the summer range. Use during late summer/fall depends on the level of use made in the spring and the degree of regrowth available for later use.

The native portion of this pasture would be grazed in conjunction with the seeding on the south end; however, use in the native area is expected to be light because most of the cattle tend to graze the south seeding portion of this pasture. However, if the level of grazing use on the native key forage grasses at key area 4306-14 exceeds the light utilization category by the end of the growing season for two years in a row, or more than two out of four consecutive years, use on the native area would be deferred until 07/01 for two out of four consecutive years.

North Pequop Mountain Pasture - This pasture is the primary summer range for the cattle operation as well as a major use area and travel corridor for mule deer. The elk population has also been increasing, and there is sage grouse habitat. The portion of this pasture associated with Upper East Squaw Creek and East Beacon Spring encompasses most of the riparian areas within the pasture. Controlling the use levels on the riparian habitat as well as forage grasses and bitterbrush (important shrub for deer browse) are primary considerations.

In order to begin making significant progress toward proper functioning condition of riparian habitat in this pasture prior to construction of the riparian management fences, it would be important to leave some of the perennial herbaceous riparian growth to help stabilize and expand the riparian area. Therefore, management would be directed at achieving the following stubble height objective during the interim:

- Stubble Height of Herbaceous Riparian Species: A minimum of four (4) inches average stubble height of selected key herbaceous riparian species (sedges/rushes) will be left along the streambank and wet meadow areas at the end of the growing season or grazing season, whichever occurs later.

Deferred rotation grazing would be applied to use areas within this pasture. Riparian management fences and water development modifications are proposed under the final grazing system/practices described below. In the interim, prior to the installation of riparian protection fences, livestock would graze the upper East Squaw Creek and East Beacon Spring areas between 5/1 and 07/31 and then moved north to the Baker Spring/Pipeline area. The Baker Spring/Pipeline area would be grazed from as early as 07/01 - 09/30 in conjunction with the Railroad and Windmill Seeding Fields. The permittee would be responsible for monitoring cattle drift outside the planned use area(s) and moving them back to the planned use area(s) in a timely manner. Removing cattle drifting back into the East Squaw Creek and East Beacon Spring areas would be particularly important prior to the installation of the proposed pasture and/or riparian management fences in these areas.

Railroad Field and Windmill Seeding Field - The interim system calls for these two fields to be used in conjunction with the Baker Spring use area in the North Pequop Mountain Pasture. These two fields would be needed to supplement the forage for summer use when the cattle are not to be grazing the Upper East Squaw Creek and East Beacon Spring use areas in the North Pequop Mountain Pasture.

Squaw Creek Ranch Field - This field includes a portion of East Squaw Creek and would be managed as a riparian pasture with use limited to no more than three weeks. Monitoring of the utilization on streambank herbaceous riparian plants and willows would be used to determine if further adjustments should be made in order to achieve proper functioning condition and habitat objectives. *Each year, the permittee would meet with the Elko Field Office to plan when this area would be grazed.* Management would be directed at achieving riparian habitat objectives including proper functioning condition. Annual stubble height/utilization limits on herbaceous riparian vegetation and willows would be used to tailor the period of use. These annual stubble height/utilization limits are described as follows:

- Stubble Height of Herbaceous Riparian Species: A minimum of four (4) inches average stubble height for selected key herbaceous riparian species (sedges/rushes) will be left along the streambank at the end of the growing season or grazing season, whichever occurs later.
- Willow Utilization: Do not exceed thirty-five (35%) average utilization of the total current year's leader growth on the portion of the willow within five (5) feet of ground level by the end of the growing season or grazing season, whichever occurs later.

Lower Squaw Creek Ranch Field - This field has been irrigated to grow meadow grasses for livestock use in the late summer/fall. This field would continue to be irrigated by the permittee and grazed up to three weeks between 8/01 and 10/31. *Each year, the permittee would meet with the Elko Field Office to plan when this area would be grazed.*

Collar and Elbow Pasture - This pasture would be used beginning on or after 8/15 for late summer/fall/early winter use. The valley portions of this pasture tends to be dusty when the dry surface is disturbed during the summer/fall. To avoid dust pneumonia in the calves, the permittee would wean the calves from the mother cows, which usually occurs beginning about August 20th and later, before placing the mother cows in this pasture.

North of Home Pasture - Use in this pasture is generally trailing cattle to and from other pastures; however, some cattle may periodically be held in this pasture for a longer period of time. *Because of the variability in the use of this pasture, the permittee would meet with the Elko Field Office each year to plan when this area would be grazed.* Planned use would be directed toward maintaining healthy forage plants, and a stable watershed for the proposed Source Water Area Protection Zone associated with the watershed that supplies water to West Wendover, Nevada.

Final Grazing Plan

The final grazing plan would continue deferred rotation practices in those pastures scheduled for use during the critical growing season. The final grazing plan proposes some new pasture fences and riparian management fences as well as new water developments and seedings that enhance the ability to implement deferred rotation strategies. Since there would be enough changes in grazing use as a result of the proposed projects, Table 54 below includes the proposed periods of use for all the pastures to facilitate an understanding of how the year-round operation would look under the final grazing plan.

Table 54. Periods Of Use By Pasture

PASTURE/USE AREA	YEARS 1 & 2	YEARS 3 & 4
Shafter	10/01 - 4/15	10/01 - 4/15
East Pequop Bench North Bench/Seeding/Long Canyon	05/01 - 07/15	03/01 - 05/15 09/01 - 12/31
South Bench/Seeding/Hardy Creek	05/01 - 07/15	03/01 - 05/15 09/01 - 12/31
Pipeline Seeding	03/01 - 05/15 09/01 - 12/31	05/01 - 07/15
Pipeline Native	03/01 - 05/15	05/01 - 07/15
Payne Basin	05/16 - 09/30	07/01 - 09/30
Six-Mile Canyon	Period of use to be defined on an annual basis.	Period of use to be defined on an annual basis.
East Squaw Creek South Seeding	04/01 - 10/15 Period of use to be defined on an annual basis.	04/01 - 10/15 Period of use to be defined on an annual basis.
North Native	05/01 - 10/15	07/01 - 10/15
North Pequop Mountain East Beacon/South Squaw Creek North Squaw Creek/Baker Spring	05/01 - 07/31 07/01 - 09/30	07/01 - 09/30 05/01 - 07/31
Upper Squaw Creek Riparian	Initially rest until PFC, then Up to 3 Weeks 05/01 - 07/31	Initially rest until PFC, then Up to 3 Weeks 05/01 - 07/31
Squaw Creek Ranch	Up to 3 Weeks 05/01 - 07/31	Up to 3 Weeks 05/01 - 07/31
Lower Squaw Creek Ranch	Up to 3 Weeks 08/01 - 10/31	Up to 3 Weeks 08/01 - 10/31
Windmill Seeding	04/01 - 10/31 Period of use to be defined on an annual basis.	04/01 - 10/31 Period of use to be defined on an annual basis.
Railroad	07/01 - 10/31	05/01 - 10/31
Collar & Elbow	08/15 - 01/31	08/15 - 01/31
North of Home	Period of use to be defined on an annual basis.	Period of use to be defined on an annual basis.

Shafter Pasture - Planned use in this pasture would be the same as described under the interim grazing plan. This pasture is the primary winter/early spring use area. No new projects are proposed.

East Pequop Bench Pasture - Under the final grazing plan, the proposed fire rehabilitation fence and seeding would have already created the North Bench use area. Additional projects are also proposed to implement the final grazing plan. These proposed projects are as follows:

- a. Construct a drift fence (100') near the bottom of Long Canyon.
- b. Add an 8,000 gallon water storage tank to Burnt Well.
- c. Develop a seeding of up to 3,000 acres within the area burned in the Oasis Fire located within the South Bench use area. Seeded species would include perennial forage grasses, shrubs/half shrubs, and forbs.
- d. Construct a reservoir in the vicinity of South Well to catch spring runoff, and add an 8,000 gallon water storage tank to South Well.
- e. Develop a new well in the lower Hardy Creek area in the vicinity of sections 15 or 22, T. 34 N., R. 66 E.
- f. Develop a seeding of up to 4,000 acres north of the West Wendover water pipeline. Seeded species would include perennial forage grasses, shrubs/half shrubs, and forbs.
- g. Construct approximately seven (7) miles of fence to encompass the new seeding north of the pipeline.
- h. Install four pipeline extensions of approximately one and one-half miles each. Two extensions would run north from the West Wendover water pipeline to provide water to the new seeding area, and two extension would run south to water the native range.

The final grazing plan for the East Pequop Bench Pasture would continue deferred rotation practices during the critical growing season (5/16 - 6/30) as shown in the table above. With the addition of the proposed projects, late summer and fall use is also proposed.

Payne Basin Pasture - This pasture would continue to receive two years of use which includes the critical growing season followed by two years of deferred use. Development of additional grazing capacity within the East Pequop Bench Pasture, as described above, would support these cattle during those years when this pasture is deferred until 07/01. The only proposed project is described below.

Lower Nanny Spring is the only riparian area that supports a small stand of aspen within the Payne Basin Pasture. To ensure the aspen stand can sustain itself over the long term, the aspen area would be fenced periodically to allow young aspen to grow to seven feet (7') in height so the terminal bud and upper branches are above the cattle browsing level.

There are also a couple spring developments that capture all the water from the source and pipe it to a trough. Therefore, the water development designs of these spring developments on public lands should be evaluated to determine if the spring developments warrant modification to encourage the growth of riparian vegetation.

Six-Mile Canyon - Grazing in this canyon would be planned on an annual basis to take into account the availability of water. The only new project would be a drift fence near the bottom of the canyon. The existing reservoir part way up the canyon would be repaired and the reservoirs at the top of the canyon would be enlarged where feasible. These reservoirs catch snow melt/runoff but are not associated with any perennial water flows. Grazing would be authorized periodically when water is available in the reservoir(s) as an alternative use area to Payne Basin.

East Squaw Creek Pasture - New projects proposed for this pasture include the following:

- a. Construct a drift fence that would run easterly from the lower Squaw Creek Field to the fence along the highway to Montello, Nevada (Route 233). This fence would be approximately two and one-half miles long.
- b. Expand the seeding within the southern portion of this pasture. Up to 1,200 acres of new seeding is proposed. The seed mix would include desirable forage grasses and forage kochia.

The final grazing plan calls for the South Seeding portion of this pasture to be grazed as described under the interim grazing plan. The South Seeding use area would commonly be grazed in the spring prior to the cattle being moved into the North Pequop Mountain Pasture, and grazed again in the late summer/fall as the cattle come off the summer range. Use during late summer/fall depends on the level of use made in the spring and the degree of regrowth available for later use. This pasture would be periodically deferred to allow a recovery period following dry years when there is little regrowth. *Each year, the permittee would meet with the Elko Field Office to plan when this area would be grazed.*

The proposed fence that would separate the South Seeding use area from the native range to the north would be constructed in such a way as to allow the cattle using either field to water at the reservoir at the bottom of the Lower Squaw Creek Field.

The North Native portion of this pasture north of the proposed fence would be grazed under a deferred rotation schedule with two years of use during the critical growing season and two years of deferred use.

North Pequop Mountain Pasture - The final grazing plan would result in a fenced pasture south of the East Squaw Creek channel, a pasture north of East Squaw Creek, and a riparian pasture enclosing the main channel of East Squaw Creek. A deferred rotation grazing system would be implemented using the two large pastures. The Upper Squaw Creek Riparian Pasture would be managed as a separate field which is described below.

Additional riparian management fences/exclosures around some of the springs are also proposed along with some new water developments. The riparian fences would be designed to minimize fence maintenance resulting from the movement of elk through the area. When proper functioning condition has been achieved within any of the proposed riparian exclosures, livestock grazing may be periodically authorized if the authorized officer determines it desirable to remove old growth and/or enhance wildlife use such as sage grouse brood rearing.

New projects proposed for this pasture include the following:

- a. Construct a boundary fence between the East and West Big Springs Allotments within the North Pequop Mountain Pasture. The fence would be approximately three miles long and run along the boundary line from Interstate 80 at Pequop Summit to Rocky Point, with a short gap fence in the canyon immediately north of Rocky Point. This fence would be designed as a let-down fence to be let-down by 9/30 and put back up prior to the entry of livestock the following year. This fence would also be part of an interior pasture fence proposed for the east side of this pasture as described under the grazing management practices for the East Big Springs Allotment below. The livestock permittees would be responsible for letting the fence down and putting it back up in a timely manner.
- b. Construct a pasture fence that would connect with the fence described above at a location just north of the middle fork of East Squaw Creek and run easterly to the Squaw Creek Ranch Field. This fence would be approximately three miles long. This fence would be designed as a let-down fence to be let-down by 9/30 and put back up prior to the entry of livestock the following year. The livestock permittee on the east side would be responsible for letting the fence down and putting it back up in a timely manner. The lower one and one-half miles of fence would create the border for the north side of the Upper Squaw Creek Riparian Pasture.
- c. Construct approximately two miles of drift fence that would run north from the Pequop Exit on Interstate 80 toward the southwest corner of the Squaw Creek Ranch Field.
- d. Construct the following riparian management fences/exclosures:
 - (1.) Enclose the main channel of East Squaw Creek with a fence on the south and west sides to create a riparian pasture in conjunction with the proposed fence on the north side described above. This fence would enclose the main spring complex near the middle of section 8, T. 37 N., R. 66 E. and the main channel eastward to the Squaw Creek Ranch Field fence. To provide water outside the riparian pasture, water would be piped from one of the main channel springs at the upper end of the riparian pasture to a location north of the riparian pasture fence. A water gap where animals could water directly from East Squaw Creek would also be considered at the lower end of the riparian pasture.
 - (2.) Fence the spring and channel leading to the reservoir at Lower Beacon Spring located in the northeast corner of section 17, T. 37 N., R. 66 E. Most of the area just above the reservoir would be left open as a loafing area for cattle.
 - (3.) Fence the spring at East (Upper) Beacon Spring located in the southwest corner of section 17, T. 37 N., R. 66 E. and pipe water to a trough outside the fence and to a location approximately one mile east/southeast of the spring.

- (4.) Fence Wally Spring including the aspen stand nearby and install a rock gabion or apron where the spring flows over the lip of the cut bank
- (5.) Fence the three spring complex at the head of the middle fork of East Squaw Creek located in the NESW section 7, T. 37 N., R. 66 E.
- (6.) Fence the spring on the north fork of East Squaw Creek located in the northeast corner of section 7, T. 37 N., R. 66 E.
- (7.) Eliminate and/or control noxious and invasive plants and reseed as necessary.

There are also a couple spring developments that capture all the water from the source and pipe it to a trough. Therefore, the water development designs of these spring developments on public lands should be evaluated to determine if the spring developments warrant modification to encourage the growth of riparian vegetation.

e. Extend a pipeline from the proposed well at the north end of the pasture to a location east of the rangeline between the East and West Big Springs Allotments. The proposed well would be located one to two miles east of Pequop Spring as described under the final grazing plan for the West Big Springs Allotment. Each permittee would be responsible for monitoring the drift of their cattle across the unfenced boundary line and moving their cattle back to their authorized use area in a timely manner.

The Nevada Division of Wildlife and the interested public would be consulted prior to the approval of the above proposed projects. Required National Environmental Policy Act (NEPA) documentation would be completed prior to development of the proposed projects on public lands.

Upper Squaw Creek Riparian Pasture - When this pasture is fenced as described above, it would be rested from livestock grazing until it has achieved proper functioning condition. Once it has reached proper functioning condition, grazing management would be directed at maintaining proper functioning condition and achieving additional riparian habitat objectives. When initial grazing use is authorized in this pasture, monitoring of the utilization on streambank herbaceous riparian plants and willows/aspen would be used to determine if further adjustments should be made in order to achieve proper functioning condition and habitat objectives. *Each year, the permittee would meet with the Elko Field Office to plan when this area would be grazed.* When initial use is authorized in this pasture, the following stubble height/utilization limits would apply:

- Stubble Height of Herbaceous Riparian Species: A minimum of four (4) inches average stubble height of selected key herbaceous riparian species (sedges/rushes) will be left along the streambank at the end of the growing season or grazing season, whichever occurs later.

- Willow and Aspen Utilization: Do not exceed thirty-five (35%) average utilization of the total current year's leader growth on the portion of the willow or aspen within five (5) feet of ground level by the end of the growing season or grazing season, whichever occurs later.

Proposed projects within this pasture are listed below:

- a. As mentioned under proposed projects for the N. Pequop Mountain Pasture above, a pipeline is proposed to bring water outside the riparian pasture fence into the North Squaw Creek/Baker Spring Pasture. Water would be piped from one of the springs at the upper end of the riparian pasture.
- b. A water gap at the lower end of the riparian pasture fence would be considered in the design of the fence to provide water for use in the North Squaw Creek and/or South Squaw Creek Pastures.
- c. Eliminate and/or control noxious and invasive plants. Treatments are envisioned to include the use of herbicides and/or digging on existing populations in conjunction with reseeding treated areas and other patches of bare ground that are likely to be invaded by weeds once the riparian pasture fence is in place.

Squaw Creek Ranch Field - This field would be managed as a riparian pasture as described under the interim grazing plan with use limited to no more than three weeks. Monitoring of the utilization on streambank herbaceous riparian plants and willows would be used to determine if further adjustments should be made in order to achieve proper functioning condition and habitat objectives. *Each year, the permittee would meet with the Elko Field Office to plan when this area would be grazed.* Management would be directed at achieving riparian habitat objectives including proper functioning condition. Annual stubble height/utilization limits on herbaceous riparian vegetation and willows would be used to tailor the period of use. These annual stubble height/utilization limits are described as follows:

- Stubble Height of Herbaceous Riparian Species: A minimum of four (4) inches average stubble height of selected key herbaceous riparian species (sedges/rushes) will be left along the streambank at the end of the growing season or grazing season, whichever occurs later.
- Willow Utilization: Do not exceed thirty-five (35%) average utilization of the total current year's leader growth on the portion of the willow within five (5) feet of ground level by the end of the growing season or grazing season, whichever occurs later.

Lower Squaw Creek Ranch Field - This field has been irrigated to grow meadow grasses for livestock use in the late summer/fall and would continue to be managed as described under the interim grazing plan. This field would continue to be irrigated by the permittee and grazed up to three weeks between 8/01 and 10/31. *Each year, the permittee would meet with the Elko Field Office to plan when this area would be grazed.*

Windmill Seeding Field - The preponderance of forage in this pasture is provided by two seeded species, Russian wildrye and crested wheatgrass. This pasture would commonly be grazed in the spring/summer but periodically deferred to allow a recovery period following dry years when there is little regrowth. *Each year, the permittee would meet with the Elko Field Office to plan when this area would be grazed.*

Railroad Field - Deferred rotation grazing would be implemented on this pasture. There would be two consecutive years of use beginning 07/01 or later followed by two years of use beginning 05/01 or later. Actual use would not be expected to span the entire period of use displayed in the table above. *Each year, the permittee would include the actual planned period of use in the application for grazing use.*

Collar and Elbow Pasture - This pasture would be managed as described under the interim system. Use would begin on 08/15 or later and end by 01/31. The actual period of use during this time would tend to be variable. For example, during those years when water and/or forage runs short in the North Pequop Mountain Pasture, the cattle may be moved into this pasture beginning in August. When water and/or forage is adequate elsewhere, the cattle may not enter this pasture until late September or October. The cattle may remain in this pasture until November and moved to the Shafter Pasture or stay into the late fall/winter until snows require removal.

North of Home Pasture - Use in this pasture is generally trailing cattle to and from other pastures; however, some cattle may periodically be held in this pasture for a longer period of time. *Because of the variability in the use of this pasture, the permittee would meet with the Elko Field Office each year to plan when this area would be grazed.* Planned use would be directed toward maintaining healthy forage plants, and a stable watershed for the proposed Source Water Area Protection Zone associated with the watershed that supplies water to West Wendover, Nevada.

Rationale: Deferred rotation grazing is intended to help the forage plants remain healthy, provide seed to populate the plant communities for watershed stability and long-term sustainable use for livestock, wildlife and other multiple uses. Periods of livestock use between pastures generally overlap to provide flexibility in movement dates needed to deal with weather variations and other unpredictable events, and move livestock to pastures/use areas within pastures when most compatible with achieving good distribution.

The periods of use in some pastures or use areas within some pastures would be determined on an annual basis. This allows management to consider factors affecting the pasture/use area the previous year(s), project current years production and water availability, and direct use to best achieve multiple use objectives and standards for rangeland health.

Riparian habitats would improve as a result of proposed fencing, stubble height/utilization limits and deferred rotation grazing practices. Managing for proper functioning condition riparian habitat and other habitat values would improve watershed stability and provide more desirable habitat for wildlife including habitat for sage grouse brood rearing.

The proposed boundary fence that would separate the East Big Springs Allotment from the West Big Springs Allotment in the North Pequop Mountain Pasture would prevent the drift of cattle between the two allotments and also serve as part of the pasture management fences proposed for the east side. The fence would be designed as a let-down fence to be let down before the opening of the rifle hunting season on mule deer. Dropping down the fence wires is necessary to allow deer free movement through the area during the hunting season as well as reduce the need for some fence repairs from elk passing through the area.

The proposed water developments would either replace water sources fenced to manage riparian areas or provide new water sources that would expand grazing use and offer more use areas with which to implement deferred rotation strategies. In addition, by not operating the proposed water development east of Pequop Spring before July 1, new grass growth each year would be available as hiding cover for sage grouse nesting and brood rearing activities.

The proposed seedings would increase forage production and diversity for livestock and wildlife, particularly antelope. Forage diversity was generally identified as a limiting habitat attribute for antelope and the addition of forage kochia and forbs to the seed mix would improve forage diversity. The increased livestock forage production from the new seedings would provide a forage reserve during dry cycles that would improve consistency in livestock stocking rates and management over the long-term.

3. Terms and Conditions for Livestock Grazing Use

- a. Authorized grazing use will be in accordance with the Big Springs Allotment Final Multiple Use Decision dated _____.
- b. The terms and conditions of your grazing permit may be modified if additional information indicates that revision is necessary to conform with 43 CFR 4180.
- c. Supplemental feeding is limited to salt, mineral, and/or protein supplements in block, granular or liquid form. Such supplements will be placed at least 1/4 mile from live waters (springs, streams and troughs), wet or dry meadows, and aspen stands.
- d. An actual use report showing use by pasture, and by use area, will be turned in within 15 days after completing annual use.
- e. All riparian enclosures, including spring development enclosures, are closed to livestock use unless specifically authorized in writing by the authorized officer.
- f. The numbers of livestock to be grazed will remain flexible according to the needs of the permittee. The grazing plan is based on the number of AUMs that may be removed from each pasture. Livestock numbers and periods of use will be applied for on an annual basis. Deviations beyond the flexibility described above may be allowed to meet the needs of the resources and the permittee as long as these deviations are consistent with multiple use objectives. Deviations beyond the limits of flexibility outlined above, including deviations in the turnout date, increases in livestock numbers and deviations from the grazing plan, will require an application, and written authorization from the authorized officer.
- g. Pursuant to 43 CFR 10.4 (g), the holder of this authorization must notify the authorized officer, by telephone with written confirmation, immediately upon the discovery of human remains, funerary items, sacred objects or objects of cultural patrimony. Further, pursuant to 43 CFR 10.4 (c) and (d), you must stop activities in the immediate vicinity of the discovery and protect it from your activities for 30 days or until notified to proceed by the authorized officer.

Rationale: The above are standard terms and conditions for grazing use.

D. Wild Horses

1. **Inventory, identify, and eliminate existing wire hazards. Clean up and dispose of old wire, especially where it creates a significant hazard to wild horses.**

Rationale: Wild horses have become tangled in old barbed wire especially in old spring enclosures and wild horse traps. Entanglement in barbed wire causes extensive injuries and in some cases the need for the animal to be destroyed.

2. **Establish an Appropriate Management Level (AML) for wild horses of 672 AUMs (56 wild horses for 12 months) within that portion of the Goshute Herd Management Area in the Shafter Pasture of the Big Springs Allotment.**

Rationale: The Wells Resource Management Plan (RMP) Wild Horse Amendment established a utilization objective of ten percent (10%) on key forage species for wild horse use prior to entry by livestock so as not to exceed the utilization objective of 55% on key forage species by the end of the combined wild horse and cattle winter use period. Evaluation of use by wild horses has concluded that wild horse use prior to the entry of livestock on the winter range in the Shafter Pasture is the most limiting factor. The principal concern with wild horse use is their use of key forage grasses during the growing season. Limiting wild horse use to an average of 10% use prior to entry by livestock is considered to be a prudent stocking level to protect the health of key forage plants exposed to grazing during the critical growing season every year. Most of the wild horse use prior to entry by livestock has occurred during the growing season.

Monitoring information collected at key area 4306-21 and vicinity is most representative of pre-livestock use by wild horses; therefore the data collected in this area was used to establish the AML. The calculated capacity for wild horse use, based on pre-livestock utilization and actual use, is 389 AUMs for seven (7) months of use. Since the Shafter Pasture is considered to be a year-long wild horse use area, extrapolation of horse use for a full 12 month period results in a calculated AML of 672 AUMs (56 wild horses).

Maintaining wild horses at the appropriate management level will result in a thriving, natural, ecological balance between horses and other resource values. Continued monitoring within the allotment will show if any adjustment in the AML is needed.

3. **Remove sufficient numbers of wild horses associated with the Goshute Herd Management Area to attain the appropriate management level (AML) and maintain wild horse populations at a level which will maintain a thriving natural ecological balance consistent with other resource values. Horses would be gathered down to the low end of the AML (minimum AML) and allowed to increase over a four year period to the AML.**

Rationale: See rationale for establishing the AML above. In addition, the minimum AML is the lowest number of adult animals allowed to graze on the range and considers genetics (herd viability), gather/removal cycles, and minimum disturbance to the herd by using as long a gather cycle as possible. Removals would never remove horses below the minimum level except in extreme emergency.

4. **Remove all wild horses that are occupying areas managed as horse free areas.**

Rationale: Current census flights confirm that wild horses are occupying areas within the Big Springs Allotment that are currently supposed to be horse free. In particular, wild horses are occupying areas within the Independence Valley Pasture designated as horse free. These horses should be removed to comply with the Wells RMP Wild Horse Amendment. If the wild horses are not removed, their use could disrupt the planned deferred rotation system by reducing the forage needed for livestock use.

5. **Continue to collect pre-livestock use by wild horses and combined use (cattle and horses) utilization data.**

Rationale: Collection of utilization data is necessary to determine if management practices are meeting objectives and will indicate management changes needed in response to climatological changes, such as drought, etc.

6. **Continue to collect seasonal distribution and census data on the Goshute HMA. Continue to collect seasonal distribution and census data on horse populations that are occupying areas managed as horse free.**

Rationale: In 1991, intensive seasonal distribution flights were begun within the Elko District. These census flights have provided valuable information on horse movements and should continue until monitoring data indicates that the appropriate management level has been attained in all HMAs, and regularly thereafter.

7. **Do not construct the fence described in the Wells RMP Wild Horse Amendment that was intended to prevent wild horses from drifting north into the checkerboard land pattern of the Goshute Herd Management Area.**

Rationale: The movement of wild horses into the checkerboard area is expected to be minimal when the numbers of wild horses are managed at the AML. The need to construct this fence should again be considered if substantial numbers of wild horses occupy the checkerboard area.

E. Wildlife

1. **Modify the wire spacing on the West Pequop Bench Fence (#5608) to meet current BLM specifications. On three wire fences, the wire spacing would be 18"-8"-12" from the ground up, and the bottom wire would be smooth. On four wire fences, the wire spacing will be 16"-6"-8"-12" from the ground up, and the bottom wire would be smooth.**
2. **Inventory the remaining fences on public lands and modify those fences to BLM specifications as needed to facilitate the movement of big game.**
3. **Modify existing fences and design new fences to facilitate the movement of deer, antelope and elk, and reduce maintenance costs.**
4. **Improve forage diversity for antelope through the seeding of grass, shrub/half-shrub and forb seeds. The areas to be seeded would be associated with the water developments in the Independence Valley and Holborn Pastures of the West Big Springs Allotment, and the East Pequop Bench Pasture of the East Big Springs Allotment as described under the Livestock Grazing Management section above.**
5. **Install additional big game guzzlers to provide more water locations and to attract big game to areas little used by livestock. The specific locations for new water guzzlers would be identified at a later date.**
6. **Manage sage grouse habitat (i.e. leks/strutting grounds, nesting, brooding, and summer and winter habitats) consistent with the Western States Sage Grouse Guidelines, as adapted for use in Nevada.**

Rationale: Designing new fences and modifying existing fences to facilitate big game movements improves access to their habitat and reduces fence maintenance.

Insufficient forage diversity for antelope was cited as a limitation for antelope habitat in this allotment. The proposed seedings are intended to provide areas of increased forage diversity for antelope as well as other wildlife.

Installing additional big game guzzlers expands big game distribution and provides water for other wildlife.

Maintaining and improving sage grouse habitat will assist in maintaining or increasing populations.

F. Fire Management

Implement the Big Springs Allotment Fire Management Plan as described in Appendix 5.

Rationale: The 1998 Elko Field Office Fire Management Plan identified fire and fuels management goals and objectives for the Elko Field Office. The Big Springs Allotment Fire Management Plan is tiered off the Field Office plan and identifies site specific fire suppression, prescribed fire, and mechanical fuels treatments goals and objectives for the public lands.

G. Forestry

1. **Recommend artificial reforestation efforts within burn areas where natural regeneration is unlikely due to fire intensity or severity.**

Rationale: The dry, hot climate common during the summer months intensifies fires within our forest types, usually killing most or all of the seedlings and seed. Due to the lack of a seed source, forest sites which have experienced high intensity fires typically do not regenerate before the microorganisms within the soils die out. These microorganisms are critical to tree survival. Those forest sites must then regenerate outward from the edges of the remaining stands, bringing the microorganisms with them. This can cause burned sites to be deforested for extended periods of time, perhaps hundreds of years.

2. **Recommend continued sustained yield management of pinyon/juniper woodlands for forest products. Improve access and utilization of woodland product harvest areas to enhance understory vegetation, provide for public demand, and improve or maintain the health of the forest.**

Rationale: Sustained yield management permits the utilization of a resource without depleting the resource. For example, in the case of forest products, harvesting no more in a year or decade than will regrow during the same time period. This assures a continued supply of the resources for future generations. Thinning within a forest stand will usually release the remaining trees (improving the health) by reducing competition for water, light, and nutrients. Harvesting within stands makes forest products available to the public for various uses. Thinned stands usually produce larger quantities of understory vegetation which may be desirable to various wildlife species.

3. **Recommend thinnings and possibly planting within areas that are desirable for Christmas tree production. Areas managed should be within high public use zones with good public access.**

Rationale: The demand for Christmas trees within the Wells Resource Area exceeds the sustained yield capabilities of the forest. Many of the Christmas tree production sites require stand maintenance to increase the growing space for Christmas tree formed trees. Natural regeneration for pinyon pine has also been very limited within the past decade due mostly to drought conditions. Poor cone crops combined with poor seedling germination and survival has been the result of the limited soil moisture.

H. Noxious Weeds and Invasive Plants

Treat noxious and invasive weeds in a manner that is most appropriate to the weed species and degree of infestation. Treatment would be in accordance with the Final Environmental Impact Statement for Vegetation Treatment on BLM Lands in Thirteen Western States, and the Elko District Programmatic Environmental Assessment for the Treatment of Noxious Weeds.

Rationale: The BLM is mandated to manage vegetation on public lands. The BLM must control noxious weeds and undesirable plants to maintain or improve the quality of forests and rangelands for multiple resources.

I. Monitoring

1. **Continue to conduct necessary monitoring studies and periodically evaluate the effects of grazing to determine if progress is being made in meeting the multiple use objectives and standards for rangeland health. The Big Springs Allotment(s) will be re-evaluated in accordance with priorities established in the Elko Field Office Monitoring and Evaluation Schedule.**

2. **Establish new key areas or supplement studies in the following locations:**

Independence Valley Pasture - Utilization studies within each principal use area, and condition and trend transects in ecological sites that represent the principal use areas.

North Pequop Mountain Pasture- The northern part of the East Squaw Creek Area and the Baker Spring Pipeline area.

Upper East Squaw Creek (Proposed Riparian Pasture) - Riparian stubble height/utilization transects and trend photos.

Squaw Creek Ranch Field - Riparian stubble height/utilization transects and trend photos.

Lower Squaw Creek Ranch Field - Utilization studies.

Railroad Field - Utilization and condition and trend studies.

Windmill Seeding - Utilization and trend studies.

East Squaw Creek Pasture - Utilization and trend studies on the seeding at the south end.

Collar and Elbow Pasture - Utilization studies within each principal use area, and condition and trend transects in ecological sites that represent the principal use areas.

Shafter Pasture - Condition and trend studies at key area 4306-21 (Shafter Well #2).

East Pequop Bench Pasture - Utilization studies within each principal use area, and condition and trend transects in ecological sites that represent the principal use areas.

Riparian Exclosures - Trend photos.

New Seedings - Utilization and trend studies.

Rationale: Additional monitoring information is needed to clarify grazing capacities, appropriate periods of use, and progress towards objectives.

VIII. CONSULTATIONS

Elko Field Office BLM

Karl Scheetz - Lead Rangeland Management Specialist - Allotment Evaluation Team Leader
Jeff Baker - Rangeland Management Specialist - Initial Author
Kathy McKinstry - Wild Horse and Burro Specialist
Walter Findlay - Wildlife Biologist
Suzanne Grayson - Wildlife Biologist
Aric Kreuger - Wildlife Technician
Carol Marchio - Lead Soil/Water/Air Specialist
Norman Ritter - Forestry Specialist
Bob Means - Fire Ecologist - Prescribed Fire Specialist
Evelyn Treiman - Wilderness Specialist
Jason Spence - Range Technician

Permittees

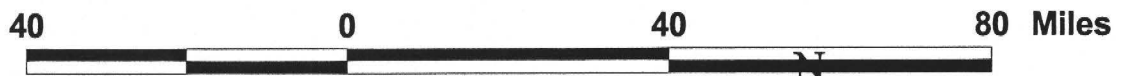
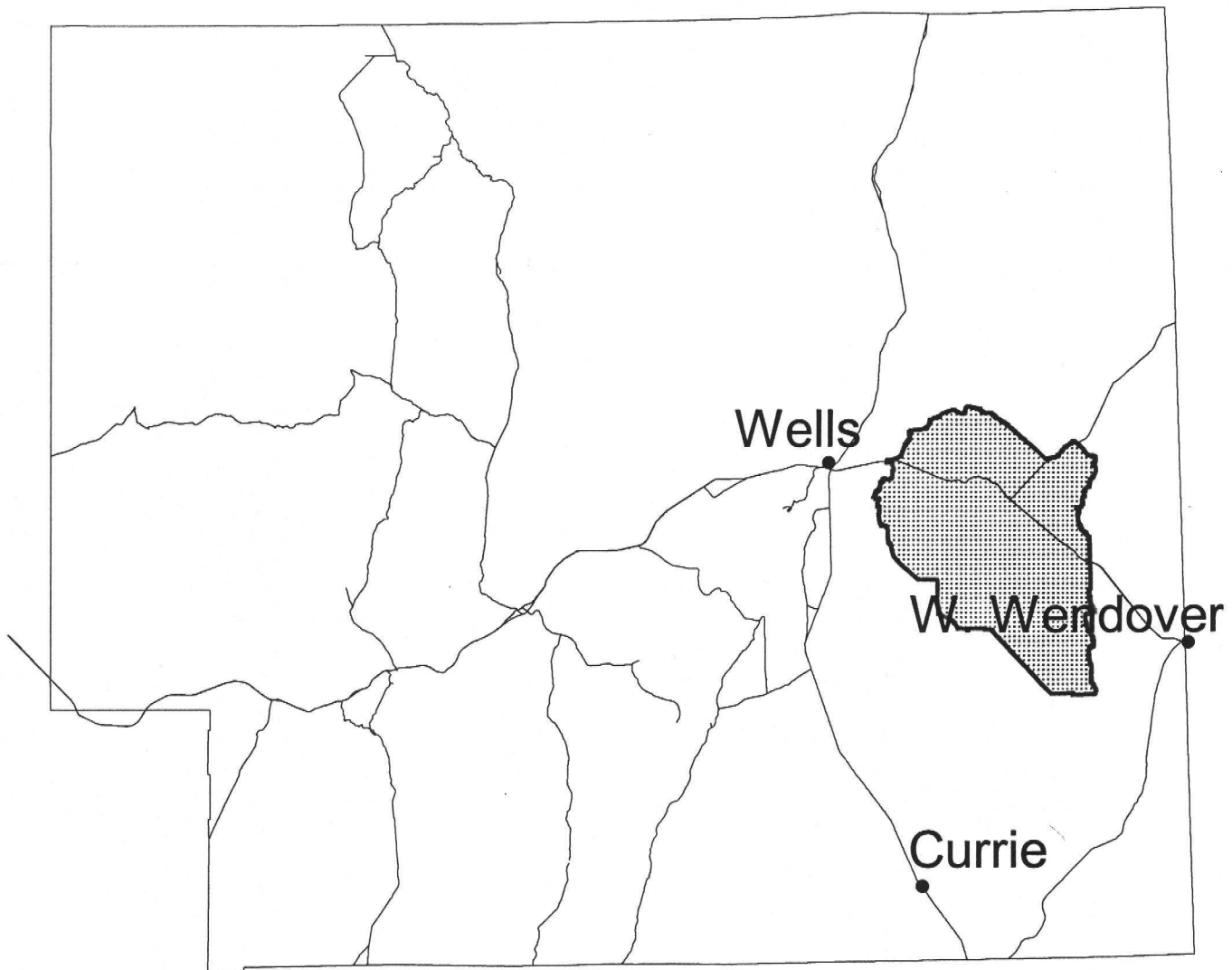
Scott and Laurel Egbert, Permittee(s) under Egbert Livestock LLC
Larry Schutte, Grazing Permittee under Parasol Ranching LLC

Other Interested Publics

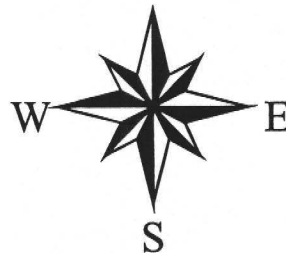
BSR Associates, Ltd.
Nevada Land and Resource Company
U.S. Fish and Wildlife Service
Nevada Division of Wildlife, Region II
Nevada Division of Agriculture
Nevada State Clearinghouse Department
Commission for the Preservation of Wild Horses
Elko Board of County Commissioners
Nevada Cattlemen's Association
Resource Concepts, Inc.
HTT Resource Advisors
Toiyabe Chapter of the Sierra Club
Wild Horse Organized Assistance
Friends of Nevada Wilderness
Charles and John Young
M. Jeanne Hermann

Appendix 1 : Maps

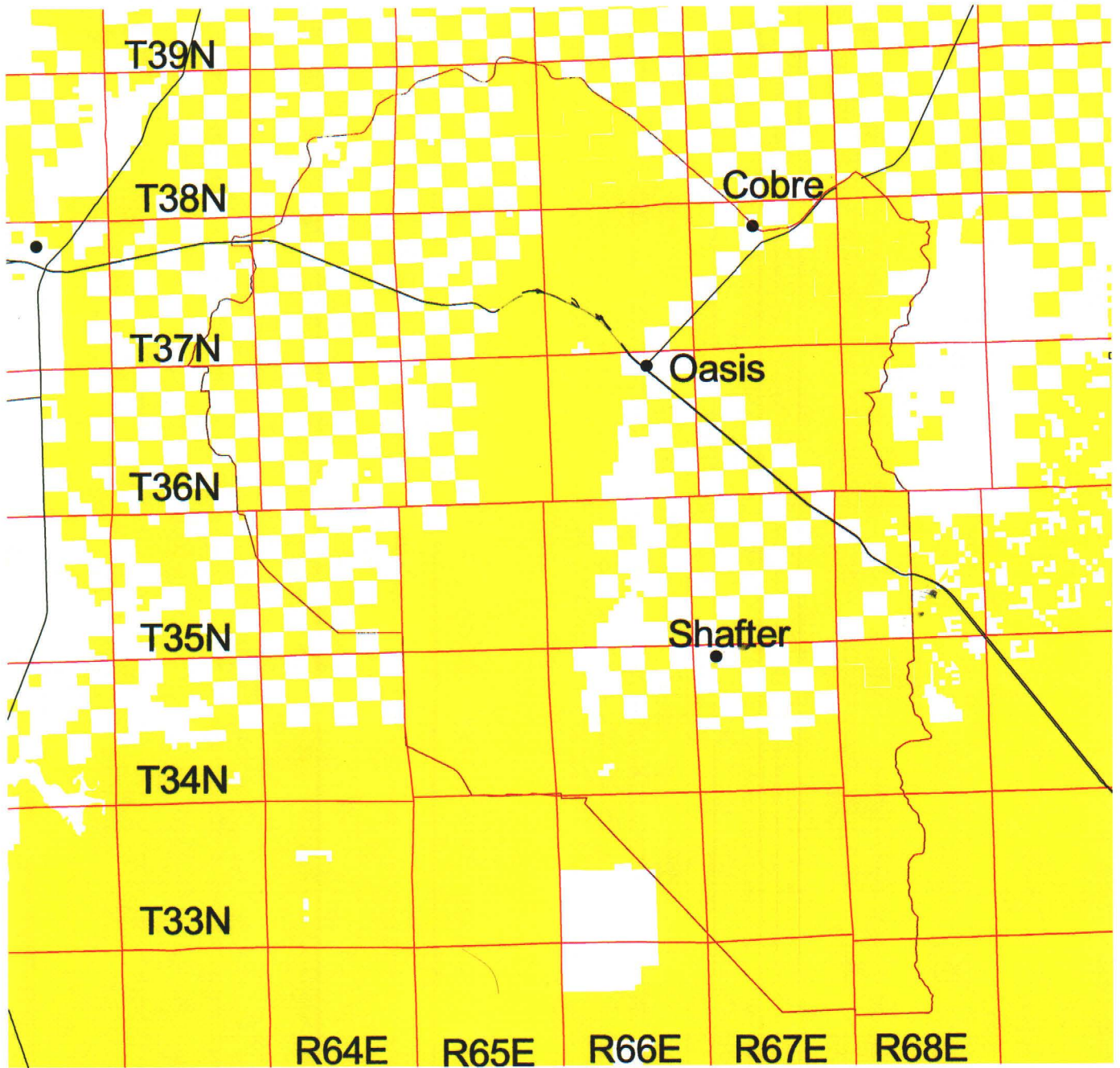
Big Springs General Location



 **Major roads**
 **Cities**



Big Springs Land Ownership



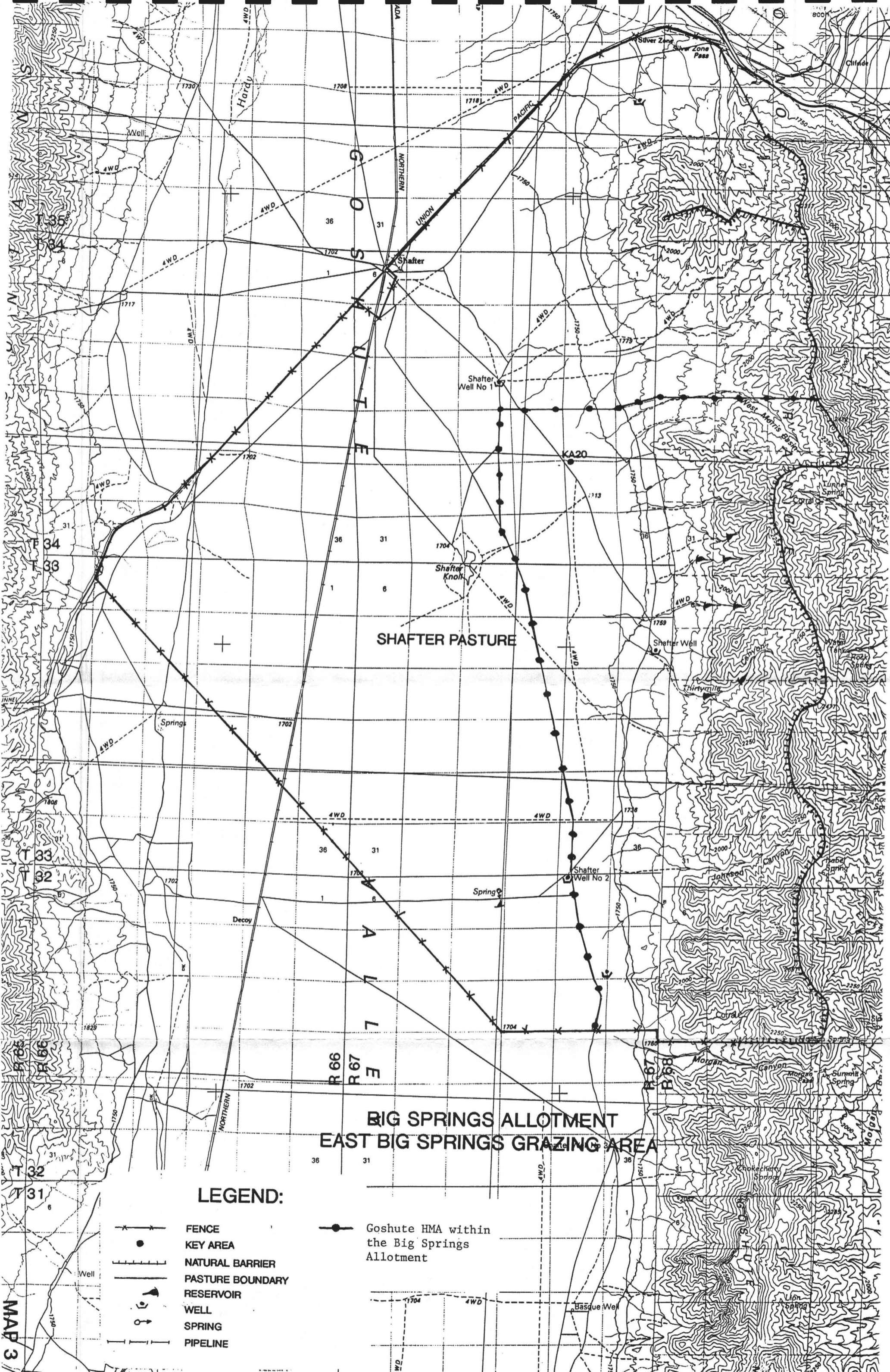
- Cities
- Major Roads
- Land Ownership
 - BLM
 - PVT



BIG SPRINGS ALLOTMENT EAST BIG SPRINGS GRAZING AREA

LEGEND:

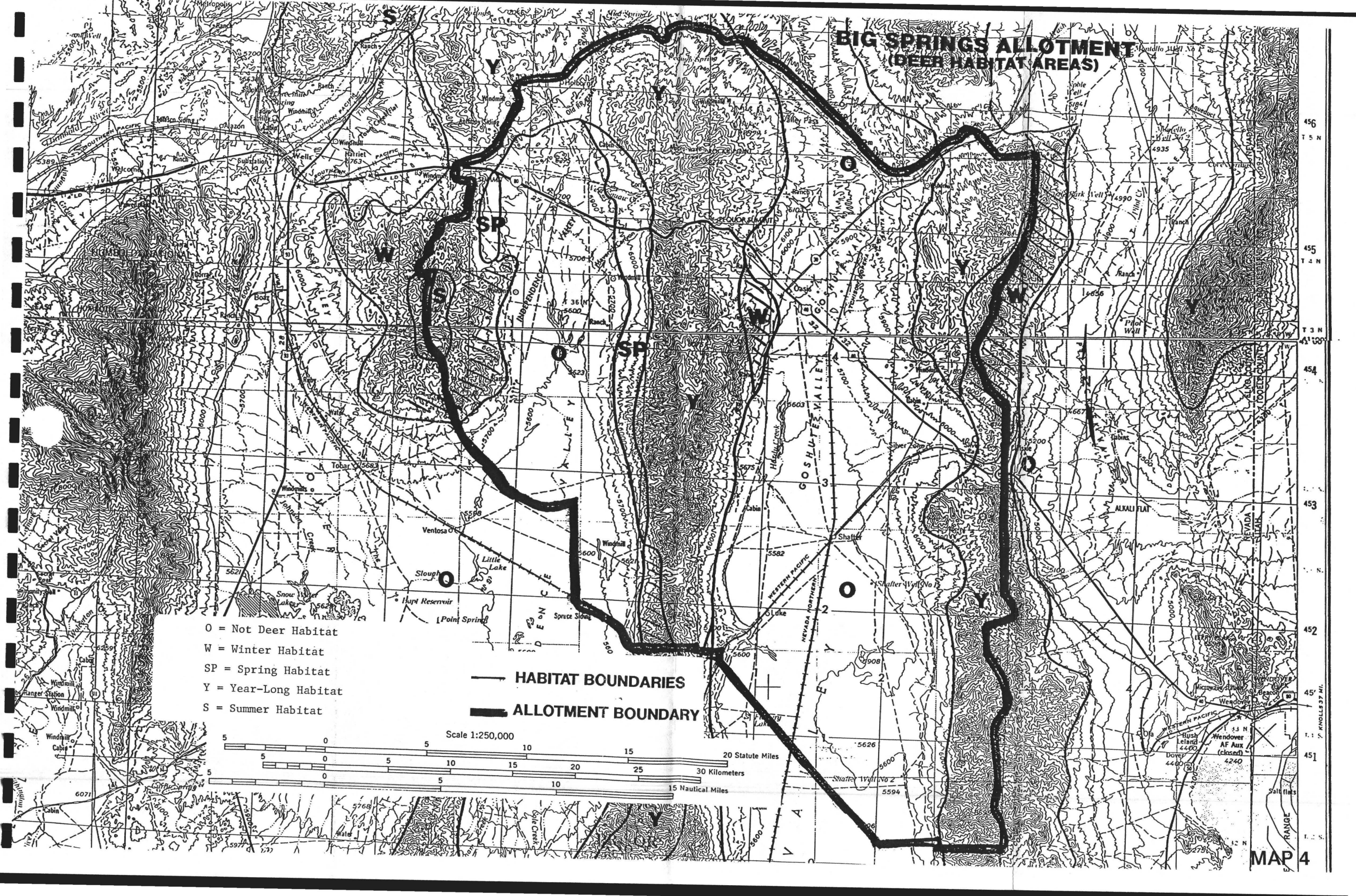
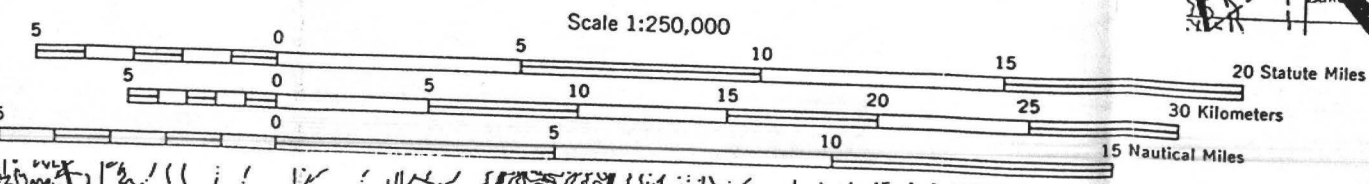
- FENCE
- KEY AREA
- NATURAL BARRIER
- PASTURE BOUNDARY
- RESERVOIR
- WELL
- SPRING
- PIPELINE
- Goshute HMA within the Big Springs Allotment



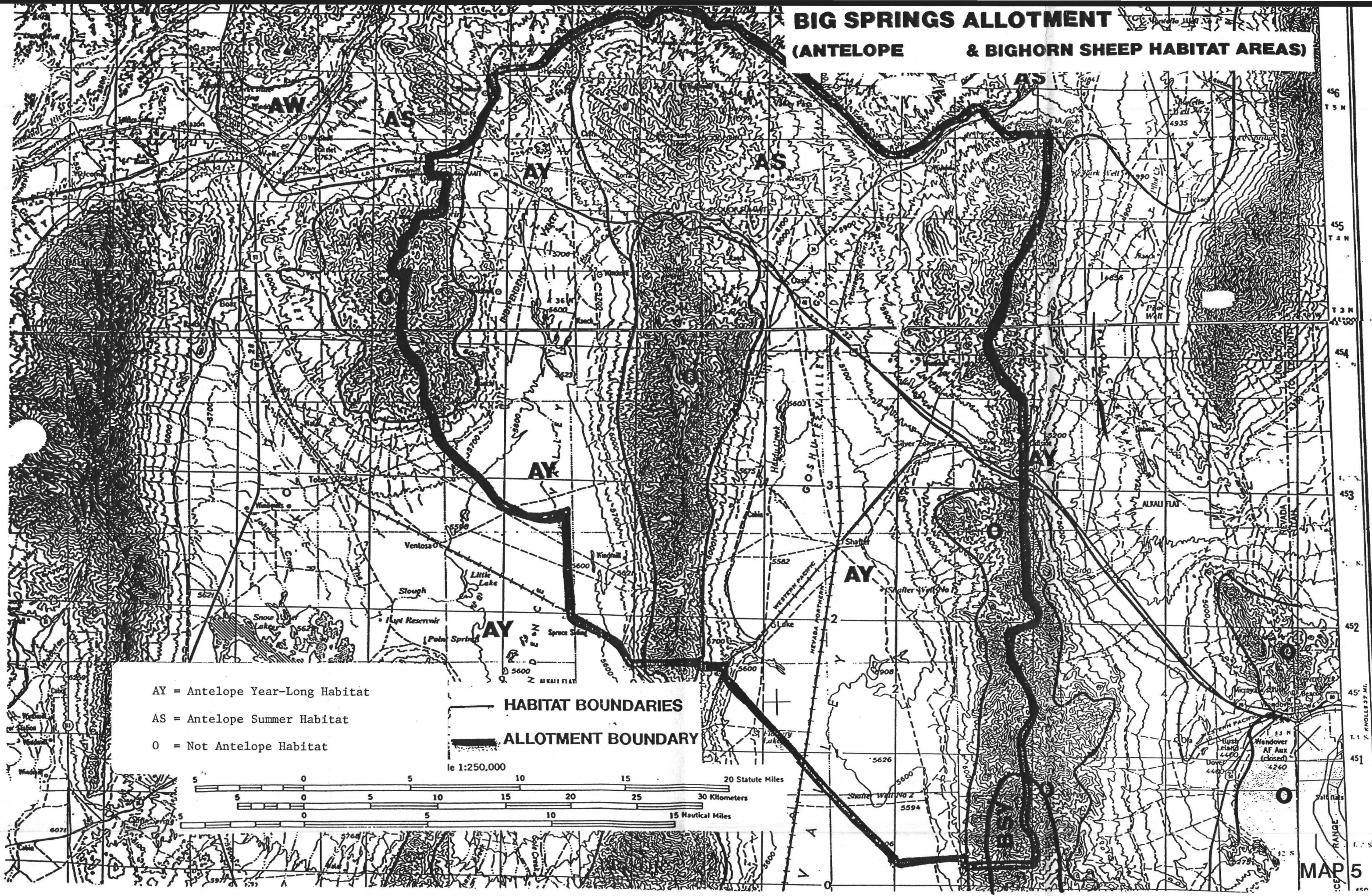
BIG SPRINGS ALLOTMENT (DEER HABITAT AREAS)

- O = Not Deer Habitat
- W = Winter Habitat
- SP = Spring Habitat
- Y = Year-Long Habitat
- S = Summer Habitat

— HABITAT BOUNDARIES
— ALLOTMENT BOUNDARY

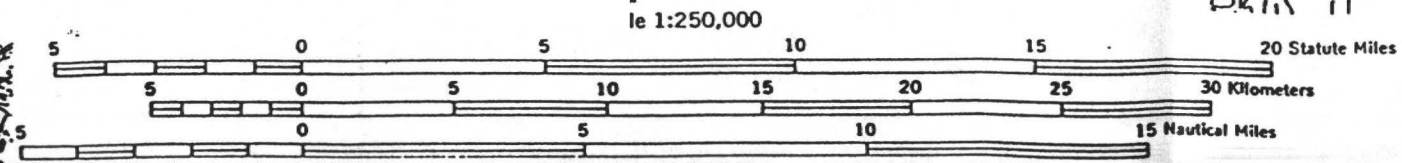


BIG SPRINGS ALLOTMENT (ANTELOPE & BIGHORN SHEEP HABITAT AREAS)

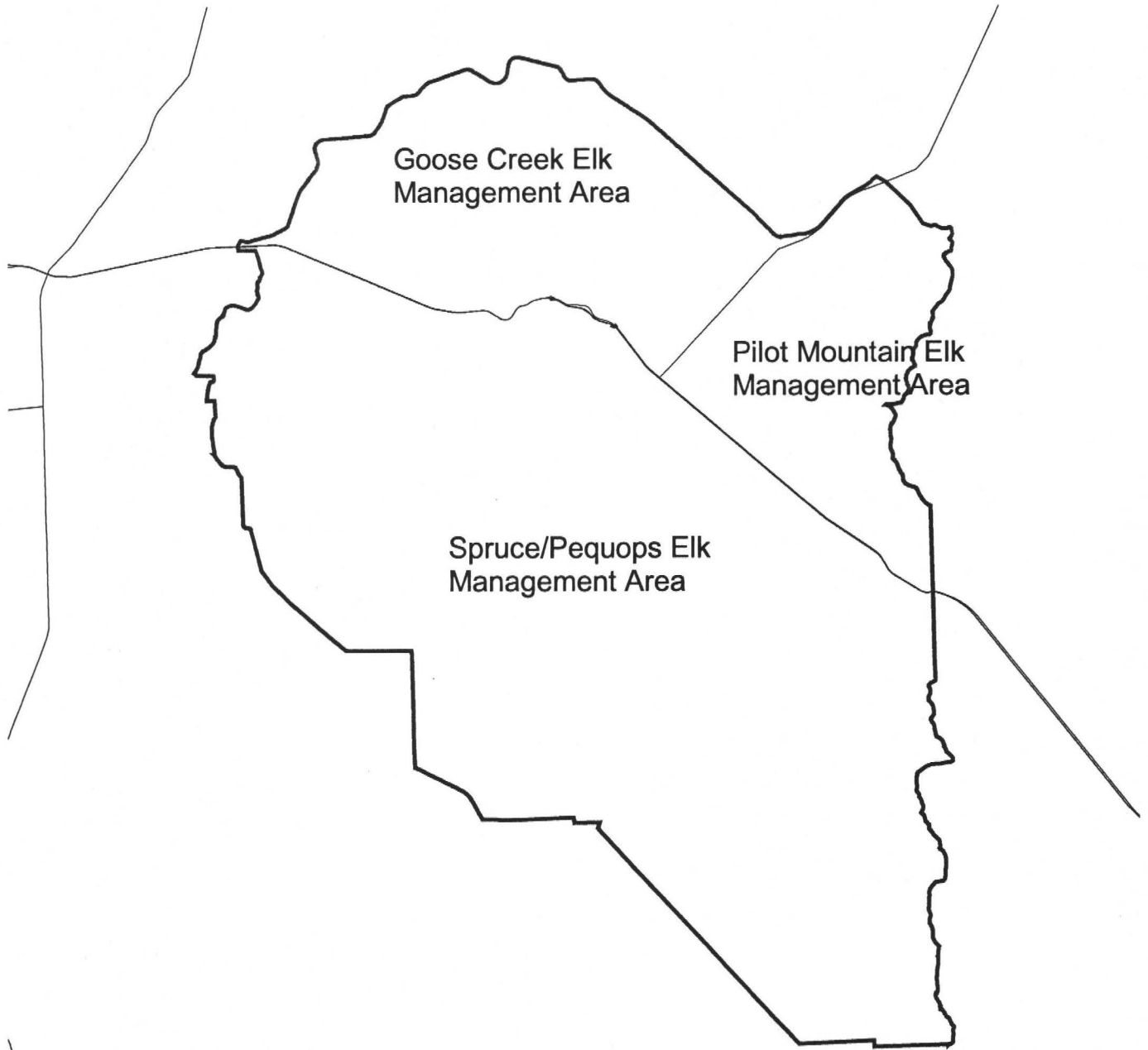


- AY = Antelope Year-Long Habitat
- AS = Antelope Summer Habitat
- 0 = Not Antelope Habitat

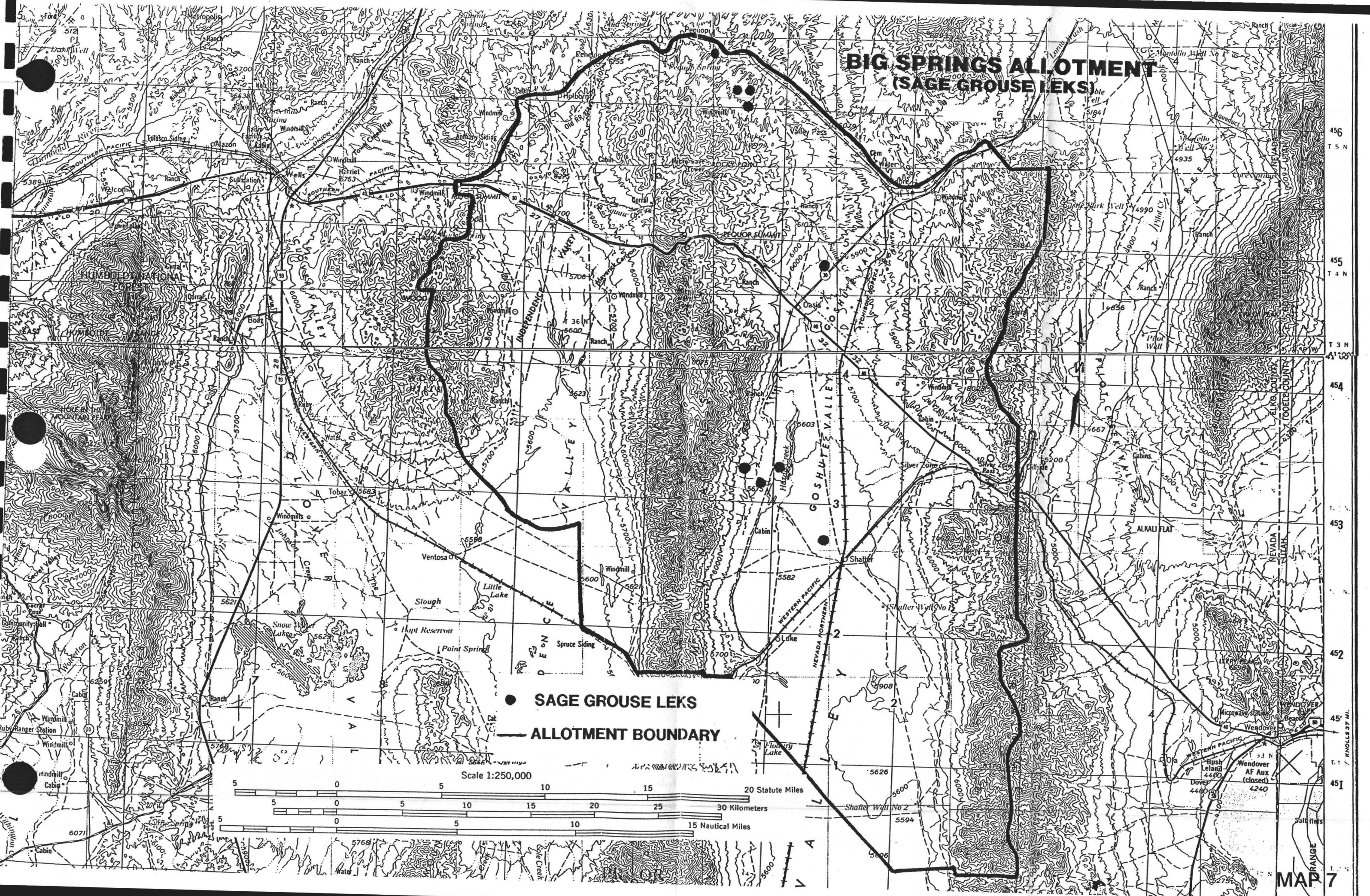
HABITAT BOUNDARIES
ALLOTMENT BOUNDARY



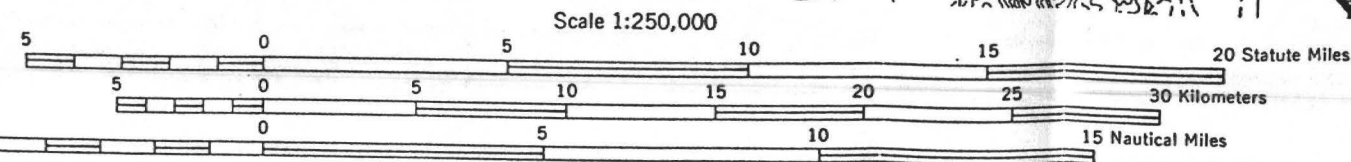
Big Springs Elk Use Areas

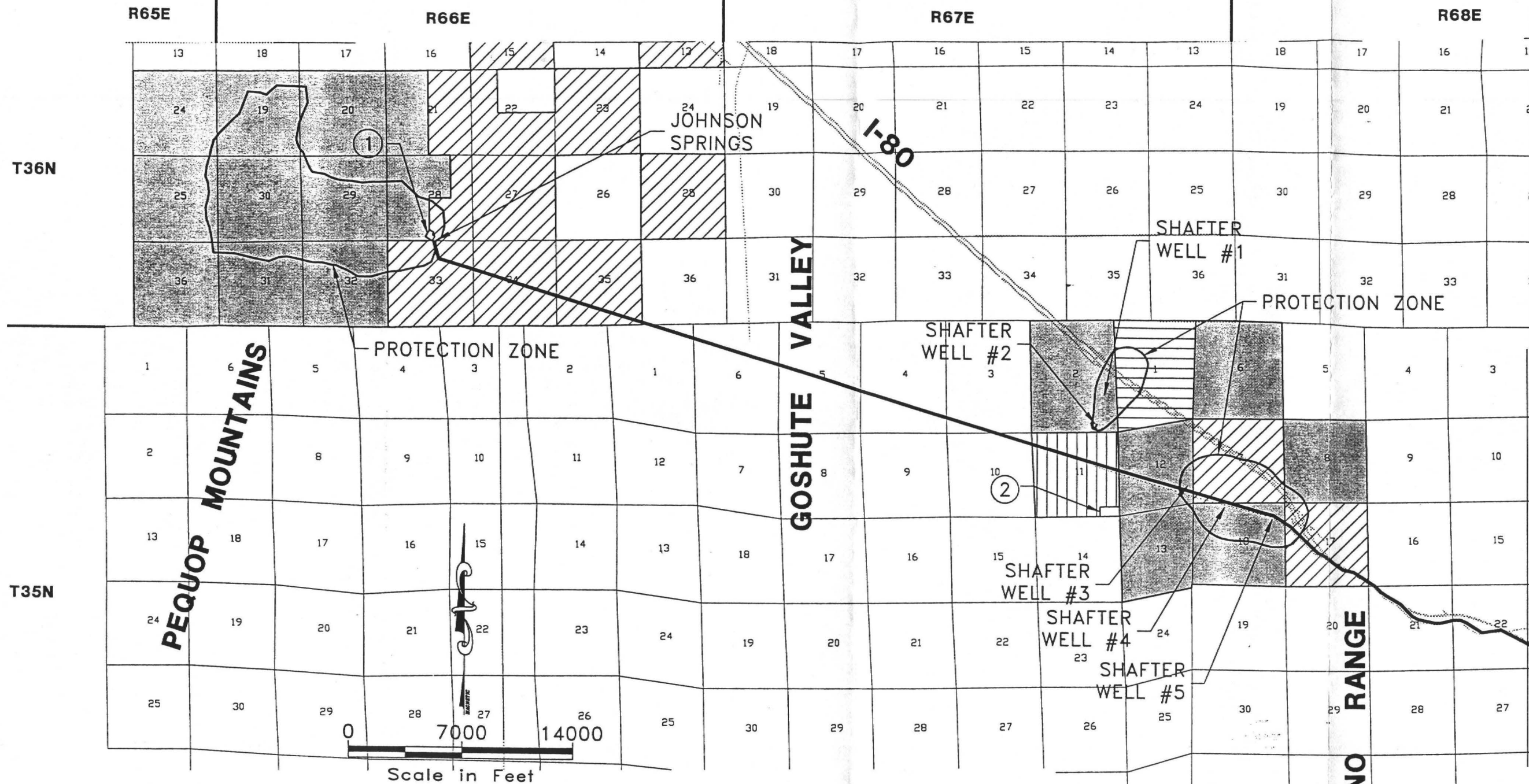


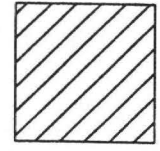
BIG SPRINGS ALLOTMENT (SAGE GROUSE LEKS)

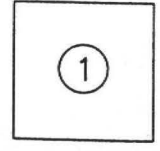



● SAGE GROUSE LEKS
— ALLOTMENT BOUNDARY

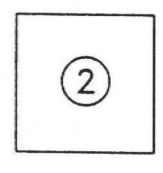





 BIG SPRINGS ASSOCIATION
535 COWPER STREET
PALO ALTO, CALIFORNIA 94301
BK. 974, PG. 104 2-24-1996

 BEAUMONT, ROBERT ESTATE
100 NO. ARLINGTON AVE., STE.340
RENO, NEVADA 89501
BK. 813 PG. 254 2-24-1993

 DOUBLE DOWN DEVELOPMENT LC
SILVER ZONE LC
438 EAST 200 SOUTH, STE. 300
SALT LAKE CITY, UTAH 84111

 WESTERN PACIFIC RAILROAD CO.
UNION PACIFIC CORP
1700 FARNHAM ST., FL 105
OMAHA, NEBRASKA 68102
BK. 85, PG. 00 10-10-85

 CITY OF WENDOVER, UTAH
BK. 519, PG. 663 3-31-86

 UNITED STATES OF AMERICA

NOTE:
OWNERSHIPS SHOWN ARE
THOSE SURROUNDING THE
PROTECTION ZONES

DESIGN: CAH
DRAWN: CAH
CHECKED: CGN
SCALE: 1" = 7000' H
DATE: _____

REVISIONS	NO.	DATE

WEST WENDOVER
DRINKING WATER SOURCE PROTECTION PLAN
OWNERSHIP MAP

AQUA
ENGINEERING, INC.
1610 SOUTH MAIN SUITE C BOUNTIFUL, UT 84010
PHONE (801) 298-1327
FAX (801) 298-0153

0 1/2 1
DRAWING IS NOT TO
SCALE IF BAR DOES
NOT MEASURE 1"

FIGURE:
**OW-1
MAP 8**

CAH 02/28/2000 X:\Wendover DWS\DRAWINGS\Ownership.dwg

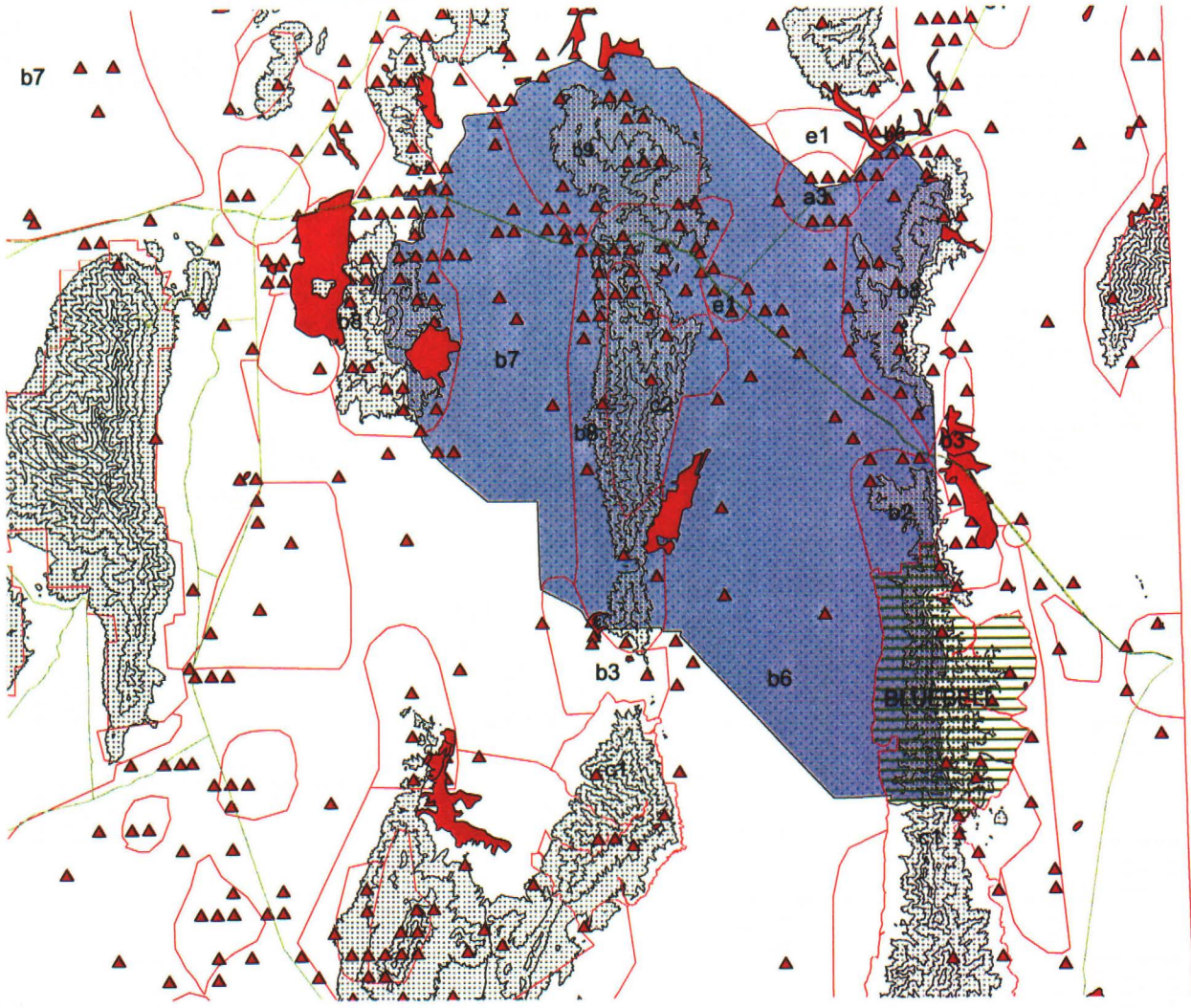
Big Springs Allotment



-  Major roads
-  Cities
-  Bluebell WSA



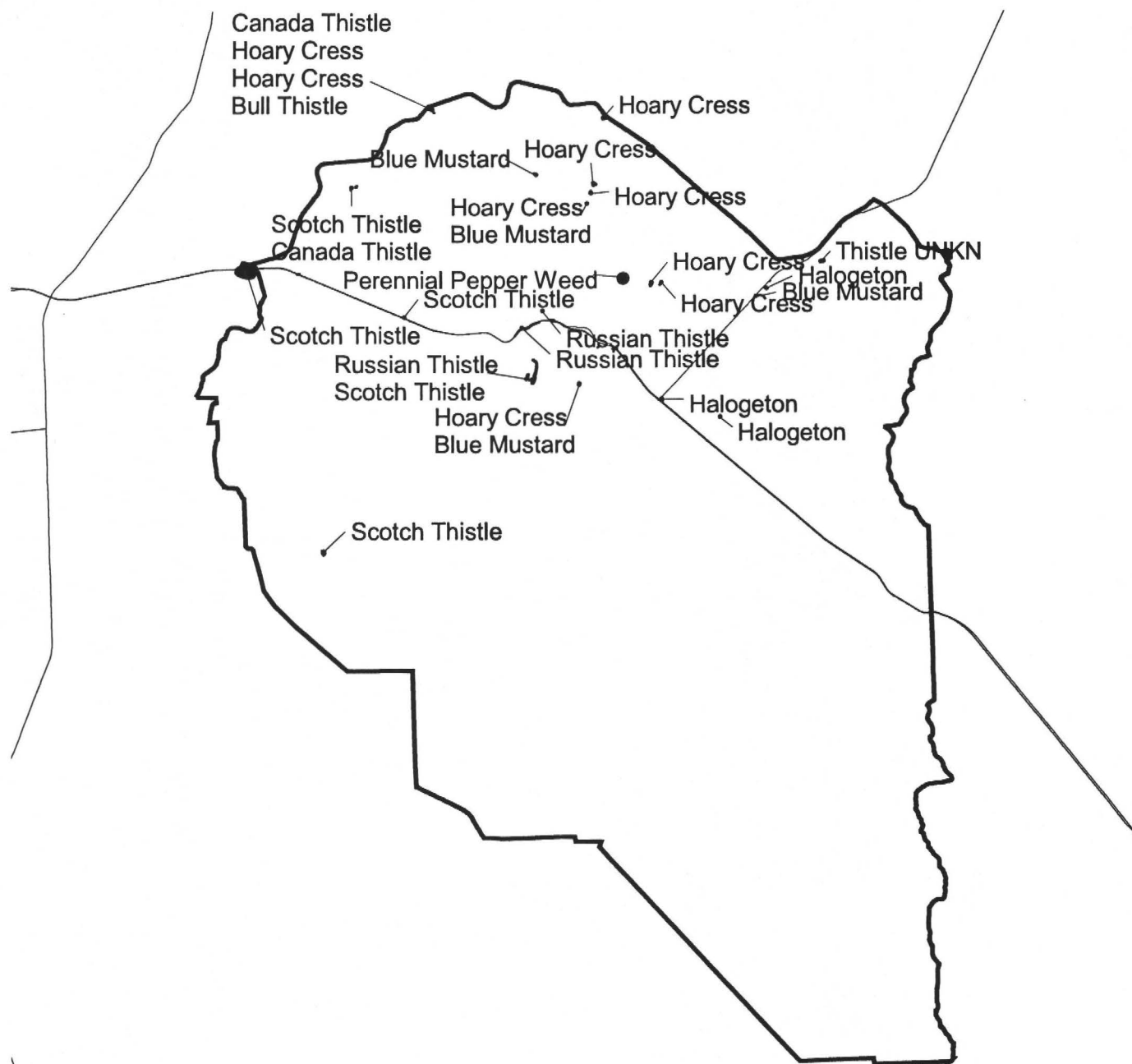
Map 10
 Big Springs Allotment
 Fire History and Fire Polygons



-  Dist_roads_mj
-  Large Fires 1999
-  Large Fires 1980-96
-  Wildland Fire Starts 1980-96
-  Fire Polygons
-  Bluebell WSA Boundary
-  Mountain Ranges
-  Big Springs Allotment
-  Fmz-rl



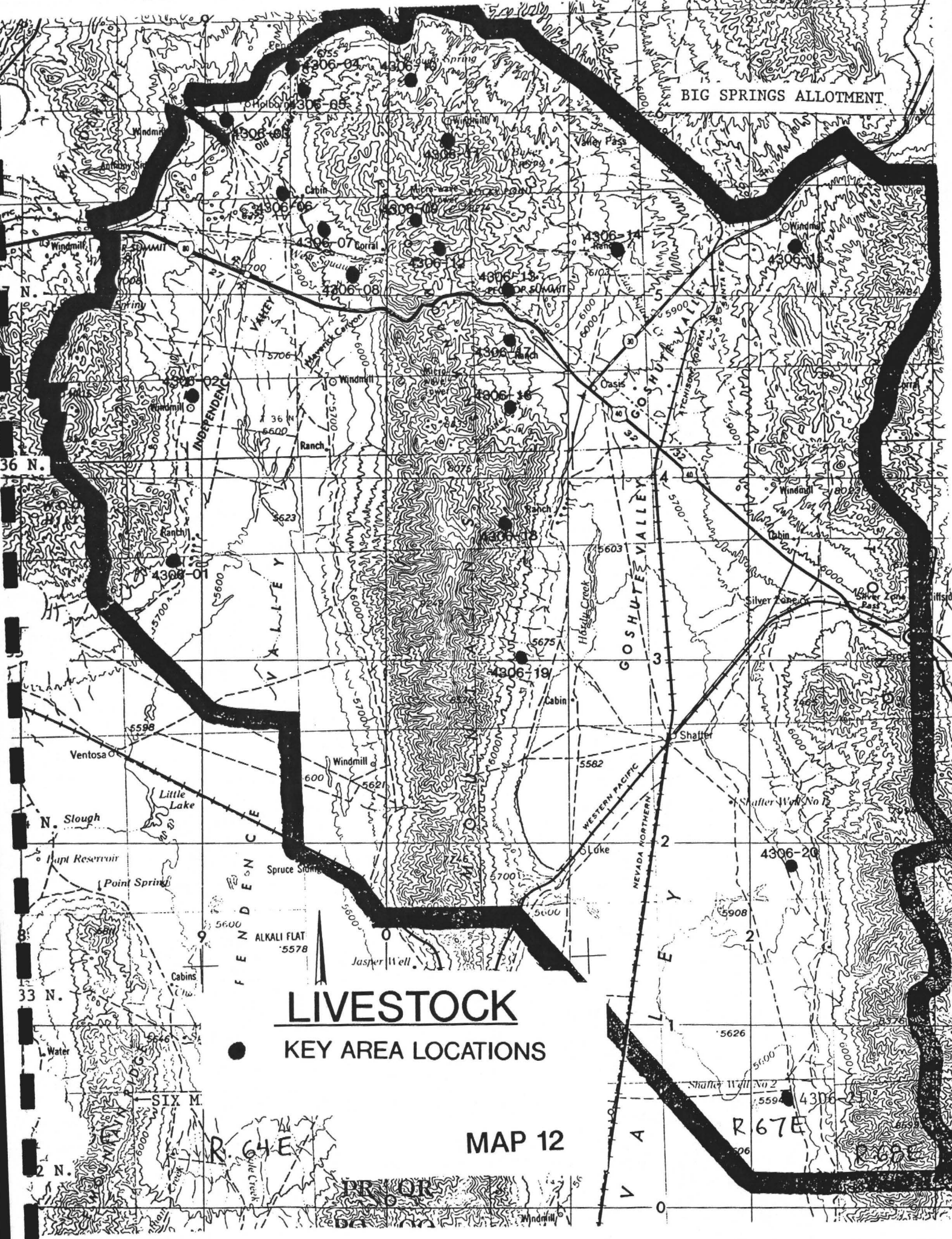
Big Springs Weeds



 Weeds
 Major Roads



BIG SPRINGS ALLOTMENT



LIVESTOCK

● KEY AREA LOCATIONS

MAP 12

36 N.

33 N.

32 N.

31 N.

F E N D E N C E

G O S H U T E V A L L E Y

W E S T E R N P A C I F I C

N E V A D A N O R T H E R N

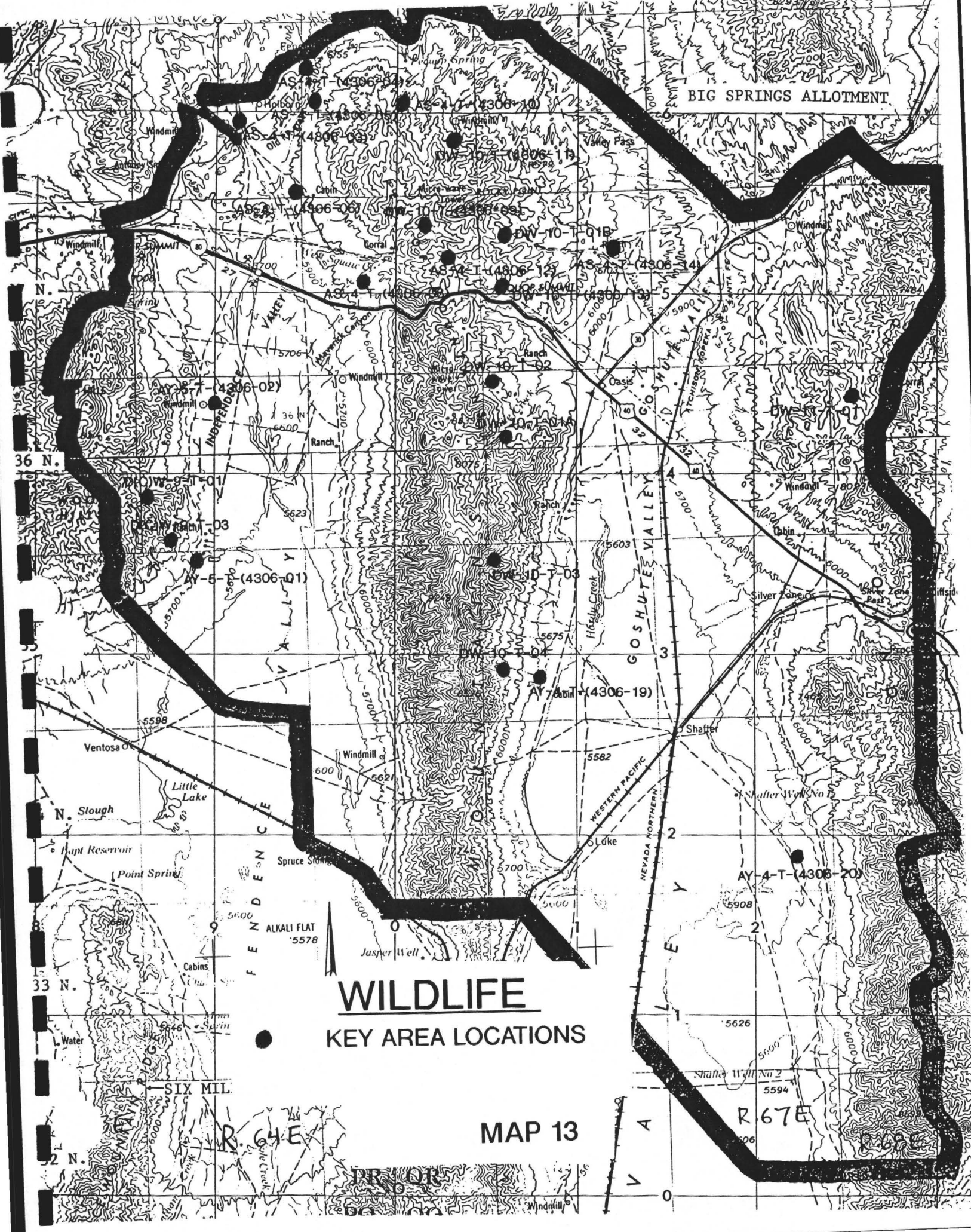
SIX M.

R. 64 E

R 67 E

P R I O R

BIG SPRINGS ALLOTMENT



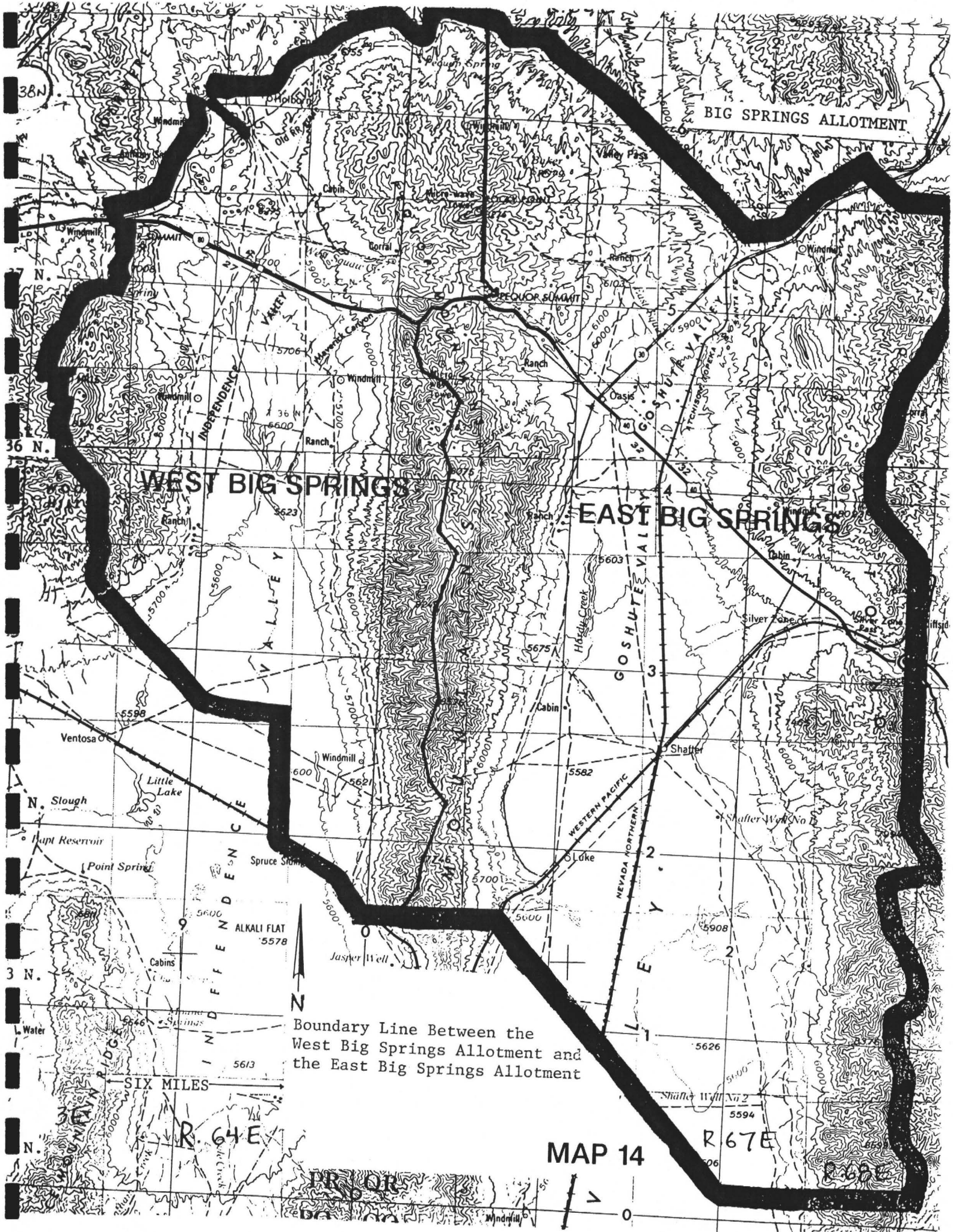
WILDLIFE
KEY AREA LOCATIONS

MAP 13

R. 64 E.

R 67 E

SIX MIL.



BIG SPRINGS ALLOTMENT

WEST BIG SPRINGS

EAST BIG SPRINGS

Boundary Line Between the West Big Springs Allotment and the East Big Springs Allotment

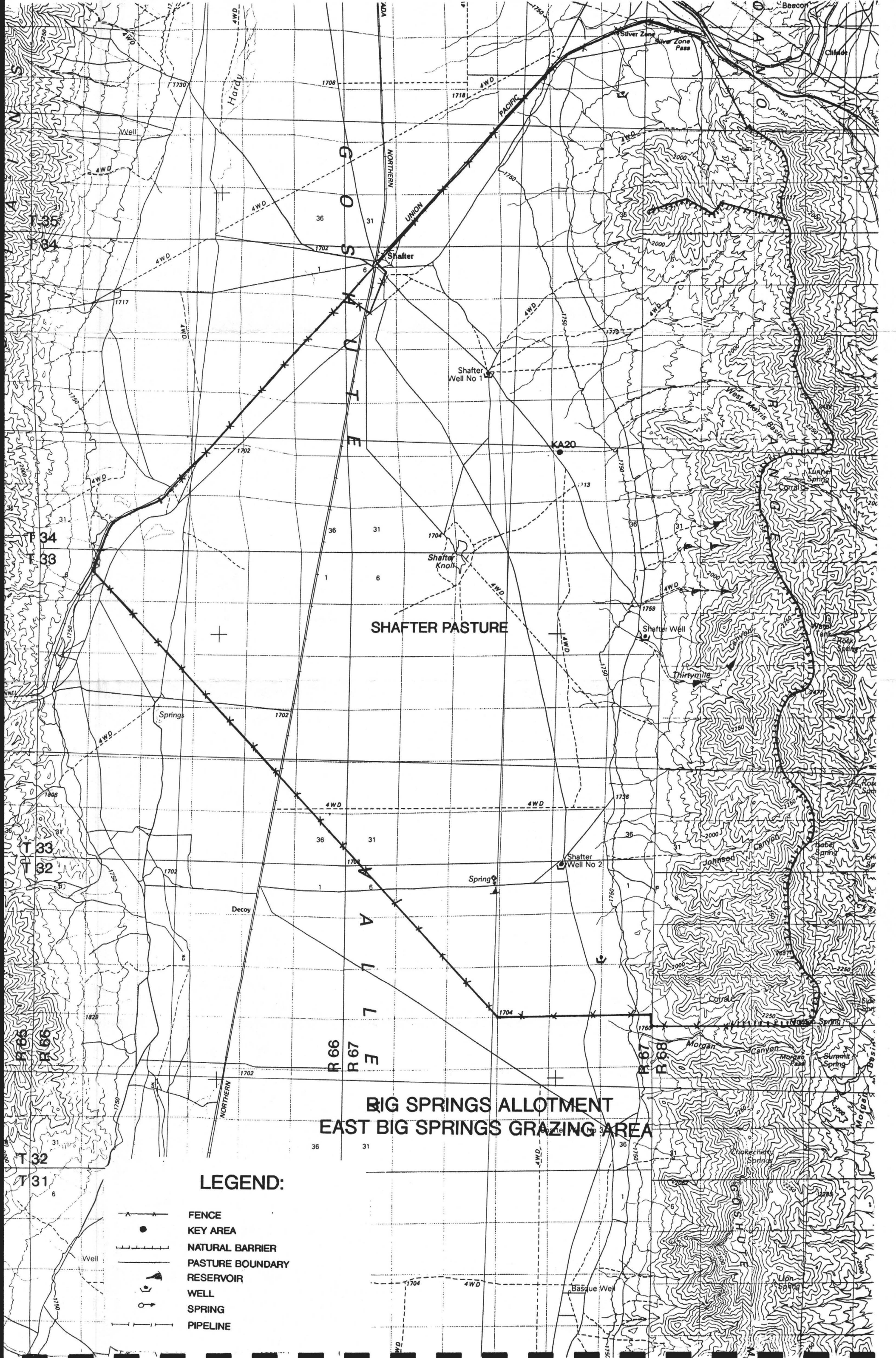
MAP 14

SIX MILES

R. 64E

R. 67E

PR. 100

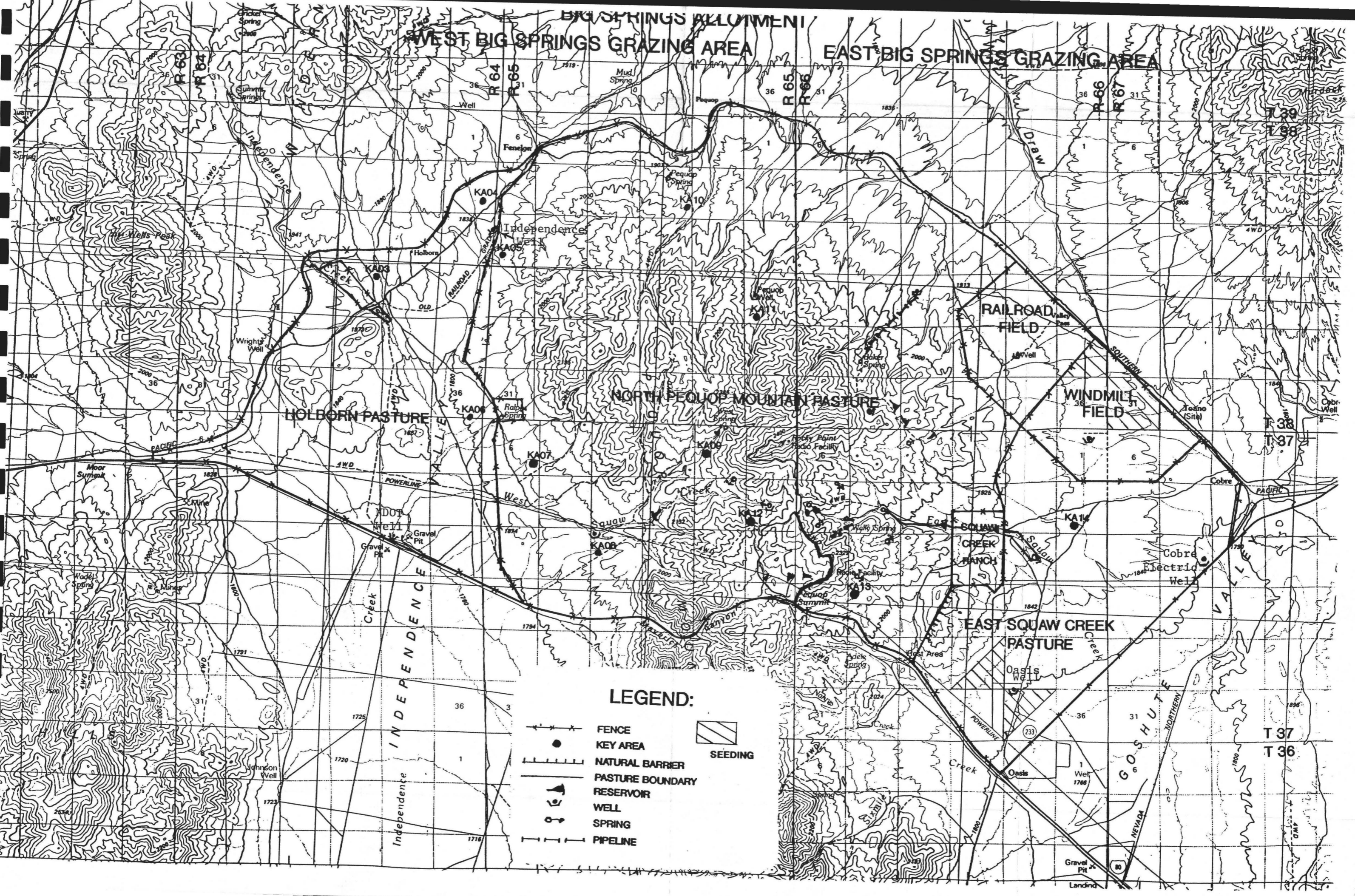


**BIG SPRINGS ALLOTMENT
EAST BIG SPRINGS GRAZING AREA**

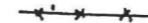

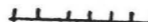





LEGEND:

- FENCE
- KEY AREA
- NATURAL BARRIER
- PASTURE BOUNDARY
- RESERVOIR
- WELL
- SPRING
- PIPELINE

BIG SPRINGS ALLOTMENT
WEST BIG SPRINGS GRAZING AREA **EAST BIG SPRINGS GRAZING AREA**



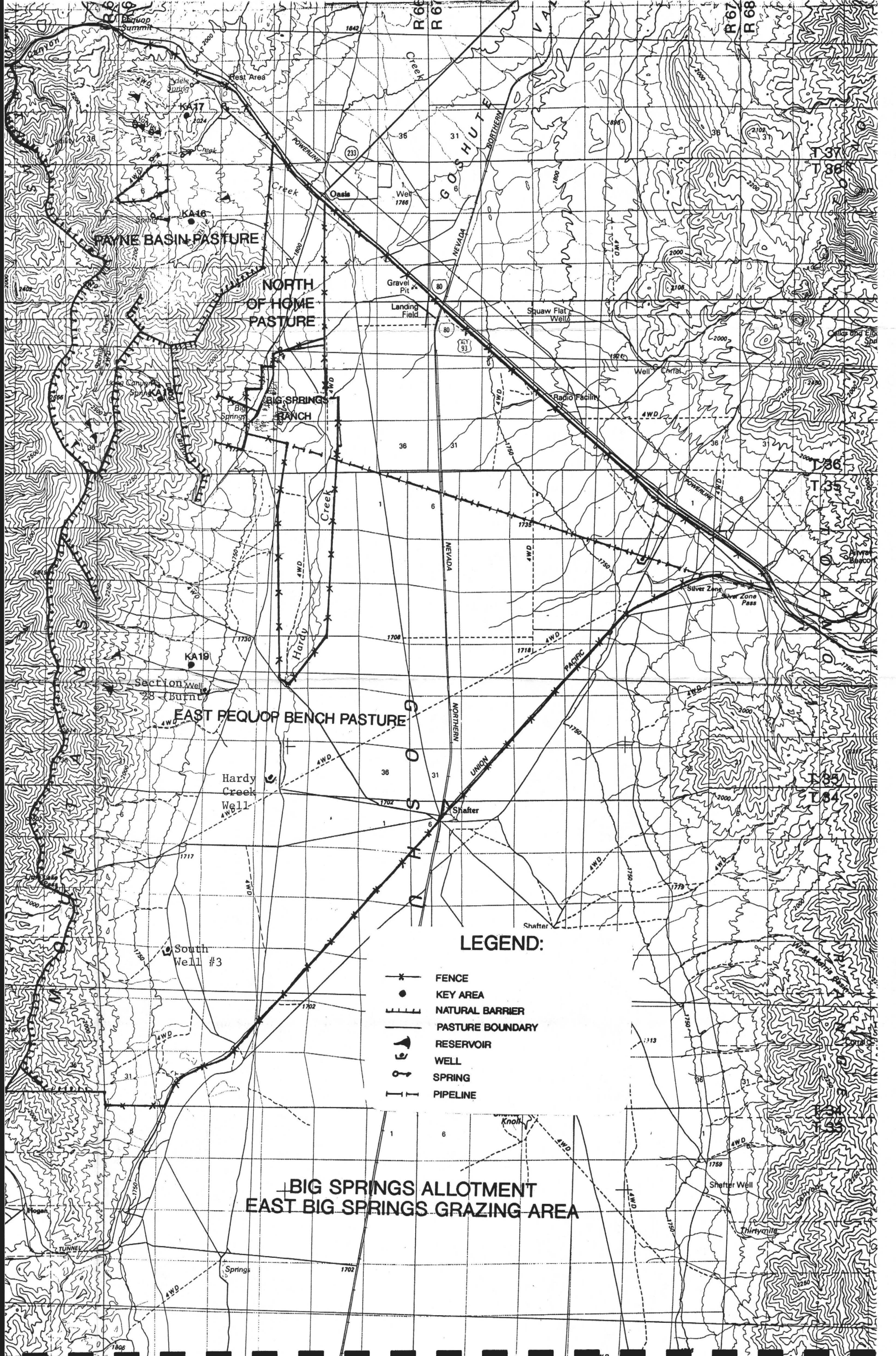
LEGEND:

-  FENCE
-  KEY AREA
-  NATURAL BARRIER
-  PASTURE BOUNDARY
-  RESERVOIR
-  WELL
-  SPRING
-  PIPELINE



T 37
T 36

Gravel Pit
Land



PAYNE BASIN PASTURE

NORTH OF HOME PASTURE

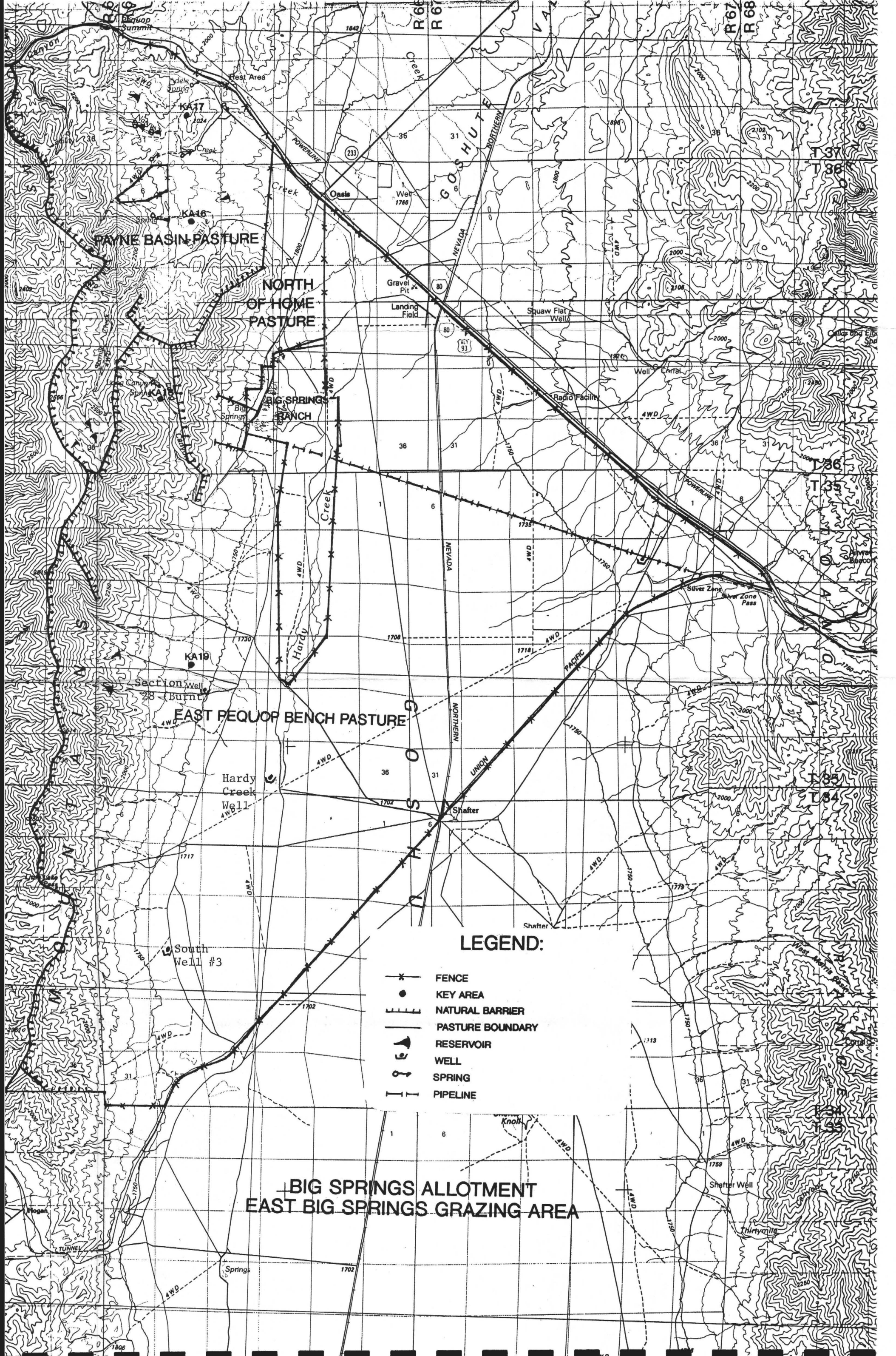
BIG SPRINGS BRANCH

EAST PEQUOP BENCH PASTURE

BIG SPRINGS ALLOTMENT
EAST BIG SPRINGS GRAZING AREA

LEGEND:

- * FENCE
- KEY AREA
- ||| NATURAL BARRIER
- PASTURE BOUNDARY
- ▲ RESERVOIR
- ⊙ WELL
- ⊕ SPRING
- PIPELINE



Appendix 2 : Objectives

A. STANDARDS AND GUIDELINES FOR RANGELAND HEALTH

Standard 1. Upland Sites: Upland soils exhibit infiltration and permeability rates that are appropriate to soil type, climate and land form.

Standard 2. Riparian and Wetland Sites: Riparian and wetland areas exhibit a properly functioning condition and achieve state water quality criteria.

Standard 3. Habitat: Habitats exhibit a healthy, productive, and diverse population of native and/or desirable plant species, appropriate to the site characteristics, to provide suitable feed, water, cover and living space for animal species and maintain ecological processes. Habitat conditions meet life cycle requirements of threatened and endangered species.

Standard 4. Cultural Resources: Land use plans will recognize cultural resources within the context of multiple use.

B. WELL RESOURCE MANAGEMENT PLAN OBJECTIVES, AS AMENDED:

1. Livestock Grazing

a. Public rangelands are managed to: enhance the productivity of the rangelands by preventing overgrazing and soil deterioration; stabilize the livestock industry dependent on public range; provide for inventory and categorization based on conditions and trends; and provide for orderly use, improvement and development.

b. To provide for livestock grazing consistent with other resource uses...

Attainment or non-attainment of the general objectives above are based on the conclusions for the more specific Rangeland Program Summary and Key Area Objectives listed below.

2. Wild Horses (As Applicable to the Big Springs Allotment)

a. Manage wild horses outside of checkerboard areas where land ownership patterns are not a problem for management.

b. Manage wild horses within HMAs and maintain a thriving natural ecological balance consistent with other resource needs.

c. Construct approximately eighteen miles of new fence to prevent the return of wild horses to checkerboard land patterns.

Specific objectives for wild horse management in the Big Springs Allotment have been developed based on the objectives above. These objectives are included under the Allotment Specific Objectives below.

3. Terrestrial Wildlife habitat

- a. Conserve and enhance wildlife habitat to the maximum extent possible.
- b. Eliminate all of the fencing hazards in crucial big game habitat and most of the fencing hazards in noncrucial big game habitat.
- c. Eliminate all of the high and medium priority terrestrial riparian habitat conflicts in coordination with other resource uses.

Attainment or non-attainment of the general objectives above are based on the conclusions under the Standards and Guidelines for Rangeland Health, and Allotment Specific Objectives below.

- d. Manage public lands in the Wells Resource Area on a sustained yield basis to support elk populations at a level consistent with other resource needs, while minimizing impacts to adjacent private and public land resources. Manage elk habitat in good or better condition within six management areas within the resource area to provide forage to sustain a total resource area target population level of 1,980 - 2,420.

The Big Springs Allotment falls within three larger elk management areas. The portion of the allotment north of Interstate 80 and west of the highway to Montello, Nevada falls within the Goose Creek Management Area. The portion of the allotment south of Interstate 80 falls within the Spruce/Pequop Management Area. The portion of the allotment north of Interstate 80 and east of the highway to Montello, Nevada falls within the Pilot Mountain Management Area. The conclusions pertaining to these three elk management areas are described under the allotment specific objectives below.

4. Riparian/Stream Habitat

Note: This RMP objective was directed at improving riparian/stream habitat for fish and thus improve riparian habitat for other resources. However, there is only one stream in this allotment (East Squaw Creek) and it is not classified as nor supports a fishery. Therefore, the conclusions related to riparian habitat objectives in this allotment are addressed through the Standards and Guidelines for Rangeland Health, and objectives for terrestrial riparian habitat.

C. ALLOTMENT SPECIFIC OBJECTIVES INCLUDING RANGELAND PROGRAM SUMMARY (RPS) OBJECTIVES:

The following objectives are tiered down from the more general RMP objectives.

1. *"Improve livestock distribution in the following pastures: North Pequop Mountains (02), Collar and Elbow (06), Shafter (08), East Squaw Creek (05), Independence Valley (12), and Holborn (01)."*
2. *"Improve ecological status in the following pastures: North Pequop Mountains (02), North Home Ranch (09), East Pequop Bench (07), Independence Valley (12), East Squaw Creek (05), Collar and Elbow (06), and Holborn (01)."*
3. *"Maintain ecological status in the following pastures: Payne Basin (10), Six Mile (11), and Shafter (08)."*
4. *"Improve or maintain all seasonal big game habitat in the Big Springs Allotment to good or excellent condition to provide forage and habitat capable of supporting the following reasonable numbers by 2005: 4,834 mule deer - 6,211 AUMs; 76 antelope - 182 AUMs; 22 bighorn sheep - 53 AUMs."*
5. *"Facilitate big game movements by modifying existing fences to Bureau standards where necessary (17 miles)."*
6. *"Improve, enhance, or develop 5 springs in the Big Springs Allotment to good or excellent condition."*
7. *"Improve crucial deer winter habitat by: cutting (thinning) within 17,000 acres of the pinyon/juniper forest type; chaining or burning and seeding 2,500 acres of sagebrush."*
8. *"Reintroduce bighorn sheep into the Goshute Mountains."*
9. *"Elk - (a.) Manage elk habitat in good or better condition within the Goose Creek Management Area to support a target elk population level of 1,070 plus or minus 10 percent. (Note: Some of the elk are expected to utilize habitat in the Big Springs Allotment.)*

(b.) Manage elk habitat in good or better condition within the Spruce/Pequop Management Area to support a target elk population level of 340 plus or minus 10 percent. (Note: Some of the elk are expected to utilize habitat in the Big Springs Allotment.)

(c.) Manage elk habitat in good or better condition within the Pilot Mountain Management Area to support a target elk population level of 250 plus or minus 10 percent. (Note: Some of the elk are expected to utilize habitat in the Big Springs Allotment.)"

10. *"Manage for a wild horse herd size which will maintain a thriving ecological balance consistent with other multiple uses while remaining within the wild horse herd management area."*
11. *Remove sufficient wild horses to attain the initial herd size and maintain populations at a level which will maintain a thriving natural ecological balance consistent with other resource values.*
12. *Construct approximately eighteen miles of new fence to prevent the return of wild horses to checkerboard land patterns.*

D. KEY AREA OBJECTIVES:

1. Short Term Objectives:

The specific short term objectives for each key area are summarized in Appendix 4. The short term objectives are utilization objectives.

The utilization objective for native key forage grasses is as follows:

- 50% average use; not to exceed 55% in any single year.

The utilization objective for introduced seeded grasses is as follows:

- 65% average use; not to exceed 70% in any single year.

The utilization objective for native half-shrubs such as white sage and saltbush is as follows:

- 55% average use; not to exceed 60% in any single year.

The utilization objective for bitterbrush is as follows:

- 25% average use by livestock at the end of the summer use period;
- 45% average use by wildlife and livestock combined at end of winter.

The utilization objective applicable to wild horses is as follows:

- 10% average use by wild horses prior to entry by livestock on winter range;
- 55% average use by wild horses and livestock combined at end of winter.

2. Long Term Objectives:

The specific long term objectives for each key area have been listed below.

4306-01 *"Improve the ecological condition as measured in 1987 from 34% to 40% of Potential Natural Community (PNC) by 1996."*

"Achieve a statistically significant upward trend on the key species ORHY, STIPA, and EULA5 by 1996."

4306-02 *"Improve the ecological condition as measured in 1987 from 36% to 40% of PNC by 1996."*

"Achieve a statistically significant upward trend on the key specie ELCI2 by 1996."

4306-03 *"Improve the ecological condition as measured in 1987 from 40% to 45% of PNC by 1996."*

"Achieve a statistically significant upward trend on the key species AGSP, PONE3, and AGSM by 1996."

4306-04 *"Improve the ecological condition as measured in 1987 from 34% to 40% of PNC by 1996."*

"Achieve a statistically significant upward trend on the key species AGSP, PONE3, and AGSM by 1996."

4306-05 *"Maintain the ecological condition as measured in 1987 at 66% of PNC by 1996."*

"Achieve a statistically significant upward trend on the key species AGSP, AGSM and STTH2 by 1996."

4306-06 *"Maintain the ecological condition as measured in 1987 at 56% of PNC by 1996."*

"Maintain a static or stable trend on the key specie SIHY, ELCI2 and ORHY by 1996."

4306-08 *"Improve the ecological condition as measured in 1987 from 43% to 50% of PNC by 1996."*

"Achieve a statistically significant upward trend on the key species AGSP by 1996."

4306-09 *"Improve the ecological condition as measured in 1987 from 43% to 50% of PNC by 1996."*

"Achieve a statistically significant upward trend on the key species FEID, STCO4, AGSP, and PUTR2 by 1996."

4306-10 *"Improve the ecological condition as measured in 1987 from 50% to 55% of PNC by 1996."*

"Achieve a statistically significant upward trend on the key species AGSP by 1996."

"Maintain a stable or static trend on the key species FEID by 1996."

4306-11 *"Maintain the ecological condition at 69% of PNC by 1996."*

"Maintain a stable or static trend on the key specie FEID by 1996."

"Achieve a statistically significant upward trend on the key specie PUTR2 by 1996."

4306-12 *"Maintain the ecological condition as measured in 1987 at 72% of PNC by 1996."*

"Maintain a stable or static trend on the key species AGSP and SIHY by 1996."

4306-13 *"Improve the ecological condition as measured in 1987 from 52% to 60% of PNC by 1996."*

"Achieve a statistically significant upward trend on the key species AGSP and PUTR2 by 1996."

4306-14 *"Maintain the ecological condition as measured in 1987 at 58% of PNC by 1996."*

"Maintain a stable or static trend on the key species STTH2 by 1996."

4306-16 *"Maintain the ecological condition as measured in 1987 at 89% of PNC."*

"Maintain a stable or static trend on the key specie AGSP by 1996."

4306-17 *"Improve the ecological condition as measured in 1987 from 36% to 45% of PNC by 1996."*

"Achieve a statistically significant upward trend on the key specie AGSP by 1996."

4306-19 Develop new objectives for this area following fire rehabilitation.

4306-20 *"Maintain the ecological condition as measured in 1987 at 80% of PNC by 1996.*

"Maintain a stable or static trend on the key species EULA5 and ATNU2 by 1996."

Appendix 3 : Wild Horse Census Data

Table 55. Aerial Census Data for the Big Springs Allotment, Shafter Pasture.

CENSUS DATE	# OF HORSES IN GOSHUTE HMA	# OF HORSES IN SHAFTER PASTURE	% of Herd in Shafter Pasture
7/1/83	200	108	54%
6/28/85	257	92	36%
7/14/88	135	14	10%
3/8/90	229	174	76%
9/5/91	194	35	18%
3/4/92	303	206	68%
6/5/92	404	131	32%
9/2/92	201	30	15%
1/27/93	434	215	50%
5/15/93	330	201	61%
8/5/93	251	78	31%
11/1/93	196	47	24%
1/24/94	236	101	43%
8/25/94	234	126	54%
3/16/95	281	186	66%
9/15/95	316	203	64%
2/10/97	382	226	59%
2/9/98	478	212	44%
8/3/00	370	173	47%
AVERAGE			45%

Table 56. Aerial Census Data for the Big Springs Allotment, Independence Pasture.

MONTH/YEAR	# OF HORSES IN SPRUCE- PEQUOP HMA/HA (including horse free area)	# OF HORSES IN INDEPENDENCE PASTURE	% OF HERD IN INDEPENDENCE PASTURE
3/25/87	116	51	44%
2/11/88	171	90	53%
7/11/88	90	29	32%
6/21/91	193	52	27%
3/5/92	77	29	38%
6/5/92	231	83	36%
9/3/92	129	65	50%
1/27/93	110	55	50%
5/15/93	107	60	56%
8/4/93	171	58	34%
01/94	102	8	8%
8/94	69	ND	ND
3/16/95	61	7	11%
2/19/97	190	11	6%
2/10/98	255	not flown	ND
8/3/00	217	63	29%
Average			34%

Table 57. Aerial Census Data for the Big Springs Allotment, East Pequop Bench Pasture.

MONTH/YEAR	# OF HORSES IN SPRUCE- PEQUOP HMA/HA (including horse free area)	# OF HORSES IN EAST PEQUOP BENCH PASTURE	% of HMA IN EAST PEQUOP BENCH PASTURE
08/86	116	44	38%
03/87	116	6	5%
02/88	171	9	5%
07/88 ¹	90	3	3%
06/91	193	77	40%
03/92	77	15	19%
06/92	231	58	25%
09/92	129	9	7%
01/93	110	33	30%
05/93	107	0	0%
08/93	171	62	36%
01/94	102	8	8%
08/94	69	ND	ND
3/16/95	61	5	8%
2/19/97	190	5	3%
2/10/98	255	0	0%
8/3/00	217	not flown	ND
AVERAGE			17%

Table 58 outlines annual actual use in terms of AUMs by wild horses. If only one census flight was conducted in a year, then the number of horses observed is multiplied by the the number of months they use the area. Beginning in 1992, seasonal flights were conducted. In these instances, the number of horses observed during one flight is the number used in calculating AUMs until the next flight.

Table 58. Actual Use by Wild Horses

Year	Wild Horse AUMs Shafter Pasture	Wild Horse AUMS Independence Pasture	Wild Horse AUMS East Pequop Bench	Total Wild Horse Use (AUMS)
1983-84	1296	n/d	n/d	1296
1984-85	1104	n/d	n/d	1104
1985-86	n/d	n/d	n/d	n/d
1986-87	n/d	612	559	1171
1987-88	n/d	1080	87	1167
1988-89	168	348	59	575
1989-90	317	n/d	n/d	317
1990-91	2401	n/d	n/d	2401
1991-92	1583	602	871	3056
1992-93	1420	736	317	2473
1993-94	1438	392	135	1965
1994-95	1496	103	60	1659
1995-96	2496	n/d	n/d	2496
1996-97	2785	132	60	2977
1997-98	3039	n/d	0	3039
1998-99	2214	n/d	n/d	2214
1999-00	2076	756	n/d	2832

Appendix 4 : Key Area Data

**BIG SPRINGS ALLOTMENT STUDIES SUMMARY MATRIX
KEY AREA 4306-01
INDEPENDENCE VALLEY PASTURE**

RANGE SITE: Shallow Calcareous Loam 8 - 10" (028BY011NV)
KEY SPECIES: WHITE SAGE (EULA5) INDIAN RICEGRASS (ORHY) THURBER NEEDLEGRASS (STTH2) NEEDLE & THREAD GRASS (STCO4)
UTILIZATION OBJECTIVE FOR THE KEY GRASS SPECIES = 50% AVERAGE; NOT TO EXCEED 55% IN ANY SINGLE YEAR.
UTILIZATION OBJECTIVE FOR WHITE SAGE = 55% AVERAGE BASED ON END OF WINTER USE; NOT TO EXCEED 60% IN ANY SINGLE YEAR.

Year	Actual Use AUMs ¹	Periods of Use	KMA Util. (percent)	Dates Read	KMA Use-Pattern Results ²	Dates Mapped	Pre-CAF Cap. (AUMs)	CAF	Post CAF Cap. (AUMs)	Ecological Stat./Prod.	Key Species Frequency
2000	NO DATA	NO DATA	NO DATA	NOT READ	NOT MAPPED	N/A	N/A		N/A	NOT READ	EULA5 - 41.5% ³ STCO4 - 64.0% ³ ORHY - 7.0% ³
1999	874 Cattle 201 WH	04/01/99 TO 06/30/99 04/01/99 TO 07/21/99	ORHY - 64% STCO4 - 32%	07/21/99	With the exception of the area represented by this key area, regrowth following grazing in the remainder of this pasture masked previous use resulting in a reading of no use to slight use in the remainder of this pasture.	07/21/99	840		N/A	NOT READ	NOT READ
	1,593 Cattle	09/01/99 TO 03/31/00	NO DATA	NOT READ		NO DATA					
1998	647 Cattle	04/01/98 TO 06/30/98	NO DATA	NOT READ	NOT MAPPED	N/A	NO DATA		N/A	NOT READ	NOT READ
	1,178 Cattle 70 WH	12/07/98 TO 03/31/99 11/01/98 TO 03/31/99	EULA5 - 39%	07/21/99			1,760				
1997	1,982 Cattle 87 WH	04/01/97 TO 07/31/97 04/01/97 TO 11/06/97	EULA5 - 34% STTH2 - 60% ORHY - 60%	11/06/97	NOT MAPPED	N/A	1,724		N/A	NOT READ	NOT READ
	771 Cattle	01/07/98 TO 03/31/98	NO DATA	NOT READ			NO DATA				
1996	1,287 Cattle	03/14/96 TO 06/30/96	NO DATA	NOT READ	NOT MAPPED	N/A	NO DATA		N/A	NOT READ	NOT READ
	641 Cattle	02/06/97 TO 03/31/97									
1995	983 Cattle	04/08/95 TO 07/31/95	NO DATA	NOT READ	NOT MAPPED	N/A	NO DATA		N/A	NOT READ	NOT READ
1994	NO USE	N/A	NO USE	N/A	NOT MAPPED	N/A	N/A	.59	N/A	NOT READ	NOT READ
1993	NO USE	N/A	NO USE	N/A	NOT MAPPED	N/A	N/A	1.05	N/A	NOT READ	NOT READ
1992	NO DATA	NO DATA	NO DATA	NOT READ	NOT MAPPED	N/A	NO DATA	.80	NO DATA	NOT READ	NOT READ
1991	(236 ⁴) Cattle	02/01/92 TO 02/28/92	NO DATA	NOT READ	NOT MAPPED	N/A	NO DATA	.56	NO DATA	NOT READ	NOT READ
1990	1,654 Cattle 288 WH	02/01/91 TO 06/01/91 11/01/90 TO 06/01/91	EULA5 - 0% STTH2 - 0% ORHY - 0%	06/21/91	NOT MAPPED	N/A	(9,710)	.70	N/A	19% OF PNC (early seral) 513 lbs/acre	EULA5 - 36.0% ³ STTH2 - 38.0% ³ ORHY - 4.5% ³

Year	Actual Use AUMs ¹	Periods of Use	KMA Util. (percent)	Dates Read	KMA Use-Pattern Results ²	Dates Mapped	Pre-CAF Cap. (AUMs)	CAF	Post CAF Cap. (AUMs)	Ecological Stat./Prod.	Key Species Frequency
1989	NO DATA on Cattle 165 WH	NO DATA 11/01/89 TO 04/03/90	EULA5 - 85% STTH2 - 26% ORHY - 32%	04/03/90	NOT MAPPED	N/A	NO DATA	.90	NO DATA	NOT READ	NOT READ
1988	1,878 Cattle 220 WH	11/01/88 TO 04/30/89 11/01/88 TO 06/09/89	EULA5 - 17% STTH2 - 10% ORHY - 10%	06/09/89	HEAVY - 2% MODERATE - 4% LIGHT - 5% SLIGHT - 29% NOT MAPPED - 60%	06/09/89	6,788	.63	10,773	NOT READ	NOT READ
1987	1,068 Cattle 382 WH	11/23/87 TO 05/31/88 11/01/87 TO 05/10/88	EULA5 - 58% STTH2 - 54% ORHY - 17%	05/10/88	HEAVY - 1% MODERATE - 3% LIGHT - 4% SLIGHT - 9% NOT MAPPED - 83%	06/03/88	1,375	.86	1,599	34% OF PNC (mid seral) 690 lbs/acre	EULA5 - 46.5% ³ STTH2 - 51.0% ³ ORHY - 7.0% ³
AVG.	1,820 Cattle 236 WH 1,238 Cattle 144 WH SPG/SU 1,050 Cattle 225 WH F/W/SPG		EULA5 - 50% WINTER USE EULA5 - 17% SPRING USE STIPA - 30% ORHY - 30.5%				2,497 1,282 SPG/SU 3,308 F/W/SPG				

FOOTNOTES:

WH = Wild Horses; Items in parenthesis (-) not used.

F = FALL; W = WINTER; SPG = SPRING; SU = SUMMER

1 Actual use includes both cattle and wild horses.

2 Utilization levels read during use pattern mapping may include other species in addition to key species.

3 Statistical analysis of EULA5 shows a significant decrease between 1987 and 1990 and no significant change between 1987 and 2000.

Statistical analysis of ORHY shows no significant change between any years.

Statistical analysis of STIPA species (needlegrasses) shows a significant decrease in 1990 compared to 1987 and 2000; however, there was a significant increase by 2000 compared to both the 1987 and 1990 data.

4 This actual use figure may be incomplete.

**BIG SPRINGS ALLOTMENT STUDIES SUMMARY MATRIX
KEY AREA 4306-02
INDEPENDENCE VALLEY PASTURE**

**RANGE SITE: SALINE BOTTOM (028BY004NV)
KEY SPECIES: BASIN WILDRYE (ELCI2); UTILIZATION OBJECTIVE = 50% AVERAGE; NOT TO EXCEED 55% IN ANY SINGLE YEAR.**

Year	Actual Use AUMs ¹	Periods of Use	KMA Util. (percent)	Dates Read	KMA Use-Pattern Results ⁴	Dates Mapped	Pre-CAF Cap. (AUMs)	CAF	Post CAF Cap. (AUMs)	Ecological Stat./Prod.	Key Species Frequency
1999	874 1,593	04/01/99 TO 06/30/99 09/01/99 TO 03/31/00	NO DATA	NO DATA	With the exception of the area represented by key area 4306-01, regrowth following grazing in this pasture masked previous use resulting in a reading of no use to slight use in the remainder of this pasture.	07/21/99	N/A		N/A	N/A	N/A
1998	647 1,178	04/01/98 TO 06/30/98 12/07/98 TO 03/31/98	NO DATA	NOT READ	NOT MAPPED	N/A	N/A		N/A	NOT READ	NOT READ
1997	1,982 771	04/01/97 TO 07/31/97 01/07/98 TO 03/31/98	ELCI2 - 19% NO DATA	11/06/97 NOT READ	NOT MAPPED	N/A	5,737		N/A	NOT READ	NOT READ
1996	1,287 641	03/14/96 TO 06/30/96 02/06/97 TO 03/31/97	NO DATA	NOT READ	NOT MAPPED	N/A	N/A		N/A	NOT READ	NOT READ
1995	983	04/08/95 TO 07/31/95	NO DATA	NOT READ	NOT MAPPED	N/A	N/A		N/A	NOT READ	NOT READ
1994	NO USE	N/A	NO USE	N/A	NOT MAPPED	N/A	N/A	.59	N/A	NOT READ	NOT READ
1993	NO USE	N/A	NO USE	N/A	NOT MAPPED	N/A	N/A	1.05	N/A	NOT READ	NOT READ
1992	NO DATA	NO DATA	NO DATA	NOT READ	NOT MAPPED	N/A	NO DATA	.80	NO DATA	NOT READ	NOT READ
1991	236 ⁶	02/01/92 TO 02/28/92	NO DATA	NOT READ	NOT MAPPED	N/A	NO DATA	.56	NO DATA	NOT READ	NOT READ
1990	1,654	02/01/91 TO 06/01/91	ELCI2 - 16%	06/21/91	NOT MAPPED	N/A	5,686	.70	8,122	23% OF PNC (early seral) 1,046 lbs/acre	ELCI2 - 44.0 ⁵
1989	NO DATA	NO DATA	NO USE ^{2,3}	11/29/89	NOT MAPPED	N/A	NO DATA	.90	NO DATA	NOT READ	NOT READ
1988	1,878	11/01/88 TO 04/30/89	NO DATA	NOT READ	HEAVY - 2% MODERATE - 4% LIGHT - 5% SLIGHT - 29% NOT MAPPED - 60%	06/09/89	NO DATA	.63	NO DATA	NOT READ	NOT READ
1987	1,068	11/23/87 TO 05/31/88	ELCI2 - 5%	06/30/88	HEAVY - 1% MODERATE - 3% LIGHT - 4% SLIGHT - 9% NOT MAPPED - 83%	06/30/88	11,748	.86	13,660	36% OF PNC (mid seral) 1,133 lbs/acre	ELCI2 - 39.5%
AVG.	1,820		ELCI2 - 13%				7,724		10,891		

FOOTNOTES:

- 1 This figure represents livestock use only.
- 2 The well in the vicinity of this key area was not used, consequently showing no grazing use in the area.
- 3 A utilization transect was not conducted because use pattern mapping revealed no use in the vicinity of the key area by cattle.
- 4 Utilization levels read during use pattern mapping may include other species in addition to key species.
- 5 ANOVA results show no significant change between 1987 and 1990.
- 6 This actual use figure may be incomplete.

**BIG SPRINGS ALLOTMENT STUDIES SUMMARY MATRIX
KEY AREA 4306-03
HOLBORN PASTURE**

RANGE SITE: LOAMY 8-10" (025XY019NV)
KEY SPECIES: BLUEBUNCH WHEATGRASS (AGSP) NEVADA BLUEGRASS (PONE3) WESTERN WHEATGRASS (AGSM)
THURBER NEEDLEGRASS (STTH2) INDIAN RICEGRASS (ORHY)
UTILIZATION OBJECTIVE FOR ALL KEY SPECIES = 50% AVERAGE; NOT TO EXCEED 55% IN ANY SINGLE YEAR.

Year	Actual Use AUMs ¹	Periods of Use	KMA Util. (percent)	Dates Read	KMA Use-Pattern Results ²	Dates Mapped	Pre-CAF Cap. (AUMs)	CAF	Post CAF Cap. (AUMs)	Ecological Stat./Prod.	Key Species Frequency
1999	596	06/01/99 TO 07/14/99	STTH2 - 34% ORHY - 32% PONE - 7%	10/27/99	Livestock use was well distributed throughout the pasture. Most of this pasture received moderate use.	11/04/99	876		N/A	NOT READ	NOT READ
1998	941	05/23/98 TO 08/15/98	NO DATA	NOT READ	NOT MAPPED	N/A	N/A		N/A	NOT READ	NOT READ
1997	NO USE	N/A	PONE - 1%	10/27/97	NOT MAPPED	N/A	N/A		N/A	NOT READ	NOT READ
1996	539	07/08/96 TO 09/17/96	NO DATA	NOT READ	NOT MAPPED	N/A	N/A		N/A	NOT READ	NOT READ
1995	NO USE	N/A	NO USE	N/A	NOT MAPPED	N/A	N/A		N/A	NOT READ	NOT READ
1994	NO USE	N/A	NO USE	N/A	NOT MAPPED	N/A	N/A	.59	N/A	NOT READ	NOT READ
1993	458 ⁴	03/19/93 TO 07/31/93	AGSP - 2% AGSM - 6% PONE3 - 19%	08/20/93	MODERATE - 9% LIGHT - 30% SLIGHT - 47% NOT MAPPED - 14%	08/20/93	1,205	1.05	1,148	NOT READ	NOT READ
1992	NO USE	N/A	NO USE ²	11/20/92	NOT MAPPED	N/A	N/A	.80	N/A	NOT READ	NOT READ
1991	NO DATA	NO DATA	AGSP - 50% AGSM - 5% PONE3 - 0%	07/08/91	HEAVY - 12% MODERATE - 22% LIGHT - 15% SLIGHT - 14% NOT MAPPED - 37%	07/20/91	NO DATA	.56	NO DATA	NOT READ	NOT READ
1990	256	06/01/90 TO 07/31/90	AGSP - 0% AGSM - 4% PONE3 - 1%	08/03/90	HEAVY - 3% MODERATE - 10% LIGHT - 25% SLIGHT - 4% NOT MAPPED - 58%	09/21/90	(3,200)	.70	(4,571)	37% OF PNC (mid seral) 611 lbs/acre	AGSP ⁴ AGSM - 23.0% ⁵ PONE3 - 3.5% ⁵
1989	NO USE	N/A	NO USE ²	11/29/89	NOT MAPPED	N/A	N/A	.90	N/A	NOT READ	NOT READ
1988	316	06/01/88 TO 06/30/88	AGSP - 35% AGSM - 12% PONE3 - 27%	07/12/88	HEAVY - 4% MODERATE - 15% LIGHT - 25% SLIGHT - 38% NOT MAPPED - 18%	07/12/88	451	.63	717	NOT READ	NOT READ
1987	NO USE	N/A	NO USE	N/A	NOT MAPPED	N/A	N/A	.86	N/A	40% OF PNC (mid seral) 927 lbs/acre	AGSP ⁴ AGSM - 31.5% PONE3 - 4.0%
AVG.	518		STTH2 - 34% ORHY - 32% AGSP - 22% AGSM - 7% PONE3 - 9%				844		933		

FOOTNOTES:

Items in parenthesis (-) not used.

1 Actual use represents livestock use only.

2 A utilization transect was not conducted because use pattern mapping revealed no use in the vicinity of the key area by cattle.

3 Utilization levels read during use pattern mapping may include additional grass species other than key species.

4 This species was not found within the frequency frames at the key area.

5 ANOVA results show a statistically non-significant decrease between years.

6 These AUMs are based on licensing information. Actual Use information was not available.

**BIG SPRINGS ALLOTMENT STUDIES SUMMARY MATRIX
KEY AREA 4306-04
HOLBORN PASTURE**

RANGE SITE: LOAMY 8-10" (028BY010NV)
KEY SPECIES: BLUEBUNCH WHEATGRASS (AGSP) NEVADA BLUEGRASS (PONE3) WESTERN WHEATGRASS (AGSM) WEBBER NEEDLEGRASS (STWE)
INDIAN RICEGRASS (ORHY)
UTILIZATION OBJECTIVE FOR ALL KEY SPECIES = 50% AVERAGE; NOT TO EXCEED 55% IN ANY SINGLE YEAR.

Year	Actual Use AUMs ¹	Periods of Use	KMA Util. (percent)	Dates Read	KMA Use-Pattern Results ²	Dates Mapped	Pre-CAF Cap. (AUMs)	CAF	Post CAF Cap. (AUMs)	Ecological Stat./Prod.	Key Species Frequency
1999	596	06/01/99 TO 07/14/99	STWE - 54% PONE - 42% AGSM - 17%	10/27/99	Livestock use was well distributed throughout the pasture. Most of this pasture received moderate use.	11/04/99	552		N/A	NOT READ	NOT READ
1998	941	05/23/98 TO 08/15/98	NO DATA	N/A	NOT MAPPED	N/A	N/A		N/A	NOT READ	NOT READ
1997	NO USE	N/A	ORHY - 20% AGSP - 7% PONE - 0%	10/27/97	NOT MAPPED	N/A	N/A		N/A	NOT READ	NOT READ
1996	539	07/08/96 TO 09/17/96	NO DATA	N/A	NOT MAPPED	N/A	N/A		N/A	NOT READ	NOT READ
1995	NO USE	N/A	NO DATA	N/A	NOT MAPPED	N/A	N/A		N/A	NOT READ	NOT READ
1994	NO USE	N/A	NO USE	N/A	NOT MAPPED	N/A	N/A	.59	N/A	NOT READ	NOT READ
1993	458 ⁸	03/19/93 TO 07/31/93	AGSP - 4% AGSM - 2% PONE3 - 7%	08/20/93	MODERATE - 9% LIGHT - 30% SLIGHT - 47% NOT MAPPED - 14%	08/20/93	(3,271)	1.05	(3,115)	NOT READ	NOT READ
1992	NO USE	N/A	NO USE ³	11/20/92	NOT MAPPED	N/A	N/A	.80	N/A	NOT READ	NOT READ
1991	NO DATA	NO DATA	AGSP - 47% AGSM - 14% PONE3 - 2%	07/08/90	HEAVY - 12% MODERATE - 22% LIGHT - 15% SLIGHT - 14% NOT MAPPED - 37%	07/20/91	NO DATA	.56	NO DATA	NOT READ	NOT READ
1990	256	06/01/90 TO 07/31/90	AGSP - 46% AGSM - 14% PONE3 - 2%	07/26/90	HEAVY - 3% MODERATE - 10% LIGHT - 25% SLIGHT - 4% NOT MAPPED - 58%	09/21/90	278	.70	398	44% OF PNC (mid seral) 673 lbs/acre	AGSP ⁵ AGSM - 38.5% ⁶ PONE3 - 19.5% ⁷
1989	NO USE	N/A	NO USE ³	11/29/89	NOT MAPPED	N/A	N/A	.90	N/A	NOT READ	NOT READ
1988	316	06/01/88 TO 06/30/88	AGSP - 0% ³ AGSM - 0% ³ PONE3 - 0% ³	10/26/88	HEAVY - 4% MODERATE - 15% LIGHT - 25% SLIGHT - 38% NOT MAPPED - 18%	07/12/88	N/A	.63	N/A	NOT READ	NOT READ
1987	NO USE	N/A	NO USE	N/A	NOT MAPPED	N/A	N/A	.86	N/A	54% OF PNC (late seral) 1,230 lbs/acre	AGSP ⁵ AGSM - 56.5% PONE3 - 10.0%
AVG.	518		STWE - 54% AGSP - 24% ORHY - 20% AGSM - 9% PONE3 - 11%				415		398		

FOOTNOTES:

- 1 Actual use represents livestock use only.
- 2 A utilization transect was not conducted because use pattern mapping revealed no use in the vicinity of the key area by cattle.
- 3 The well in the vicinity of the key area was not used, consequently showing no grazing use in the area.
- 4 Utilization levels read during use pattern mapping may include additional grass species other than key species.
- 5 This species was not found within the frequency frames at the key area.
- 6 ANOVA results show a statistically significant decrease between years.
- 7 ANOVA results show a statistically significant increase between years.
- 8 These AUMs are based on licensing information. Actual Use information was not available.

**BIG SPRINGS ALLOTMENT STUDIES SUMMARY MATRIX
KEY AREA 4306-05
NORTH PEQUOP MOUNTAIN PASTURE**

RANGE SITE: LOAMY 10 - 12" (028BY007NV)
KEY SPECIES: THURBER NEEDLEGRASS (STTH2) BLUEBUNCH WHEATGRASS (AGSP) WESTERN WHEATGRASS (AGSM)
UTILIZATION OBJECTIVE FOR ALL KEY SPECIES = 50% AVERAGE; NOT TO EXCEED 55% IN ANY SINGLE YEAR.

Year	Actual Use AUMs ¹	Periods of Use	KMA Util. (percent)	Dates Read	KMA Use-Pattern Results ⁴	Dates Mapped	Pre-CAF Cap. (AUMs)	CAF	Post CAF Cap. (AUMs)	Ecological Stat./Prod.	Key Species Frequency
1999	1,117	07/08/99 TO 09/30/99	STTH2 - 66% AGSP - 64% AGSM - 25%	10/27/99	NOT MAPPED	N/A	846		N/A	NOT READ	STTH2 - 25.0% ⁷ AGSP - 7.0% ⁷ AGSM - 33.5% ⁷
1998	1,143	06/04/98 TO 09/30/98	NO DATA	NOT READ	NOT MAPPED	N/A	N/A		N/A	NOT READ	NOT READ
1997	1,703	08/01/97 TO 09/30/97	STTH2 - 23% AGSP - 13%	10/27/97	NOT MAPPED	N/A	3,702		N/A	NOT READ	NOT READ
1996	822	07/01/96 TO 09/20/96	NO DATA	NOT READ	NOT MAPPED	N/A	N/A		N/A	NOT READ	NOT READ
1995	NO USE	N/A	NO USE	N/A	NOT MAPPED	N/A	N/A		N/A	NOT READ	NOT READ
1994	NO USE	N/A	NO USE	N/A	NOT MAPPED	N/A	N/A	.59	N/A	NOT READ	NOT READ
1993	NO USE	N/A	NO USE	N/A	NOT MAPPED	N/A	N/A	1.05	N/A	NOT READ	NOT READ
1992	NO USE	N/A	NO USE ²	11/20/92	NOT MAPPED	N/A	N/A	.80	N/A	NOT READ	NOT READ
1991	3,098	05/15/91 TO 10/31/91	AGSP - 84% AGSM - 2%	11/13/91	NOT MAPPED	N/A	1,844	.56	3,293	NOT READ	NOT READ
1990	711 ²	05/21/90 TO 11/02/90	AGSP - 2% AGSM - 1%	11/05/90	HEAVY - 6% MODERATE - 10% LIGHT - 10% SLIGHT - 1% NOT MAPPED - 73%	09/25/90	(17,775)	.70	(25,393)	42% OF PNC (late seral) 475 lbs/acre	AGSP - 1.0% ⁷ AGSM - 23.5% ⁷
1989	779 ³	07/15/89 TO 10/31/89	AGSP - 0% ⁵ AGSM - 0% ⁵	10/13/89	SEVERE - 1% HEAVY - 16% MODERATE - 19% LIGHT - 16% SLIGHT - 28% NOT MAPPED - 20%	10/13/89	N/A	.90	N/A	NOT READ	NOT READ
1988	420	07/01/88 TO 09/15/88	AGSP - 55% AGSM - 27%	10/26/88	SEVERE - 1% HEAVY - 8% MODERATE - 12% LIGHT - 13% SLIGHT - 19% NOT MAPPED - 47%	10/12/88	382	.63	606	NOT READ	NOT READ
1987	NO USE	N/A	NO USE	N/A	NOT MAPPED	N/A	N/A	.86	N/A	66% OF PNC (late seral) 739 lbs/acre	STTH2 - 18.0% ⁷ AGSP - 5.5% ⁷ AGSM - 25.5% ⁷
AVG.	1,252		STTH2 - 45% AGSP - 36% AGSM - 11%				1,694		1,950		

FOOTNOTES:

Items in parenthesis (-) were not used.

1 Actual use represents livestock use only.

2 Based on the Actual Grazing Use Report the use area of the livestock herd included Key Areas 4306-05, 4306-07, 4306-08 and 4306-10.

3 Actual Use information is not available for the grazing period 11/01/89 to 02/28/90 - therefore this figure may be incomplete.

4 A utilization transect was not conducted because Use Pattern Mapping revealed no use in the vicinity of the key area by cattle.

5 The well in the vicinity of this key area was not used, consequently showing no grazing use in the area.

6 Utilization levels read during use pattern mapping may include additional species other than key species.

7 Statistical analysis shows that Thurber needlegrass (STTH2) and western wheatgrass (AGSM) had increased significantly by 1999, and bluebunch wheatgrass (AGSP) had not changed significantly.

**BIG SPRINGS ALLOTMENT STUDIES SUMMARY MATRIX
KEY AREA 4306-06
HOLBORN PASTURE**

RANGE SITE: LOAMY 8-10" (028BY010NV)
KEY SPECIES: BOTTLEBRUSH SQUIRRELTAIL (SIHY) BASIN WILDRYE (ELCI2) ⁴ INDIAN RICEGRASS (ORHY)
UTILIZATION OBJECTIVE FOR ALL KEY SPECIES = 50% AVERAGE; NOT TO EXCEED 55% IN ANY SINGLE YEAR.

Year	Actual Use AUMs ¹	Periods of Use	KMA Util. (percent)	Dates Read	KMA Use-Pattern Results ³	Dates Mapped	Pre-CAF Cap. (AUMs)	CAF	Post CAF Cap. (AUMs)	Ecological Stat./Prod.	Key Species Frequency
1999	596	06/01/99 TO 07/14/99	SIHY - 50% ELCI2 - 50% ORHY - 42%	11/04/99	Livestock use was well distributed throughout the pasture. Most of this pasture received moderate use.	11/04/99	596		N/A	NOT READ	NOT READ
1998	941	05/23/98 TO 08/15/98	NO DATA	NOT READ	NOT MAPPED	N/A	N/A		N/A	NOT READ	NOT READ
1997	NO USE	N/A	SIHY - 0% ELCI - 0% ORHY - 0%	11/04/99	NOT MAPPED	N/A	N/A		N/A	NOT READ	NOT READ
1996	539	07/08/96 TO 09/17/96	NO DATA	NOT READ	NOT MAPPED	N/A	N/A		N/A	NOT READ	NOT READ
1995	NO USE	N/A	NO USE	N/A	NOT MAPPED	N/A	N/A		N/A	NOT READ	NOT READ
1994	NO USE	N/A	NO USE	N/A	NOT MAPPED	N/A	N/A	.59	N/A	NOT READ	NOT READ
1993	458 [*]	03/19/93 TO 07/31/93	SIHY - 9% ORHY - 7% ³	08/20/93	MODERATE - 9% LIGHT - 30% SLIGHT - 47% NOT MAPPED - 14%	08/20/93	(2,544)	1.05	(2,423)	NOT READ	NOT READ
1992	NO USE	N/A	NO USE ²	11/20/92	NOT MAPPED	N/A	N/A	.80	N/A	NOT READ	NOT READ
1991	NO DATA	N/A	SIHY - 3% ORHY - 40% ³	07/20/91	HEAVY - 12% MODERATE - 22% LIGHT - 15% SLIGHT 14% NOT MAPPED - 37%	07/20/91	NO DATA	.56	NO DATA	NOT READ	NOT READ
1990	256	06/01/90 TO 07/31/90	SIHY - 6% ORHY - 27% ³	11/05/90	HEAVY - 3% MODERATE - 10% LIGHT - 25% SLIGHT - 4% NOT MAPPED - 58%	11/19/90	(2,133)	.70	(3,047)	52% OF PNC (late seral) 240 lbs/acre	SIHY - 53.5% ⁹ ORHY - 1.0% ⁴
1989	NO USE	N/A	NO USE ²	11/29/89	NOT MAPPED	N/A	N/A	.90	N/A	NOT READ	NOT READ
1988	316	06/01/88 TO 06/30/88	SIHY - 18% ORHY ⁷	07/12/88	HEAVY - 4% MODERATE - 15% LIGHT - 25% SLIGHT - 38% NOT MAPPED - 18%	07/12/88	878	.63	1,393	NOT READ	NOT READ
1987	NO USE	N/A	NO USE	N/A	NOT MAPPED	N/A	N/A	.86	N/A	56% OF PNC (late seral) 683 lbs/acre	SIHY - 68.0% ORHY - 1.0%
AVG.	518		SIHY - 17% ELCI2 - 50% ORHY - 29%				737		1,393		

FOOTNOTES:

Items in parenthesis (-) not used.

- 1 Actual use represents livestock use only.
- 2 A utilization transect was not conducted because use pattern mapping revealed no use in the vicinity of the key area by cattle.
- 3 Indian ricegrass (ORHY) was not found in sufficient quantity to represent a true utilization average. This figure will not be used to calculate Pre or Post CAF capacities.
- 4 Basin wildrye (ELCI2) was not found within the range site represented by the key area.
- 5 Utilization levels read during use pattern mapping may include additional grass species other than key species.
- 6 ANOVA results show no change between years.
- 7 Indian ricegrass (ORHY) was not found on the range site during utilization studies.
- 8 These AUMs are based on licensing information. Actual Use information was not available.
- 9 ANOVA results show a statistically significant decrease between years.

**BIG SPRINGS ALLOTMENT STUDIES SUMMARY MATRIX
KEY AREA 4306-07
NORTH PEQUOP MOUNTAIN PASTURE**

RANGE SITE: LOAMY 8-10" (025XY019NV)
KEY SPECIES: BLUEBUNCH WHEATGRASS (AGSP) WESTERN WHEATGRASS (AGSM)
UTILIZATION OBJECTIVE FOR ALL KEY SPECIES = 50% AVERAGE; NOT TO EXCEED 55% IN ANY SINGLE YEAR.

Year	Actual Use AUMs	Periods of Use	KMA Util. (percent)	Dates Read	KMA Use-Pattern Results ⁴	Dates Mapped	Pre-CAF Cap. (AUMs)	CAF	Post CAF Cap. (AUMs)	Ecological Stat./Prod.	Key Species Frequency
1999	1,117	07/08/99 TO 09/30/99	AGSP - 37% AGSM - 36%	11/02/99	NOT MAPPED	N/A	1,509		N/A	NO STUDIES	NO STUDIES
1998	1,143	06/04/98 TO 09/30/98	NO DATA	NOT READ	NOT MAPPED	N/A	N/A		N/A	NO STUDIES	NO STUDIES
1997	1,703	08/01/97 TO 09/30/97	AGSP - 45% AGSM - 11%	11/04/97	NOT MAPPED	N/A	1,892		N/A	NO STUDIES	NO STUDIES
1996	822	07/01/96 TO 09/20/96	NO DATA	NOT READ	NOT MAPPED	N/A	NO DATA		NO DATA	NO STUDIES	NO STUDIES
1995	830	06/21/95 TO 09/30/95	NO DATA	NOT READ	NOT MAPPED	N/A	NO DATA		NO DATA	NO STUDIES	NO STUDIES
1994	NO USE	N/A	NO USE	N/A	NOT MAPPED	N/A	N/A	.59	N/A	NO STUDIES	NO STUDIES
1993	NO USE	N/A	NO USE	N/A	NOT MAPPED	N/A	N/A	1.05	N/A	NO STUDIES	NO STUDIES
1992	NO DATA	NO DATA	NO DATA	NOT READ	NOT MAPPED	N/A	NO DATA	.72	NO DATA	NO STUDIES	NO STUDIES
1991	3,098	05/15/91 TO 10/31/91	AGSP - 58% AGSM - 1%	11/13/91	NOT MAPPED	N/A	2,671	.68	3,927	NO STUDIES	NO STUDIES
1990	711 ³	05/21/90 TO 11/02/90	AGSP - 64% AGSM - 21%	11/05/90	HEAVY - 6% MODERATE - 10% LIGHT - 10% SLIGHT - 1% NOT MAPPED - 73%	11/19/90	555	.89	624	NO STUDIES	NO STUDIES
1989	1,553 ²	05/15/89 TO 09/24/89	AGSP - 36% AGSM - 11%	10/04/89	SEVERE - 1% HEAVY - 16% MODERATE - 19% LIGHT - 16% SLIGHT - 28% NOT MAPPED - 20%	10/04/89	2,157	.95	2,270	NO STUDIES	NO STUDIES
1988	267 ¹	04/01/88 TO 05/31/88	AGSP - 59% AGSM - 11%	10/12/88	SEVERE - 1% HEAVY - 8% MODERATE - 12% LIGHT - 13% SLIGHT - 19% NOT MAPPED - 47%	10/26/88	226	1.10	206	NO STUDIES	NO STUDIES
1987	NO USE	N/A	NO USE	N/A	NOT MAPPED	N/A	N/A	.90	N/A	NO STUDIES	NO STUDIES
AVG.	1,249	.	AGSP - 50% AGSM - 15%				1,502		1,757		

FOOTNOTES:

- 1 Based on the Actual Grazing Use Report the use area of the livestock herd included Key Areas 4306-07 and 4306-08. This figure represents livestock use only.
- 2 Based on the Actual Grazing Use Report the use area of the livestock herd included Key Areas 4306-07, 4306-08, 4306-09, 4306-12 and 4306-13. This figure represents livestock use only.
- 3 Based on the Actual Grazing Use Report the use area of the livestock herd included Key Areas 4306-05, 4306-07, 4306-08 and 4306-10. This figure represents livestock use only.
- 4 Utilization levels read during use pattern mapping may include additional grass species other than key species.

**BIG SPRINGS ALLOTMENT STUDIES SUMMARY MATRIX
KEY AREA 4306-08
NORTH PEQUOP MOUNTAIN PASTURE**

**RANGE SITE: LOAMY 10 -12" (025XY014NV)
KEY SPECIES: BLUEBUNCH WHEATGRASS (AGSP)
UTILIZATION OBJECTIVE = 50% AVERAGE; NOT TO EXCEED 55% IN ANY SINGLE YEAR.**

Year	Actual Use AUMs	Periods of Use	KMA Util. (percent)	Dates Read	KMA Use-Pattern Results ⁴	Dates Mapped	Pre-CAF Cap. (AUMs)	CAF	Post CAF Cap. (AUMs)	Ecological Stat./Prod.	Key Species Frequency
1999	1,117	07/08/99 TO 09/30/99	AGSP - 50%	11/02/99	NOT MAPPED	N/A	1,117		N/A	NOT READ	NOT READ
1998	1,143	06/04/98 TO 09/30/98	NO DATA	N/A	NOT MAPPED	N/A	N/A		N/A	NOT READ	NOT READ
1997	1,703	08/01/97 TO 09/30/97	AGSP - 60%	11/04/97	NOT MAPPED	N/A	1,419		N/A	NOT READ	NOT READ
1996	822	07/01/96 TO 09/20/96	NO USE	N/A	NOT MAPPED	N/A	N/A		N/A	NOT READ	NOT READ
1995	NO USE	N/A	NO USE	N/A	NOT MAPPED	N/A	N/A		N/A	NOT READ	NOT READ
1994	NO USE	N/A	NO USE	N/A	NOT MAPPED	N/A	N/A	.59	N/A	NOT READ	NOT READ
1993	NO USE	N/A	NO USE	N/A	NOT MAPPED	N/A	N/A	1.05	N/A	NOT READ	NOT READ
1992	NO DATA	NO DATA	NO DATA	NOT READ	NOT MAPPED	N/A	NO DATA	.80	NO DATA	NOT READ	NOT READ
1991	3,098	05/15/91 TO 10/31/91	AGSP - 49%	11/13/91	NOT MAPPED	N/A	3,161	.56	5,645	NOT READ	NOT READ
1990	711 ³	05/21/90 TO 11/02/90	AGSP - 31%	11/07/90	HEAVY - 6% MODERATE - 10% LIGHT - 10% SLIGHT - 1% NOT MAPPED - 73%	11/19/90	1,147	.70	1,638	43% OF PNC (mid seral) 635 lbs/acre	AGSP - 77% ⁵
1989	1,553 ²	05/15/89 TO 09/24/89	AGSP - 31%	10/04/89	SEVERE - 1% HEAVY - 16% MODERATE - 19% LIGHT - 16% SLIGHT - 28% NOT MAPPED - 20%	10/04/89	2,505	.90	2,783	NOT READ	NOT READ
1988	267 ¹	04/01/88 TO 05/31/88	AGSP - 19%	10/12/88	SEVERE - 1% HEAVY - 8% MODERATE - 12% LIGHT - 13% SLIGHT - 19% NOT MAPPED - 47%	10/26/88	703	.63	1,115	NOT READ	NOT READ
1987	NO USE	N/A	NO USE	N/A	NOT MAPPED	N/A	N/A	.86	N/A	43% OF PNC (mid seral) 768 lbs/acre	AGSP - 72%
AVG.	1,302		AGSP - 40%				1,675		2,795		

FOOTNOTES:

- 1 Based on the Actual Grazing Use Report the livestock use area included Key Areas 4306-07 and 4306-08. These figures represent livestock use only.
- 2 Based on the Actual Grazing Use Report the livestock use area included Key Areas 4306-07, 4306-08, 4306-09, 4306-12 and 4306-13. These figures represent livestock use only.
- 3 Based on the Actual Grazing Use Report the livestock use area included Key Areas 4306-05, 4306-07, 4306-08 and 4306-10. These figures represent livestock use only.
- 4 Utilization levels read during use pattern mapping may include additional grass species other than key species.
- 5 ANOVA results show a statistically non-significant increase between years.

**BIG SPRINGS ALLOTMENT STUDIES SUMMARY MATRIX
KEY AREA 4306-09
NORTH PEQUOP MOUNTAIN PASTURE**

RANGE SITE: LOAMY 12-14" (025XY027NV)

KEY SPECIES: IDAHO FESCUE (FEID) NEEDLEANDTHREAD (STCO4) BLUEBUNCH WHEATGRASS (AGSP) ANTELOPE BITTERBRUSH (PUTR2)

UTILIZATION OBJECTIVES FOR KEY GRASSES = 50% AVERAGE; NOT TO EXCEED 55% IN ANY SINGLE YEAR.

UTILIZATION OBJECTIVE FOR PUTR2 = 25% AVERAGE USE BY LIVESTOCK

Year	Actual Use AUMs	Periods of Use	KMA Util. (percent)	Dates Read	KMA Use-Pattern Results ⁴	Dates Mapped	Pre-CAF Cap. (AUMs)	CAF	Post CAF Cap. (AUMs)	Ecological Stat./Prod.	Key Species Frequency
1999	1,117	07/08/99 TO 09/30/99	AGSP - 50% FEID - 32% (PUTR2 - 56%)	10/29/99	NOT MAPPED	N/A	1,117		N/A	NOT READ	NOT READ
1998	1,143	06/04/98 TO 09/30/98	NO DATA	NOT READ	NOT MAPPED	N/A	NO DATA		NO DATA	NOT READ	NOT READ
1997	1,703	08/01/97 TO 09/30/97	AGSP - 62% FEID - 62% (PUTR2 - 75%)	11/04/97	NOT MAPPED	N/A	1,373		N/A	NOT READ	NOT READ
1996	822	07/01/96 FO 09/20/96	NO DATA	NOT READ	NOT MAPPED	N/A	NO DATA		NO DATA	NOT READ	NOT READ
1995	NO USE	N/A	NO USE	N/A	NOT MAPPED	N/A	N/A		N/A	NOT READ	NOT READ
1994	NO USE	N/A	NO USE	N/A	NOT MAPPED	N/A	N/A	.59	N/A	NOT READ	NOT READ
1993	NO USE	N/A	NO USE	N/A	NOT MAPPED	N/A	N/A	1.05	N/A	NOT READ	NOT READ
1992	NO DATA	NO DATA	NO DATA	NOT READ	NOT MAPPED	N/A	NO DATA	.80	NO DATA	NOT READ	NOT READ
1991	3,098	05/15/91 TO 10/31/91	PUTR2 - 24% AGSP - 44% STCO4 - 4% FEID - 4%	10/29/91	NOT MAPPED	N/A	3,520	.56	6,287	NOT READ	NOT READ
1990	365 ³	07/14/90 TO 11/02/90	PUTR2 - ^{NOT READ} AGSP - 46% STCO4 - 70% FEID - 58%	10/30/90	HEAVY - 6% MODERATE - 10% LIGHT - 10% SLIGHT - 1% NOT MAPPED - 73%	11/19/90	261	.70	372	32% OF PNC (mid seral) 1,199 lbs/acre	PUTR2 - 5.0% ⁵ AGSP - 20.0% ⁵ STCO4 - 12.5% ⁶ FEID - 21.0% ⁷
1989	1,553 ²	05/15/89 TO 09/24/89	PUTR2 - 68% AGSP - 52% STCO4 - 34% FEID - 50%	09/27/89	SEVERE - 1% HEAVY - 16% MODERATE - 19% LIGHT - 16% SLIGHT - 28% NOT MAPPED - 20%	09/27/89	1,493	.90	1,659	NOT READ	NOT READ
1988	486 ¹	07/01/88 TO 09/15/88	PUTR2 - 27% AGSP - 18% STCO4 - 27% FEID - 15%	10/12/88	SEVERE - 1% HEAVY - 8% MODERATE - 12% LIGHT - 13% SLIGHT - 19% NOT MAPPED - 47%	10/26/88	900	.63	1,429	NOT READ	NOT READ
1987	NO USE	N/A	NO USE	N/A	NOT MAPPED	N/A	N/A	.86	N/A	40% OF PNC (mid seral) 1,401 lbs/acre	PUTR2 - 6.0% AGSP - 22.0% STCO4 - 12.0% FEID - 28.5%
AVG.	1,286		PUTR2 - 50% AGSP - 45% STCO4 - 34% FEID - 37%				1,444		2,437		

FOOTNOTES:

Items in parenthesis (-) were primarily the result of deer use and not reflective of livestock use; therefore, these numbers were not used in the calculation of carrying capacity.

1 Based on the Actual Grazing Use Report the use area of the livestock herd included Key Areas 4306-09, 4306-12 and 4306-13. This figure represents livestock use only.

2 Based on the Actual Grazing Use Report the use area of the livestock herd included Key Areas 4306-07, 4306-08, 4306-09, 4306-12 and 4306-13. This figure represents livestock use only.

3 Based on the Actual Grazing Use Report the use area of the livestock herd included Key Areas 4306-09, 4306-11, 4306-12 and 4306-13. This figure represents livestock use only.

4 Utilization levels read during use pattern mapping may include other species in addition to key species.

5 ANOVA results show no significant change between years.

6 ANOVA results show no significant change between years.

7 ANOVA results show a statistically significant decrease between years.

**BIG SPRINGS ALLOTMENT STUDIES SUMMARY MATRIX
KEY AREA 4306-10
NORTH PEQUOP MOUNTAIN PASTURE**

RANGE SITE: LOAMY 12-14" (025XY027NV)

KEY SPECIES: BLUEBUNCH WHEATGRASS (AGSP) IDAHO FESCUE (FEID)

UTILIZATION OBJECTIVE FOR ALL KEY SPECIES = 50% AVERAGE; NOT TO EXCEED 55% IN ANY SINGLE YEAR.

Year	Actual Use AUMs	Periods of Use	KMA Util. (percent)	Dates Read	KMA Use-Pattern Results ⁵	Dates Mapped	Pre-CAF Cap. (AUMs)	CAF	Post CAF Cap. (AUMs)	Ecological Stat./Prod.	Key Species Frequency
1999	1,117	07/08/99 TO 09/30/99	FEID - 54% AGSP - 50%	11/04/99			1,034			NOT READ	NOT READ
1998	1,143	06/04/98 TO 09/30/98	NO DATA	NOT READ	NOT MAPPED	N/A	NO DATA		NO DATA	NOT READ	NOT READ
1997	1,703	08/01/97 TO 09/30/97	AGSP - 12% FEID - 10%	10/27/97	NOT MAPPED	N/A	7,096			NOT READ	NOT READ
1996	822	07/01/96 TO 09/20/96	NO DATA	NOT READ	NOT MAPPED	N/A	NO DATA		NO DATA	NOT READ	NOT READ
1995	NO USE	N/A	NO USE	N/A	NOT MAPPED	N/A	N/A		N/A	NOT READ	NOT READ
1994	NO USE	N/A	NO USE	N/A	NOT MAPPED	N/A	N/A	.86	N/A	NOT READ	NOT READ
1993	NO USE	N/A	NO USE	N/A	NOT MAPPED	N/A	N/A	1.28	N/A	NOT READ	NOT READ
1992	NO DATA	NO DATA	NO DATA	NOT READ	NOT MAPPED	N/A	NO DATA	.72	NO DATA	NOT READ	NOT READ
1991	3,098	05/15/91 TO 10/31/91	AGSP - 55% FEID - 65%	11/13/91	NOT MAPPED	N/A	2,383	.68	3,504	NOT READ	NOT READ
1990	711 ³	05/21/90 TO 11/02/90	AGSP - 68% FEID - 66%	11/05/90	HEAVY - 6% MODERATE - 10% LIGHT - 10% SLIGHT - 1% NOT MAPPED - 73%	11/19/90	523	.89	587	41% OF PNC (mid seral) 1,601 lbs/acre	AGSP - 5.5% ⁶ FEID - 12.5% ⁶
1989	779 ^{2,4}	07/15/89 TO 10/31/89	AGSP - 26% FEID - 36%	10/05/89	SEVERE - 1% HEAVY - 16% MODERATE - 19% LIGHT - 16% SLIGHT - 28% NOT MAPPED - 20%	10/05/89	1,082	.95	1,139	NOT READ	NOT READ
1988	420 ¹	07/01/88 TO 09/15/88	AGSP - 45% FEID - 60%	10/26/88	SEVERE - 1% HEAVY - 8% MODERATE - 12% LIGHT - 13% SLIGHT - 19% NOT MAPPED - 47%	10/12/88	350	1.10	318	NOT READ	NOT READ
1987	NO USE	N/A	NO USE	N/A	NOT MAPPED	N/A	N/A	.90	N/A	50% OF PNC (mid seral) 2,894 lbs/acre	AGSP - 16.5% FEID - 36.0%
AVG.	1,224		AGSP - 43% FEID - 49%				2,078		1,387		

FOOTNOTES:

- 1 Based on the Actual Grazing Use Report the use area of the livestock herd included Key Areas 4306-05, 4306-10 and 4306-11. This figure represents livestock use only.
- 2 Based on the Actual Grazing Use Report the use area of the livestock herd included Key Areas 4306-05, 4306-10 and 4306-11. This figure represents livestock use only.
- 3 Based on the Actual Grazing Use Report the use area of the livestock herd included Key Areas 4306-05, 4306-07, 4306-08 and 4306-10. This figure represents livestock use only.
- 4 Actual Use information is not available for the grazing period 11/01/89 to 02/28/90, therefore actual use figure may be incomplete.
- 5 Utilization levels read during use pattern mapping may include other species in addition to key species.
- 6 ANOVA results show a statistically significant decrease between years.

**BIG SPRINGS ALLOTMENT STUDIES SUMMARY MATRIX
KEY AREA 4306-11
NORTH PEQUOP MOUNTAIN PASTURE**

RANGE SITE: LOAMY SLOPE 12-16" (025XY012NV)
KEY SPECIES: IDAHO FESCUE (FEID) ANTELOPE BITTERBRUSH (PUTR2)
UTILIZATION OBJECTIVE FOR FEID = 50% AVERAGE; NOT TO EXCEED 55% IN ANY SINGLE YEAR.
UTILIZATION OBJECTIVE FOR PUTR2 = 25% AVERAGE USE BY CATTLE

Year	Actual Use AUMs	Periods of Use	KMA Util. (percent)	Dates Read	KMA Use-Pattern Results ⁵	Dates Mapped	Pre-CAF Cap. (AUMs)	CAF	Post CAF Cap. (AUMs)	Ecological Stat./Prod.	Key Species Frequency
1999	1,117	07/08/99 TO 09/30/99	FEID - 17% PUTR2 - 13%	11/04/99	NOT MAPPED	N/A	2,148		N/A	NOT READ	NOT READ
1998	1,143	06/04/98 TO 09/30/98	NO DATA	NOT READ	NOT MAPPED	N/A	NO DATA		NO DATA	NOT READ	NOT READ
1997	1,703	08/01/97 TO 09/30/97	FEID - 20% PUTR2 - 10%	10/27/97	NOT MAPPED	N/A	4,258		N/A		
1996	822	07/01/96 TO 09/20/96	NO DATA	NOT READ	NOT MAPPED	N/A	NO DATA		NO DATA	NOT READ	NOT READ
1995	NO USE	N/A	NO USE	N/A	NOT MAPPED	N/A	N/A		N/A	NOT READ	NOT READ
1994	NO USE	N/A	NO USE	N/A	NOT MAPPED	N/A	N/A	.86	N/A	NOT READ	NOT READ
1993	NO USE	N/A	NO USE	N/A	NOT MAPPED	N/A	N/A	1.28	N/A	NOT READ	NOT READ
1992	NO DATA	NO DATA	NO DATA	NOT READ	NOT MAPPED	N/A	NO DATA	.72	NO DATA	NOT READ	NOT READ
1991	3,098	05/15/91 TO 10/31/91	FEID - 52% PUTR2 - 18%	10/29/91	NOT MAPPED	N/A	2,979	.68	4,381	NOT READ	NOT READ
1990	365 ²	07/14/90 TO 11/02/90	FEID - 65% PUTR2 ⁶	10/30/90	HEAVY - 6% MODERATE - 10% LIGHT - 10% SLIGHT - 1% NOT MAPPED - 73%	11/19/90	281	.89	315	69% OF PNC (late seral) 985 lbs/acre	FEID - 87.0% ⁸ PUTR2 - 2.5% ⁷
1989	779 ^{1,3}	07/15/89 TO 10/31/89	FEID - 45% PUTR2 - 11%	10/06/89	SEVERE - 1% HEAVY - 16% MODERATE - 19% LIGHT - 16% SLIGHT - 28% NOT MAPPED - 20%	10/06/89	866	.95	911	NOT READ	NOT READ
1988	420 ¹	07/01/88 TO 09/15/88	NO USE ⁴	11/01/88	SEVERE - 1% HEAVY - 8% MODERATE - 12% LIGHT - 13% SLIGHT - 19% NOT MAPPED - 47%	10/12/88	N/A	1.10	N/A	NOT READ	NOT READ
1987	NO USE	N/A	NO USE	N/A	NOT MAPPED	N/A	N/A	.90	N/A	44% OF PNC (mid seral) 2,894 lbs/acre	FEID - 76.0% PUTR2 - 3.0%
AVG.	1,181		FEID - 40% PUTR2 - 13%				2,106		1,869		

FOOTNOTES:

- 1 Based on the Actual Grazing Use Report the use area of the livestock herd included Key Areas 4306-05, 4306-10 and 4306-11. This figure represents livestock use only.
- 2 Based on the Actual Grazing Use Report the use area of the livestock herd included Key Areas 4306-09, 4306-11, 4306-12 and 4306-13. This figure represents livestock use only.
- 3 Actual Use information is not available for the grazing period 11/01/89 to 02/28/90, therefore this actual use figure may be incomplete.
- 4 A utilization transect was not conducted because Use Pattern Mapping revealed no use in the vicinity of the key area by cattle.
- 5 Utilization levels read during use pattern mapping may include other species in addition to key species.
- 6 A utilization transect was not read for Antelope bitterbrush (PUTR2).
- 7 ANOVA results show no significant change between years.
- 8 ANOVA results show a statistically significant increase between years.

**BIG SPRINGS ALLOTMENT STUDIES SUMMARY MATRIX
KEY AREA 4306-12
NORTH PEQUOP MOUNTAIN PASTURE**

RANGE SITE: MOUNTAIN RIDGE 12-14" (028BY034NV)
KEY SPECIES: BLUEBUNCH WHEATGRASS (AGSP) BOTTLEBRUSH SQUIRRELTAIL (SIHY)
UTILIZATION OBJECTIVE = 50% AVERAGE; NOT TO EXCEED 55% IN ANY SINGLE YEAR.

Year	Actual Use AUMs	Periods of Use	KMA Util. (percent)	Dates Read	KMA Use-Pattern Results *	Dates Mapped	Pre-CAF Cap. (AUMs)	CAF	Post CAF Cap. (AUMs)	Ecological Stat./Prod.	Key Species Frequency
1999	1,117	07/08/99 TO 09/30/99	SIHY - 15% AGSP - 6%	10/29/99	NOT MAPPED	N/A	3,723		N/A	NOT READ	NOT READ
1998	1,143	06/04/98 TO 09/30/98	NO DATA	NOT READ	NOT MAPPED	N/A	NO DATA		NO DATA	NOT READ	NOT READ
1997	1,703	08/01/97 TO 09/30/97	AGSP - 41% SIHY - 28%	11/05/97	NOT MAPPED	N/A	2,077		N/A	NOT READ	NOT READ
1996	822	07/01/96 TO 09/20/96	NO DATA	NOT READ	NOT MAPPED	N/A	NO DATA		NO DATA	NOT READ	NOT READ
1995	NO USE	N/A	NO USE	N/A	NOT MAPPED	N/A	N/A		N/A	NOT READ	NOT READ
1994	NO USE	N/A	NO USE	N/A	NOT MAPPED	N/A	N/A	.86	N/A	NOT READ	NOT READ
1993	NO USE	N/A	NO USE	N/A	NOT MAPPED	N/A	N/A	1.28	N/A	NOT READ	NOT READ
1992	NO DATA	NO DATA	NO DATA	NOT READ	NOT MAPPED	N/A	NO DATA	.72	NO DATA	NOT READ	NOT READ
1991	3,098	05/15/91 TO 10/31/91	AGSP - 29% SIHY - 7%	11/13/91	NOT MAPPED	N/A	5,341	.68	7,855	NOT READ	NOT READ
1990	365 ³	07/14/90 TO 11/02/90	AGSP - 27% SIHY - 0%	11/07/90	HEAVY - 6% MODERATE - 10% LIGHT - 10% SLIGHT - 1% NOT MAPPED - 73%	12/05/90	676	.89	759	72% OF PNC (late seral) 408 lbs/acre	AGSP - 7.0% ⁴ SIHY - 24.5% ⁵
1989	1,553 ²	05/15/89 TO 09/24/89	AGSP - 43% SIHY - 20%	09/27/89	SEVERE - 1% HEAVY - 16% MODERATE - 19% LIGHT - 16% SLIGHT - 28% NOT MAPPED - 20%	09/22/89	1,806	.95	1,901	NOT READ	NOT READ
1988	486 ¹	07/01/88 TO 09/15/88	AGSP - 12% SIHY - 6%	10/11/88	SEVERE - 1% HEAVY - 8% MODERATE - 12% LIGHT - 13% SLIGHT - 19% NOT MAPPED - 47%	10/16/88	2,025	1.10	1,841	NOT READ	NOT READ
1987	NO USE	N/A	NO USE	N/A	NOT MAPPED	N/A	N/A	.90	N.A	70% OF PNC (late seral) 436 lbs/acre	AGSP - 28.0% SIHY - 34.5%
AVG.	1,286		AGSP - 26% SIHY - 13%				2,608		3,089		

FOOTNOTES:

- 1 Based on the Actual Grazing Use Report the use area of the livestock herd included Key Areas 4306-09, 4306-12 and 4306-13. This figure represents livestock use only.
- 2 Based on the Actual Grazing Use Report the use area of the livestock herd included Key Areas 4306-07, 4306-08, 4306-09, 4306-12 and 4306-13. This figure represents livestock use only.
- 3 Based on the Actual Grazing Use Report the use area of the livestock herd included Key Areas 4306-09, 4306-11, 4306-12 and 4306-13. This figure represents livestock use only.
- 4 Utilization levels read during use pattern mapping may include other species in addition to key species.
- 5 ANOVA results show a statistically significant decrease between years.

**BIG SPRINGS ALLOTMENT STUDIES SUMMARY MATRIX
KEY AREA 4306-13
NORTH PEQUOP MOUNTAIN PASTURE**

RANGE SITE: LOAMY 12 - 16" (028BY030NV)
KEY SPECIES: BLUEBUNCH WHEATGRASS (AGSP) ANTELOPE BITTERBRUSH (PUTR2)
UTILIZATION OBJECTIVE FOR AGSP = 50% AVERAGE; NOT TO EXCEED 55% IN ANY SINGLE YEAR.
UTILIZATION OBJECTIVE FOR PUTR2 = 25% AVERAGE BY THE END OF CATTLE USE; 45% AVERAGE BY THE END OF WINTER DEER USE.

Year	Actual Use AUMs	Periods of Use	KMA Util. (percent)	Dates Read	KMA Use-Pattern Results ¹	Dates Mapped	Pre-CAF Cap. (AUMs)	CAF	Post CAF Cap. (AUMs)	Ecological Stat./Prod.	Key Species Frequency
1999	1,244	06/02/99 TO 09/08/99	AGSP - 50% (PUTR2 - 52%)	11/08/99	With the exception of this key area, most of the east side of this pasture received light use on upland grasses.	11/08/99	1,244		N/A	NOT READ	NOT READ
1998	1,209	07/03/98 TO 09/10/98	NO DATA	NOT READ	NOT MAPPED	N/A	NO DATA		NO DATA	NOT READ	NOT READ
1997	1,379	05/27/97 TO 10/15/97	NO DATA	NOT READ	NOT MAPPED	N/A	NO DATA		NO DATA	NOT READ	NOT READ
1996	1,219	06/08/96 TO 09/11/96	NO DATA	NOT READ	NOT MAPPED	N/A	NO DATA		NO DATA	NOT READ	NOT READ
1995	50 830	03/09/95 TO 04/05/95 06/21/95 TO 09/30/95	NO DATA	NOT READ	NOT MAPPED	N/A	NO DATA		NO DATA	NOT READ	NOT READ
1994	932 ⁷	06/13/94 TO 09/26/94	NO DATA	NOT READ	NOT MAPPED	N/A	NO DATA	.86	NO DATA	NOT READ	NOT READ
1993	NO USE	N/A	NO USE	N/A	NOT MAPPED	N/A	N/A	1.28	N/A	NOT READ	NOT READ
1992	NO DATA	NO DATA	NO DATA	NOT READ	NOT MAPPED	N/A	NO DATA	.72	NO DATA	NOT READ	NOT READ
1991	3,098	05/15/91 TO 10/31/91	AGSP - 63% PUTR2 - 24%	10/29/91	NOT MAPPED	N/A	2,459	.68	3,616	NOT READ	NOT READ
1990	365 ³	07/14/90 TO 11/02/90	AGSP - 54% PUTR2 - 18%	10/30/90	HEAVY - 6% MODERATE - 10% LIGHT - 10% SLIGHT - 1% NOT MAPPED - 73%	12/05/90	338	.89	380	37% OF PNC (mid seral) 524 lbs/acre	AGSP - 21.5% ⁴ PUTR2 - 3.5% ⁶
1989	1,553 ²	05/15/89 TO 09/24/89	AGSP - 69% PUTR2 - 81%	09/22/89	SEVERE - 1% HEAVY - 16% MODERATE - 19% LIGHT - 16% SLIGHT - 28% NOT MAPPED - 20%	09/22/89	479	.95	504	NOT READ	NOT READ
1988	486 ¹	07/01/88 TO 09/15/88	AGSP - 48% PUTR2 - 38%	11/04/88	SEVERE - 1% HEAVY - 8% MODERATE - 12% LIGHT - 13% SLIGHT - 19% NOT MAPPED - 47%	10/16/88	320	1.10	290	NOT READ	NOT READ
1987	NO USE	N/A	NO USE	N/A	NOT MAPPED	N/A	N/A	.90	N/A	52% OF PNC (late seral) 1,564 lbs/acre	AGSP - 31.0% PUTR2 - 3.0%
AVG.	1,237		AGSP - 57% PUTR2 - 43%				968		1,198		

FOOTNOTES:

Item in parenthesis not reflective of livestock use, but most of the use attributed to deer, therefore not used in the calculation.

- 1 Based on the Actual Grazing Use Report the use area of the livestock herd included Key Areas 4306-09, 4306-12 and 4306-13. This figure represents livestock use only.
- 2 Based on the Actual Grazing Use Report the use area of the livestock herd included Key Areas 4306-07, 4306-08, 4306-09, 4306-12 and 4306-13. This figure represents livestock use only.
- 3 Based on the Actual Grazing Use Report the use area of the livestock herd included Key Areas 4306-09, 4306-11, 4306-12 and 4306-13. This figure represents livestock use only.
- 4 Utilization levels read during use pattern mapping may include other species in addition to key species.
- 5 ANOVA results show a statistically significant decrease between years.
- 6 ANOVA results show no significant change between years.
- 7 This figure represents grazing east of the rangeline that separates R.65E. from R.66E. only (that portion of the pasture falling within the East Big Springs Grazing Use Area).

**BIG SPRINGS ALLOTMENT STUDIES SUMMARY MATRIX
KEY AREA 4306-14
EAST SQUAW CREEK PASTURE**

RANGE SITE: LOAMY 10 - 12" (028BY007NV)

KEY SPECIES: THURBER NEEDLEGRASS (STTH2)

UTILIZATION OBJECTIVE = 50% AVERAGE; NOT TO EXCEED 55% IN ANY SINGLE YEAR.

Year	Actual Use AUMs	Periods of Use	KMA Util. (percent)	Dates Read	KMA Use-Pattern Results ³	Dates Mapped	Pre-CAF Cap. (AUMs)	CAF	Post CAF Cap. (AUMs)	Ecological Stat./Prod.	Key Species Frequency
2000	NO DATA	NO DATA	NO DATA	NOT READ	NOT MAPPED	N/A	NO DATA		NO DATA	NOT READ	STTH2 - 42.0% ⁴
1999	113	06/04/99 TO 07/01/99	STTH2 - 46%	11/18/99	NOT MAPPED	N/A	123		N/A	NOT READ	NOT READ
1998	387	05/05/98 TO 07/03/98	NO DATA	NOT READ	NOT MAPPED	N/A	NO DATA		NO DATA	NOT READ	NOT READ
1997	110	5/12/97 TO 8/25/97	STTH2 - 35%	10/31/97	NOT MAPPED	N/A	157		N/A		
1996	224 ⁵	05/10/96 TO 06/08/96	NO DATA	NOT READ	NOT MAPPED	N/A	NO DATA		NO DATA	NOT READ	NOT READ
1995	619 ⁵	04/02/95 TO 06/21/95	NO DATA	NOT READ	NOT MAPPED	N/A	NO DATA		NO DATA	NOT READ	NOT READ
1994	355	05/04/94 TO 09/26/94	NO DATA	NOT READ	NOT MAPPED	N/A	NO DATA	.86	NO DATA	NOT READ	NOT READ
1993	NO USE	N/A	NO USE	N/A	NOT MAPPED	N/A	N/A	1.28	N/A	NOT READ	NOT READ
1992	NO DATA	NO DATA	NO DATA	NOT READ	NOT MAPPED	N/A	NO DATA	.72	NO DATA	NOT READ	NOT READ
1991	784	06/01/91 TO 12/31/91	NO DATA	NOT READ	NOT MAPPED	N/A	NO DATA	.68	NO DATA	NOT READ	NOT READ
1990	(58 ³)	05/01/90 TO 06/01/90 and 07/26/90 TO 01/02/91	STTH2 - 32%	11/07/90	HEAVY - 17% MODERATE - 5% LIGHT - 27% SLIGHT - 11% NOT MAPPED - 40%	11/09/90	(91)	.89	(102)	61% OF PNC (late seral) 412 lbs/acre	STTH2 - 40.0% ⁴
1989	(70 ¹¹)	05/22/89 TO 05/31/89	STTH2 - 6%	07/19/89	HEAVY - 11% MODERATE - 15% LIGHT - 17% SLIGHT - 40% NOT MAPPED - 17%	07/19/89	(583)	.95	(614)	NOT READ	NOT READ
1988	263	04/01/88 TO 05/30/88	STTH2 - 51%	07/20/88	SEVERE - 1% HEAVY - 17% MODERATE - 22% LIGHT - 26% SLIGHT - 25% NOT MAPPED - 9%	07/20/88	258	1.10	234	NOT READ	NOT READ
1987	NO USE	N/A	NO USE	N/A	NOT MAPPED	N/A	N/A	.90	N/A	58% OF PNC (late seral) 520 lbs/acre	STTH2 - 45.0%
AVG.	357		STTH2 - 30%				179		234		

FOOTNOTES:

Items in parenthesis were not used.

- 1 The Actual Grazing Use Report submitted does not correlate with the dates and cattle numbers obtained during previous conversations between the permittee and Range Conservationist during this particular grazing year. This actual use figure was considered suspect at the time of receipt.
- 2 Actual Use information is not available for the grazing period 03/01/90 to 04/30/90, therefore this actual use figure may be incomplete.
- 3 Utilization levels read during use pattern mapping may include additional grass species other than key species.
- 4 ANOVA results show no significant change between years.
- 5 Most of this actual use was focused on the Oasis Seeding in the southern part of this pasture.

**BIG SPRINGS ALLOTMENT STUDIES SUMMARY MATRIX
KEY AREA 4306-15
COLLAR AND ELBOW PASTURE**

RANGE SITE: SALINE TERRACE 5-8" (028BY047NV)
KEY SPECIES: WHITE SAGE (EULA5); UTILIZATION OBJECTIVE = 55% AVERAGE; NOT TO EXCEED 60% IN ANY SINGLE YEAR.
 INDIAN RICEGRASS (ORHY); NEEDLEGRASS (STIPA); UTILIZATION OBJECTIVE = 50% AVERAGE; NOT TO EXCEED 55% IN ANY SINGLE YEAR.

Year	Actual Use AUMs	Periods of Use	KMA Util. (percent)	Dates Read	KMA Use-Pattern Results ⁺	Dates Mapped	Pre-CAF Cap. (AUMs)	CAF	Post CAF Cap. (AUMs)	Ecological Stat./Prod.	Key Species Frequency
1999	1,417	09/30/99 TO 12/31/99	ORHY 42% (60%) ⁵ EULA5 - 44%(63%) ¹	12/02/99	All the wells were operated this year, with use levels generally moderate. Use levels at this key area represent the highest use levels due to its location on the trail above Loray Well.	12/02/99	1,181		NO DATA	NO STUDIES	NO STUDIES
1998	913	09/16/98 TO 11/24/98	NO DATA	NOT READ	NOT MAPPED	N/A	NO DATA		NO DATA	NO STUDIES	NO STUDIES
1997	969	09/29/97 TO 11/27/97	NO DATA	NOT READ	NOT MAPPED	N/A	NO DATA		NO DATA	NO STUDIES	NO STUDIES
1996	1,387	08/21/96 TO 11/05/96	NO DATA	NOT READ	NOT MAPPED	N/A	NO DATA		NO DATA	NO STUDIES	NO STUDIES
1995	722	10/24/95 TO 01/21/96	NO DATA	NOT READ	NOT MAPPED	N/A	NO DATA		NO DATA	NO STUDIES	NO STUDIES
1994	1,259	04/15/94 TO 11/26/94	NO DATA	NOT READ	NOT MAPPED	N/A	NO DATA	.86	NO DATA	NO STUDIES	NO STUDIES
1993	NO USE	N/A	NO USE	N/A	NOT MAPPED	N/A	N/A	1.28	N/A	NO STUDIES	NO STUDIES
1992	NO DATA	NO DATA	NO DATA	NOT READ	NOT MAPPED	N/A	NO DATA	.72	NO DATA	NO STUDIES	NO STUDIES
1991	353	04/16/91 TO 05/15/91	NO DATA	NOT READ	HEAVY - < 1% MODERATE - 1% LIGHT - 6% SLIGHT - 11% NOT MAPPED - 82%	05/06/91	NO DATA	.68	NO DATA	NO STUDIES	NO STUDIES
1990	598 ¹	05/01/90 TO 06/22/90 and 12/01/90 TO 01/02/91	EULA5 - 3% ² ORHY - 15% STIPA - 51% EULA5 - 31% ³	03/25/91	NOT MAPPED	N/A	586	.89	1,192	NO STUDIES	NO STUDIES
1989	282	06/01/89 TO 08/16/89	ORHY - 50% EULA5 - 12%	09/06/89	HEAVY - 8% MODERATE - 9% LIGHT - 10% SLIGHT - 19% NOT MAPPED - 54%	08/31/89	282	.95	1,361	NO STUDIES	NO STUDIES
1988	251	06/01/88 TO 09/15/88	STIPA - 64% EULA5 - 10%	11/08/88	HEAVY - 3% MODERATE - 1% LIGHT - 2% SLIGHT - 6% NOT MAPPED - 88%	11/08/88	196	1.10	1,255	NO STUDIES	NO STUDIES
1987	NO USE	N/A	NO USE	N/A	NOT MAPPED	N/A	N/A	90	N/A	NO STUDIES	NO STUDIES

AVG.	1,038 FALL/W.		EULA5 - 47% FALL/WINTER				884 FALL/WINTER				
	295 SPG/SU		EULA - 8% SPG/SUMMER				239 SPG/SUMMER				
			ORHY/STIPA - 56%								

FOOTNOTES:

- 1 Actual Use information is not available for the grazing period 03/01/90 to 04/30/90, therefore this actual use figure may be incomplete.
- 2 Utilization reflective of grazing use between the period 05/01/90 to 06/22/90.
- 3 Utilization reflective of additional grazing use occurring for the period 12/01/90 to 01/02/91.
- 4 Utilization levels read during use pattern mapping may include additional grass species other than key species.
- 5 Utilization was read before the end of the grazing period. The numbers in parenthesis () are projected levels of use to the end of the grazing season and are used to calculate the carrying capacity.

**BIG SPRINGS ALLOTMENT STUDIES SUMMARY MATRIX
KEY AREA 4306-16
PAYNE BASIN PASTURE**

RANGE SITE: PIMO-JUOS WOODLAND (028B064NV)
KEY SPECIES: BLUEBUNCH WHEATGRASS (AGSP)
UTILIZATION OBJECTIVE = 50% AVERAGE; NOT TO EXCEED 55% IN ANY SINGLE YEAR.

Year	Actual Use AUMs ¹	Periods of Use	KMA Util. (percent)	Dates Read	KMA Use-Pattern Results ²	Dates Mapped	Pre-CAF Cap. (AUMs)	CAF	Post CAF Cap. (AUMs)	Ecological Stat./Prod.	Key Species Frequency
1999	260	05/24/99 TO 09/09/99	AGSP - 27%	11/30/99	NOT MAPPED	N/A	481		NO DATA	NOT READ	NOT READ
1998	450	06/02/98 TO 09/25/98	NO DATA	NOT READ	NOT MAPPED	N/A	NO DATA		NO DATA	NOT READ	NOT READ
1997	566	04/02/97 TO 09/10/97	AGSP - 54%	10/31/97	NOT MAPPED	N/A	524		NO DATA	NOT READ	NOT READ
1996	212	05/02/96 TO 09/16/96	NO DATA	NOT READ	NOT MAPPED	N/A	NO DATA		NO DATA	NOT READ	NOT READ
1995	802	03/03/95 TO 04/02/95 07/04/95 TO 10/14/95	NO DATA	NOT READ	NOT MAPPED	N/A	NO DATA		NO DATA	NOT READ	NOT READ
1994	273	08/01/94 TO 10/15/94	NO DATA	NOT READ	NOT MAPPED	N/A	NO DATA	.86	NO DATA	NOT READ	NOT READ
1993	NO USE	N/A	NO USE	N/A	NOT MAPPED	N/A	N/A	1.28	N/A	NOT READ	NOT READ
1992	NO DATA	NO DATA	NO DATA	NOT READ	NOT MAPPED	N/A	NO DATA	.72	NO DATA	NOT READ	NOT READ
1991	385	06/01/91 TO 11/30/91	AGSP - 53%	10/08/91	HEAVY - 11% MODERATE - 19% LIGHT - 10% SLIGHT - 6% NOT MAPPED - 54%	10/08/91	363	.68	534	NOT READ	NOT READ
1990	378	06/22/90 TO 10/23/90	AGSP - 65%	11/09/90	SEVERE - 2% HEAVY - 25% MODERATE - 8% LIGHT - 15% NOT MAPPED - 50%	11/14/90	291	.89	327	74% OF PNC (late seral) 397 lbs/acre	AGSP - 18.5% ³
1989	282	06/01/89 TO 08/16/89	AGSP - 43%	09/21/89	SEVERE - 3% HEAVY - 22% MODERATE - 19% LIGHT - 16% NOT MAPPED - 40%	09/21/89	328	.95	345	NOT READ	NOT READ
1988	290	06/01/88 TO 09/15/88	AGSP - 48%	10/06/88	SEVERE - 5% HEAVY - 32% MODERATE - 16% LIGHT - 6% SLIGHT - 7% NOT MAPPED - 34%	10/06/88	302	1.10	275	NOT READ	NOT READ
1987	NO USE	N/A	NO USE	N/A	NOT MAPPED	N/A	N/A	.90	N/A	89% OF PNC (pnc) 695 lbs/acre	AGSP - 33.5%

AVG.	390		AGSP - 48%				382		370		
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FOOTNOTES:

- 1 Based on the Actual Grazing Use Report, the figures shown will represent pasture-wide grazing use which includes both Key Areas 4306-16 and 4306-17. This figure represents livestock use only.
- 2 Utilization levels read during use pattern mapping may include other species in addition to key species.
- 3 ANOVA results show a statistically significant decrease between years.

**BIG SPRINGS ALLOTMENT STUDIES SUMMARY MATRIX
KEY AREA 4306-17
PAYNE BASIN PASTURE**

RANGE SITE: LOAMY 10-12" (025XY014NV)
KEY SPECIES: BLUEBUNCH WHEATGRASS (AGSP) WESTERN WHEATGRASS (AGSM)
UTILIZATION OBJECTIVE = 50% AVERAGE; NOT TO EXCEED 55% IN ANY SINGLE YEAR.

Year	Actual Use AUMs	Periods of Use	KMA Util. (percent)	Dates Read	KMA Use-Pattern Results	Dates Mapped	Pre-CAF Cap. (AUMs)	CAF	Post CAF Cap. (AUMs)	Ecological Stat./Prod.	Key Species Frequency
1999	260	05/24/99 TO 09/09/99	AGSP - 44% AGSM - 29%	11/30/99	NOT MAPPED	N/A	295		NO DATA	NOT READ	NOT READ
1998	450	06/02/98 TO 09/25/98	NO DATA	NOT READ	NOT MAPPED	N/A	NO DATA		NO DATA	NOT READ	NOT READ
1997	566	04/02/97 TO 09/10/97	AGSP - 50% AGSM - 3%	10/31/97	NOT MAPPED	N/A	566		NO DATA	NOT READ	NOT READ
1996	212	05/02/96 TO 09/16/96	NO DATA	NOT READ	NOT MAPPED	N/A	NO DATA		NO DATA	NOT READ	NOT READ
1995	802	03/03/95 TO 04/02/95 07/04/95 TO 10/14/95	NO DATA	NOT READ	NOT MAPPED	N/A	NO DATA		NO DATA	NOT READ	NOT READ
1994	273	08/01/94 TO 10/15/94	AGSP - 23% AGSM - 35%	10/14/94	NOT MAPPED	N/A	390	.86	453	NOT READ	NOT READ
1993	NO USE	N/A	NO USE	N/A	NOT MAPPED	N/A	N/A	1.28	N/A	NOT READ	NOT READ
1992	NO DATA	NO DATA	NO DATA	NOT READ	NOT MAPPED	N/A	NO DATA	.72	NO DATA	NOT READ	NOT READ
1991	385	06/01/91 TO 11/30/91	AGSP - 70% AGSM - 44%	10/08/91	HEAVY - 11% MODERATE - 19% LIGHT - 10% SLIGHT - 6% NOT MAPPED - 54%	10/08/91	275	.68	404	NOT READ	NOT READ
1990	378	06/22/90 TO 10/23/90	AGSP - 73% AGSM - 35%	11/09/90	SEVERE - 2% HEAVY - 25% MODERATE - 8% LIGHT - 15% NOT MAPPED - 50%	11/14/90	259	.89	291	33% OF PNC (mid seral) 1,264 lbs/acre	AGSP - 3.0% ³ AGSM - 38.0% ³
1989	282	06/01/89 TO 08/16/89	AGSP - 70% AGSM - 64%	09/21/89	SEVERE - 3% HEAVY - 22% MODERATE - 19% LIGHT - 16% NOT MAPPED - 40%	09/21/89	201	.95	212	NOT READ	NOT READ
1988	290	06/01/88 TO 09/15/88	AGSP - 67% AGSM - 65%	10/06/88	SEVERE - 5% HEAVY - 32% MODERATE - 16% LIGHT - 6% SLIGHT - 7% NOT MAPPED - 34%	10/06/88	216	1.10	197	NOT READ	NOT READ
1987	NO USE	N/A	NO USE	N/A	NOT MAPPED	N/A	N/A	.90	N/A	36% OF PNC (mid seral) 599 lbs/acre	AGSP - 21.5% AGSM - 54.0%
AVG.	390		AGSP - 57% AGSM - 39%				315		311		

FOOTNOTES:

- 1 Based on the Actual Grazing Use Report, the figures shown will represent pasture-wide grazing use which includes both Key Areas 4306-16 and 4306-17. This figure represents livestock use only.
- 2 Utilization levels read during use pattern mapping may include other species in addition to key species.
- 3 ANOVA results show a statistically significant decrease between years.

**BIG SPRINGS ALLOTMENT STUDIES SUMMARY MATRIX
KEY AREA 4306-18
EAST PEQUOP BENCH PASTURE**

RANGE SITE: CALCAREOUS MAHOGANY SAVANNA (028BY043NV)
KEY SPECIES: IDAHO FESCUE (FEID) BLUEBUNCH WHEATGRASS (AGSP) NEEDLEANDTHREAD (STCO4)
UTILIZATION OBJECTIVE = 50% AVERAGE; NOT TO EXCEED 55% IN ANY SINGLE YEAR.

Year	Actual Use AUMs	Periods of Use	KMA Util. (percent)	Dates Read	KMA Use-Pattern Results ⁵	Dates Mapped	Pre-CAF Cap. (AUMs)	CAF	Post CAF Cap. (AUMs)	Ecological Stat./Prod.	Key Species Frequency
1999	2,546	02/26/99 TO 08/28/99	NO DATA	NOT READ	NOT MAPPED	N/A	NO DATA		NO DATA	NO STUDIES	NO STUDIES
1998	2,414	02/21/98 TO 08/15/98	NO DATA	NOT READ	NOT MAPPED	N/A	NO DATA		NO DATA	NO STUDIES	NO STUDIES
1997	1,800	02/18/97 TO 06/01/97	NO DATA	NOT READ	NOT MAPPED	N/A	NO DATA		NO DATA	NO STUDIES	NO STUDIES
1995	640 (S. HARDY)	04/06/96 TO 06/15/96	NO DATA	NOT READ	NOT MAPPED	N/A	NO DATA		NO DATA	NO STUDIES	NO STUDIES
1995	594	03/01/95 TO 07/23/95	NO DATA	NOT READ	NOT MAPPED	N/A	NO DATA		NO DATA	NO STUDIES	NO STUDIES
1994	1,132	11/01/94 TO 06/30/95 ⁶	NO DATA	NOT READ	NOT MAPPED	N/A	NO DATA	.86	NO DATA	NO STUDIES	NO STUDIES
1993	461	02/21/93 TO 05/07/94	NO DATA	NOT READ	NOT MAPPED	N/A	NO DATA	1.28	NO DATA	NO STUDIES	NO STUDIES
1992	NO DATA	NO DATA	NO DATA	NOT READ	NOT MAPPED	N/A	NO DATA	.72	NO DATA	NO STUDIES	NO STUDIES
1991	NO DATA	NO DATA	NO USE ⁴	02/18/92	NOT MAPPED	N/A	NO DATA	.68	NO DATA	NO STUDIES	NO STUDIES
1990	294 ²	12/10/90 TO 01/02/91	NO DATA	NOT READ	MODERATE - 2% LIGHT - 2% SLIGHT - 4% NOT MAPPED - 92%	04/03/90	NO DATA	.89	NO DATA	NO STUDIES	NO STUDIES
1989	418 ³	04/16/89 TO 05/28/89 and 10/01/89 TO 10/31/89	NO USE ⁴	11/29/89	HEAVY - 2% MODERATE - 9% LIGHT - 10% SLIGHT - 30% NOT MAPPED - 49%	11/29/89	N/A	.95	N/A	NO STUDIES	NO STUDIES
1988	178	09/16/88 TO 11/30/88	FEID - 1% AGSP - 0% STCO4 - 1%	11/08/88	HEAVY - 1% MODERATE - 3% LIGHT - 6% SLIGHT - 18% NOT MAPPED - 72%	11/08/88	8,900	1.10	8,091	NO STUDIES	NO STUDIES
1987	NO USE	N/A	NO USE	N/A	NOT MAPPED	N/A	N/A	.90	N/A	NO STUDIES	NO STUDIES
AVG.	497		FEID - 1% AGSP - 0% STCO4 - 1%				8,900		8,091		

FOOTNOTES:

- 1 Based on the Actual Grazing Use Report, the figures shown represent pasture-wide actual use which included Key Areas 4306-18 and 4306-19. This figure represents livestock use only.
- 2 Actual Use information is not available for the grazing period 03/01/90 to 04/30/90, therefore this figure may be incomplete.
- 3 Actual Use information is not available for the grazing period 11/01/89 to 02/28/90, therefore this figure may be incomplete.
- 4 A utilization transect was not conducted because use pattern mapping revealed no use in the vicinity of the key area by cattle.
- 5 Utilization levels read during use pattern mapping may include other species in addition to key species.
- 6 Actual Use information is not available beyond 02/28/95. Those AUMs occurring between 03/01/95 and 06/30/95 are based on licensing information.

**BIG SPRINGS ALLOTMENT STUDIES SUMMARY MATRIX
KEY AREA 4306-19
EAST PEQUOP BENCH PASTURE**

RANGE SITE: LOAMY 10-12" (028BY007NV)
KEY SPECIES: THURBER NEEDLEGRASS (STTH2) INDIAN RICEGRASS (ORHY)
UTILIZATION OBJECTIVE = 50% AVERAGE; NOT TO EXCEED 55% IN ANY SINGLE YEAR.

Year	Actual Use AUMs ¹	Periods of Use	KMA Util. (percent)	Dates Read	KMA Use-Pattern Results ⁷	Dates Mapped	Pre-CAF Cap. (AUMs)	CAF	Post CAF Cap. (AUMs)	Ecological Stat./Prod.	Key Species Frequency
1999	2,546	02/26/99 TO 08/28/99	NO DATA	NOT READ	NOT MAPPED	N/A	NO DATA		NO DATA	NOT READ	NOT READ
1998	2,414	02/21/98 TO 08/15/98	NO DATA	NOT READ	NOT MAPPED	N/A	NO DATA		NO DATA	NOT READ	NOT READ
1997	1,800	02/18/97 TO 06/01/97	NO DATA	NOT READ	NOT MAPPED	N/A	NO DATA		NO DATA	NOT READ	NOT READ
1996	640	04/06/96 TO 06/15/96	NO DATA	NOT READ	NOT MAPPED	N/A	NO DATA		NO DATA	NOT READ	NOT READ
1995	594	03/01/95 TO 07/23/95	NO DATA	NOT READ	NOT MAPPED	N/A	NO DATA		NO DATA	NOT READ	NOT READ
1994	1,132	11/01/94 TO 06/30/95 ⁸	NO DATA	NOT READ	NOT MAPPED	N/A	NO DATA	.86	NO DATA	NOT READ	NOT READ
1993	461	02/21/93 TO 05/07/94	NO DATA	NOT READ	NOT MAPPED	N/A	NO DATA	1.28	NO DATA	NOT READ	NOT READ
1992	NO DATA	NO DATA	NO DATA	NOT READ	NOT MAPPED	N/A	NO DATA	.72	NO DATA	NOT READ	NOT READ
1991	NO USE	N/A	NO USE	N/A	NOT MAPPED	N/A	N/A	.68	N/A	NOT READ	NOT READ
1990	294 ⁶	12/10/90 TO 01/02/91	STTH2 - 70% ORHY - 53%	04/10/91	MODERATE - 2% LIGHT - 2% SLIGHT - 4% NOT MAPPED - 92%	04/03/90	210	.89	236	39% OF PNC (mid seral) 1,842 lbs/acre	STTH2 - 38.0% ⁴ ORHY - 1.5% ⁴
1989	418 ⁵	04/16/89 TO 05/28/89 and 10/01/89 TO 10/31/89	STTH2 - 0% ² ORHY - 0%	06/09/89	HEAVY - 2% MODERATE - 9% LIGHT - 10% SLIGHT - 30% NOT MAPPED - 49%	06/09/89	N/A	.95	N/A	NOT READ	NOT READ
1988	178	09/16/88 TO 11/30/88	NO USE ^{3,3}	11/01/88	HEAVY - 1% MODERATE - 3% LIGHT - 6% SLIGHT - 18% NOT MAPPED - 72%	11/08/88	N/A	1.10	N/A	NOT READ	NOT READ
1987	NO USE	N/A	NO USE	N/A	NOT MAPPED	N/A	N/A	.90	N/A	43% OF PNC (mid seral) 494 lbs/acre	STTH2 - 40.5% ORHY - 1.5%
AVG.	1,048		STTH2 - 70% ORHY - 53%				210		236		

FOOTNOTES:

- 1 Based on the Actual Grazing Use Report, the figures shown represent pasture-wide actual use which included Key Areas 4306-18 and 4306-19. This figure represents livestock use only.
- 2 The well in the vicinity of this key area was not used, consequently showing no grazing use in the area.
- 3 A utilization transect was not conducted because use pattern mapping revealed no use in the vicinity of the key area by cattle.
- 4 ANOVA results show no significant change between years.
- 5 Actual Use information is not available for the grazing period 11/01/89 to 02/28/90, therefore this figure may be incomplete.
- 6 Actual Use information is not available for the grazing period 03/01/90 to 04/30/90, therefore this figure may be incomplete.
- 7 Utilization levels read during use pattern mapping may include other species in addition to key species.
- 8 Actual Use information is not available beyond 02/28/95. Those AUMs occurring between 03/01/95 and 06/30/95 are based on licensing information.

BIG SPRINGS ALLOTMENT STUDIES SUMMARY MATRIX
KEY AREA 4306-20
COMBINED LIVESTOCK AND WILDHORSE USE AT END OF WINTER
SHAFTER PASTURE

RANGE SITE: SALINE TERRACE 5-8" (028BY047NV)
KEY SPECIES: WHITE SAGE (EULA5) SALT SAGE (ATNU2)
UTILIZATION OBJECTIVE = 55% AVERAGE; NOT TO EXCEED 60% IN ANY SINGLE YEAR.

Year	Actual Use AUMs	Periods of Use	KMA Util. (percent)	Dates Read	KMA Use-Pattern Results ³	Dates Mapped	Pre-CAF Cap. (AUMs)	Ecological Stat./Prod.	Key Species Frequency
1999	3,067 Cattle 1,228 WH	11/01/99 TO 04/15/00 11/01/99 TO 03/31/00	NO DATA	NOT READ	NOT MAPPED	N/A	NO DATA	NOT READ	EULA5 - 25.5% ¹ ATNU2 - 24.0% ¹
1998	3,211 Cattle 529 WH 3,740 Total	11/07/98 TO 03/03/99 11/01/98 TO 01/06/99	EULA - 54% ⁴ (ATNU2 - 44%)	03/24/99			3,270 Cattle 539 WH 3,809 Total	NOT READ	NOT READ
1997	3,071 Cattle 1,194 WH 4,265 Total	11/06/97 TO 04/13/98 11/01/97 TO 03/31/98	EULA5 - 58% ⁴ (ATNU2 - 66%)	04/21/98	NOT MAPPED	N/A	2,912 Cattle 1,132 WH 4,044 Total	NOT READ	NOT READ
1996	3,112 Cattle 1,130 WH 4,242 Total	11/06/96 TO 03/12/97 11/01/96 TO 03/31/97	EULA5 - 47% ⁴ (ATNU2 - 53%)	03/11/97	NOT MAPPED	N/A	3,642 Cattle 1,322 WH 4,964 Total	NOT READ	NOT READ
1995	4,195 Cattle 994 WH 5,189 Total	11/01/95 TO 05/05/96 11/01/95 TO 03/31/96	EULA5 - 56% ⁴ (ATNU2 - 68%)	05/22/96	NOT MAPPED	N/A	4,120 Cattle 976 WH 5,096 Total	NOT READ	NOT READ
1994	2,827 Cattle 648 WH 3,475 Total	11/03/94 TO 03/14/95 11/01/94 TO 03/31/95	EULA5 - 74% ⁴ (ATNU2 - 69%)	04/13/95	SEVERE - 6% HEAVY - 9% MODERATE - 11% LIGHT - 7% SLIGHT - 8% INCIDENTAL USE - 43% NOT MAPPED - 16%	04/13/95	2,101 Cattle 482 WH 2,583 Total	NOT READ	NOT READ
1993	2,261 Cattle 349 WH 2,610 Total	11/07/93 TO 03/03/94 11/01/93 TO 03/31/94	NO DATA	NOT READ	NOT MAPPED	N/A	NO DATA	NOT READ	NOT READ
1992	480 Cattle 535 WH 1,015 Total	12/01/92 TO 01/15/93 11/01/92 TO 03/31/93	NO DATA	NOT READ	NOT MAPPED	N/A	NO DATA	NOT READ	NOT READ

Year	Actual Use AUMs	Periods of Use	KMA Util. (percent)	Dates Read	KMA Use-Pattern Results ¹	Dates Mapped	Pre-CAF Cap. (AUMs)	Ecological Stat./Prod.	Key Species Frequency
1991	573 Cattle 313 WH 886 Total	12/28/91 TO 02/28/92 11/01/91 TO 03/31/92	NO DATA	NOT READ	NOT MAPPED	N/A	NO DATA	NOT READ	NOT READ
1990	2,258 Cattle 980 WH 3,238 Total	11/07/90 TO 04/14/91 11/01/90 TO 03/31/91	EULA5 - 48% ⁴ (ATNU2 - 55%)	04/17/91	NOT MAPPED	N/A	2,587 Cattle 1,123 WH 3,710 Total	80% OF PNC (pnc) 674 lbs/acre	EULA5 - 15.5% ¹ ATNU2 - 17.0% ¹
1989	NO DATA - Cattle 198 WH	NO DATA 11/01/89 TO 03/31/90	EULA5 - 52% ^{2,4} (ATNU2 - 60%)	04/03/90	HEAVY - 4% MODERATE - 7% LIGHT - 19% SLIGHT - 32% NOT MAPPED - 38%	04/03/90	NO DATA	NOT READ	NOT READ
1988	1,434 Cattle 69 WH 1,503 Total	12/01/88 TO 04/26/89 11/01/8 TO 03/31/89	EULA5 - 29% ¹ (ATNU2 - 23%)	05/01/89	HEAVY - 1% MODERATE - 7% LIGHT - 12% SLIGHT - 29% NOT MAPPED - 51%	05/01/89	2,720 Cattle 131 WH 2,851 Total	NOT READ	NOT READ
1987	395 Cattle 642 WH 1,037 Total	11/23/87 TO 02/28/88 11/01/87 TO 03/31/88	NO DATA	NOT READ	NOT MAPPED	N/A	NO DATA	80% OF PNC (pnc) 334 lbs/acre	EULA5 - 32.0% ¹ ATNU2 - 30.0% ¹
AVG.	2,240 Cattle 678 WH 2,918 Total		EULA5 - 52% ATNU2 - 55%				3,050 Cattle 815 WH 3,865 Total		

FOOTNOTES:

WH = Wild Horses

PNC = Potential Natural Community

1 ANOVA results show a statistically significant decrease in 1990 and no significant change between 1987 and 1999.

2 This key area utilization level reflects the use levels associated with the grazing that took place during the winter of 1989-1990 of which no cattle actual use information is available.

3 Utilization levels read during use pattern mapping may include other species in addition to key species.

4. EULA5 considered the principle key management species; therefore, percent utilization on EULA5 was the only percentage used to calculate the pre-CAF and post-CAF capacities (AUMs).

**BIG SPRINGS ALLOTMENT STUDIES SUMMARY MATRIX
KEY AREA 4306-21
SHAFTER WELL #2 & VICINITY - PRE-LIVESTOCK USE BY WILD HORSES
SHAFTER PASTURE**

RANGE SITE: SALINE TERRACE 5-8" (028BY047NV)
KEY SPECIES: INDIAN RICEGRASS (ORHY); WHITE SAGE (EULA5)
UTILIZATION OBJECTIVE = 10% AVERAGE BY WILD HORSES PRIOR TO ENTRY OF LIVESTOCK.

Year	Actual Use AUMs	Periods of Use	KMA Util. (percent)	Dates Read	Calculated Capacity (AUMs)	Ecological Stat./Prod.	Key Species Frequency
1999	1,155 WH	04/01/99 TO 10/20/99	ORHY - 50% ¹ ONLY AT PATCHES ALONG ROADS & TRAIL(S)	10/20/99	N/A ¹	NO STUDIES	NO STUDIES
1998	1,624 WH	04/01/98 TO 10/20/98	EULA5 - 31%	10/20/98	524	NO STUDIES	NO STUDIES
1997	2,125 WH	04/01/97 TO 10/29/97	ORHY - 55%	10/29/97	386	NO STUDIES	NO STUDIES
1996	1,394 WH	04/01/96 TO 08/29/96	ORHY - 63%	08/29/96	221	NO STUDIES	NO STUDIES
1995	1,625 WH		NO DATA	NO DATA		NO STUDIES	NO STUDIES
1994	919 WH		NO DATA	NO DATA		NO STUDIES	NO STUDIES
1993	1,006 WH	04/01/93 TO 10/06/93	ORHY - 42% ² EULA5 - 27% ²	10/06/93	240	NO STUDIES	NO STUDIES
1992						NO STUDIES	NO STUDIES
1991	1,292 WH	04/01/91 TO 12/05/91	ORHY - 20%	12/05/91	646	NO STUDIES	NO STUDIES
1990	1,854 WH	04/01/90 TO 12/07/90	ORHY - 59%	12/07/90	314	NO STUDIES	NO STUDIES
AVG.	1,444 WH		ORHY - 45%¹ EULA5 - 29%		389		

FOOTNOTES:

WH = Wild Horses

1. This utilization observation was not used to calculate average utilization or carrying capacity because the distribution of use was considered too limited to be representative of use in the larger area.
2. Utilization levels recorded in the vicinity of 30 Mile Canyon and considered to be representative of wild horse use in the Shafter Well #2 vicinity.

BIG SPRINGS ALLOTMENT STUDIES SUMMARY MATRIX
KEY AREA 4306-21
SHAFTER WELL #2 AND VICINITY- END OF WINTER (COMBINED CATTLE AND WILD HORSE USE)
SHAFTER PASTURE

RANGE SITE: SALINE TERRACE 5-8" (028BY047NV)
KEY SPECIES: WHITE SAGE (EULA5) SALT SAGE (ATNU2)
UTILIZATION OBJECTIVE = 55% AVERAGE; NOT TO EXCEED 60% IN ANY SINGLE YEAR.

Year	Actual Use AUMs	Periods of Use	KMA Util. (percent)	Dates Read	KMA Use-Pattern Results ¹	Dates Mapped	Calculated Capacity (AUMs)	Ecological Stat./Prod.	Key Species Frequency
1999	3,067 Cattle 1,228 WH	11/01/99 TO 04/15/00 11/01/99 TO 03/31/00	NO DATA	NOT READ	NOT MAPPED	N/A	NO DATA	NO STUDIES	NO STUDIES
1998	3,211 Cattle 529 WH 3,740 Total	11/07/98 TO 03/03/99 11/01/98 TO 01/06/99	EULA5 - 41% ² (ATNU2 - 54%)	03/24/99	NOT MAPPED	N/A	4,307 Cattle 710 WH 5,017 Total	NO STUDIES	NO STUDIES
1997	3,071 Cattle 1,194 WH 4,265 Total	11/06/97 TO 04/13/98 11/01/97 TO 03/31/98	EULA5 - 58% ² (ATNU2 - 74%)	04/21/98	NOT MAPPED	N/A	2,912 Cattle 1,132 WH 4,044 Total	NO STUDIES	NO STUDIES
1996	3,112 Cattle 1,130 WH 4,242 Total	11/06/96 TO 03/12/97 11/01/96 TO 03/31/97	EULA5 - 25% ² (ATNU2 - 30%)	03/11/97	NOT MAPPED	N/A	6,846 Cattle 2,486 WH 9,332 Total	NO STUDIES	NO STUDIES
1995	4,195 Cattle 994 WH 5,189 Total	11/01/95 TO 05/05/96 11/01/95 TO 03/31/96	EULA5 - 58% ² (ATNU2 - 66%)	05/22/96	NOT MAPPED	N/A	3,978 Cattle 943 WH 4,921 Total	NO STUDIES	NO STUDIES
1994	2,827 Cattle 648 WH 3,475 Total	11/03/94 TO 03/14/95 11/01/94 TO 03/31/95	NO DATA	NOT READ	SEVERE - 6% HEAVY - 9% MODERATE - 11% LIGHT - 7% SLIGHT - 8% INCIDENTAL USE - 43% NOT MAPPED - 16%	04/13/95	NO DATA	NO STUDIES	NO STUDIES
1993	2,261 Cattle 349 WH 2,610 Total	11/07/93 TO 03/03/94 11/01/93 TO 03/31/94	NO DATA	NOT READ	NOT MAPPED	N/A	NO DATA	NO STUDIES	NO STUDIES
1992	480 Cattle 535 WH 1,015 Total	12/01/92 TO 01/15/93 11/01/92 TO 03/31/93	NO DATA	NOT READ	NOT MAPPED	N/A	NO DATA	NO STUDIES	NO STUDIES

Year	Actual Use AUMs	Periods of Use	KMA Util. (percent)	Dates Read	KMA Use-Pattern Results ¹	Dates Mapped	Calculated Capacity (AUMs)	Ecological Stat./Prod.	Key Species Frequency
1991	573 Cattle 313 WH 886 Total	12/28/91 TO 02/28/92 11/01/91 TO 03/31/92	NO DATA	NOT READ	NOT MAPPED	N/A	NO DATA	NO STUDIES	NO STUDIES
1990	2,258 Cattle 980 WH 3,238 Total	11/07/90 TO 04/14/91 11/01/90 TO 03/31/91	EULA5 - 48% ² (ATNU2 - 55%)	04/17/91	NOT MAPPED	N/A	2,587 Cattle 1,123 WH 3,710 Total	NO STUDIES	NO STUDIES
1989	NO DATA - Cattle 198 WH	NO DATA 11/01/89 TO 03/31/90	NO DATA	NOT READ	HEAVY - 4% MODERATE - 7% LIGHT - 19% SLIGHT - 32% NOT MAPPED - 38%	04/03/90	NO DATA	NO STUDIES	NO STUDIES
1988	1,434 Cattle 69 WH 1,503 Total	12/01/88 TO 04/26/89 11/01/8 TO 03/31/89	NO DATA	NOT READ	HEAVY - 1% MODERATE - 7% LIGHT - 12% SLIGHT - 29% NOT MAPPED - 51%	05/01/89	NO DATA	NO STUDIES	NO STUDIES
1987	395 Cattle 642 WH 1,037 Total	11/23/87 TO 02/28/88 11/01/87 TO 03/31/88	NO DATA	NOT READ	NOT MAPPED	N/A	NO DATA	NO STUDIES	NO STUDIES
AVG.	2,240 Cattle 678 WH 2,918 Total		EULA5 - 46% ATNU2 - 56%				4,126 Cattle 1,279 WH 5,405 Total		

FOOTNOTES:

WH = Wild Horses

PNC = Potential Natural Community

1. Utilization levels read during use pattern mapping may include other species in addition to key species.

2. EULA5 considered the principle key management species; therefore, percent utilization on EULA5 was the only percentage used to calculate capacities (AUMs).

**BIG SPRINGS ALLOTMENT STUDIES SUMMARY MATRIX
JOHNSON WELL
WINDMILL FIELD**

RANGE SITE: LOAMY 10-12" (028BY007NV)
KEY SPECIES: RUSSIAN WILDRYE (ELJU)
UTILIZATION OBJECTIVE = 65% AVERAGE; NOT TO EXCEED 70% IN ANY SINGLE YR.

Year	Actual Use AUMs	Periods of Use	KMA Util. (percent)	Dates Read	KMA Use-Pattern Results	Dates Mapped	Pre-CAF. Cap. AUMs	Ecological Stat./Prod.	Key Species Frequency
1999	442	05/15/99 TO 08/01/99	N/A	N/A	NOT MAPPED	N/A		NO STUDIES	NO STUDIES
1998	NO USE	N/A	N/A	N/A	NOT MAPPED	N/A		NO STUDIES	NO STUDIES
1997	420	04/01/97 TO 07/03/97	ELJU - 70% ²	10/31/97	NOT MAPPED	N/A	390	NO STUDIES	NO STUDIES
1996	417	06/02/96 TO 08/13/96	N/A	N/A	NOT MAPPED	N/A		NO STUDIES	NO STUDIES
1995	320	06/03/95 TO 10/03/95	N/A	N/A	NOT MAPPED	N/A		NO STUDIES	NO STUDIES
1994	359	07/07/94 TO 10/12/94	N/A	N/A	NOT MAPPED	N/A		NO STUDIES	NO STUDIES
1993	NO USE	N/A	N/A	N/A	NOT MAPPED	N/A		NO STUDIES	NO STUDIES
1992	NO DATA	NO DATA	N/A	N/A	NOT MAPPED	N/A		NO STUDIES	NO STUDIES
1991	NO DATA	NO DATA	N/A	N/A	NOT MAPPED	N/A		NO STUDIES	NO STUDIES
1990	214	05/06/90 TO 07/14/90	N/A	N/A	NOT MAPPED	N/A		NO STUDIES	NO STUDIES
1989	148 ¹	10/18/89 TO 11/30/89	ELJU - 70% ²	07/19/89	HEAVY - 17% MODERATE - 19% LIGHT - 28% SLIGHT - 22% NOT MAPPED - 14%	07/19/89	137	NO STUDIES	NO STUDIES
1988	47	10/18/88 TO 10/31/88	ELJU - 70% ²	11/08/88	SEVERE - 3% HEAVY - 8% MODERATE - 22% LIGHT - 23% SLIGHT - 44%	11/08/88	44	NO STUDIES	NO STUDIES
1987	NO USE	N/A	N/A	N/A	NOT MAPPED	N/A		NO STUDIES	NO STUDIES
AVG.	296		70%				190		

FOOTNOTES:

- 1 The Actual Grazing Use Report submitted by the permittee did not include any use in this field. Use Pattern mapping showed that grazing had occurred and this figure is a reconstruction by the range conservationist.
2. Utilization percentage selected from the use pattern map.

**BIG SPRINGS ALLOTMENT STUDIES SUMMARY MATRIX
REYNOLDS WELL
RAILROAD FIELD**

RANGE SITE: · LOAMY 10-12" (028BY007NV)
KEY SPECIES: THURBER NEEDLEGRASS (STTH2)
UTILIZATION OBJECTIVE = 50% AVERAGE; NOT TO EXCEED 55% IN ANY SINGLE YEAR.

Year	Actual Use AUMs	Periods of Use	KMA Util. (percent)	Dates Read	KMA Use-Pattern Results	Dates Mapped	Pre-CAF Cap. (AUMs)	Ecological Stat./Prod.	Key Species Frequency
1999	255	05/19/99 TO 08/02/99	N/A	N/A	NOT MAPPED	N/A		NO STUDIES	NO STUDIES
1998	NO USE	N/A	N/A	N/A	NOT MAPPED	N/A		NO STUDIES	NO STUDIES
1997	324	05/13/97 TO 07/05/97	STTH2 - 30% ¹	10/31/97	NOT MAPPED	N/A	540	NO STUDIES	NO STUDIES
1996	NO USE	N/A	N/A	N/A	NOT MAPPED	N/A		NO STUDIES	NO STUDIES
1995	84	07/05/95 TO 09/10/95	N/A	N/A	NOT MAPPED	N/A		NO STUDIES	NO STUDIES
1994	21	06/15/94 TO 06/21/94	N/A	N/A	NOT MAPPED	N/A		NO STUDIES	NO STUDIES
1993	NO USE	N/A	N/A	N/A	NOT MAPPED	N/A		NO STUDIES	NO STUDIES
1992	NO DATA	NO DATA	N/A	N/A	NOT MAPPED	N/A		NO STUDIES	NO STUDIES
1991	NO DATA	NO DATA	N/A	N/A	NOT MAPPED	N/A		NO STUDIES	NO STUDIES
1990	59	11/02/90 TO 11/09/90	STTH2 - 70% ¹	11/09/90	HEAVY - 75% MODERATE - 15% LIGHT - 10%	11/09/90	42	NO STUDIES	NO STUDIES
1989	NO USE	N/A	N/A	N/A	NOT MAPPED	N/A		NO STUDIES	NO STUDIES
1988	NO USE	N/A	N/A	N/A	NOT MAPPED	N/A		NO STUDIES	NO STUDIES
1987	NO USE	N/A	N/A	N/A	NOT MAPPED	N/A		NO STUDIES	NO STUDIES
AVG.	149		STTH2 - 50%				291		

FOOTNOTES:
1. UTILIZATION LEVEL SELECTED FROM THE USE PATTERN MAP.

BIG SPRINGS ALLOTMENT STUDIES SUMMARY MATRIX
BIG SPRINGS
NORTH OF HOME PASTURE

RANGE SITE: LOAMY 8 - 10" (028BY010NV)
KEY SPECIES: NONE

Year	Actual Use AUMs	Periods of Use	KMA Util. (percent)	Dates Read	KMA Use-Pattern Results	Dates Mapped	Ecological Stat./Prod.	Key Species Frequency
1999	NO USE	N/A	N/A	N/A	NOT MAPPED	N/A	NO STUDIES	NO STUDIES
1998	NO USE	N/A	N/A	N/A	NOT MAPPED	N/A	NO STUDIES	NO STUDIES
1997	17	05/11/97 TO 08/17/97	N/A	N/A	NOT MAPPED	N/A	NO STUDIES	NO STUDIES
1996	42	06/09/96 TO 06/18/96	N/A	N/A	NOT MAPPED	N/A	NO STUDIES	NO STUDIES
1995	59	05/05/95 TO 07/24/95	N/A	N/A	NOT MAPPED	N/A	NO STUDIES	NO STUDIES
1994	53	05/01/94 TO 05/14/94	N/A	N/A	NOT MAPPED	N/A	NO STUDIES	NO STUDIES
1993	NO USE	N/A	N/A	N/A	NOT MAPPED	N/A	NO STUDIES	NO STUDIES
1992	NO DATA	NO DATA	N/A	N/A	NOT MAPPED	N/A	NO STUDIES	NO STUDIES
1991	NO DATA	NO DATA	N/A	N/A	NOT MAPPED	N/A	NO STUDIES	NO STUDIES
1990	NO DATA	NO DATA	N/A	N/A	NOT MAPPED	N/A	NO STUDIES	NO STUDIES
1989	NO DATA	NO DATA	N/A	N/A	HEAVY - 1% MODERATE - 2% LIGHT - 15% SLIGHT - 46% NOT MAPPED - 36%	09/21/89	NO STUDIES	NO STUDIES
1988	NO DATA	NO DATA	N/A	N/A	LIGHT - 21% SLIGHT - 39% NOT MAPPED - 40%	10/06/88	NO STUDIES	NO STUDIES
1987	NO DATA	NO DATA	N/A	N/A	NOT MAPPED	N/A	NO STUDIES	NO STUDIES
AVG.	43							

FOOTNOTES:

Appendix 5 : Fire Management Plan

Introduction:

In 1998, the Elko Field Office prepared a new district-wide fire management plan that encompasses all BLM administered public lands within the Elko District boundaries. This plan was prepared as per national direction and went through public review and internal review. This plan was approved at the national level in 1999. This plan defines the goals and general objectives for fire suppression, prescribed fire and fuels management for the District.

This site specific plan tiers off the Field Office plan and sets specific objectives for this area in the areas of prescribed fire fuels management. The wildland fire suppression objectives remain constant with the Field Office plan. The site specificity of this plan will assist in meeting the goals and objectives of the Elko Field Office Plan.

Background Information:

The Field Office Fire Management Plan differentiated fire management goals and objectives by area and vegetation type. These "polygons" are the basis for all fire management activity within the district. The Big Sprigs Allotment Fire Management Plan has ten (10) of these polygons located within its scope.

These polygons (Map 10, Appendix 1) and their descriptions are as follows:

A-3 Cultural Sites, Historic and Protohistoric

Current Condition - These areas of high cultural concern contain perishable sites, which are easily damaged by wildfire. They occur in vegetation types ranging from low sagebrush to pinyon-juniper woodlands.

Future Desired Condition - Maintain integrity of these cultural sites.

Constraints - Mechanized equipment can be used to keep wildfire out of these areas only with the on-site presence and approval of an archaeologist. No mechanized equipment is to be used within the perimeter of the sites.

Appropriate Fire Management Response - All fires will be kept to minimum possible acreage based on firefighter safety and restrictions on mechanized equipment usage. There will be no planned ignitions within these boundaries. Fire history for these areas is 1.4 fires per year burning an average of 17 acres.

Prescribed Fire/Fuels Management Opportunities - None within boundaries. Outside of boundaries some limited prescribed fire or mechanical treatments to create buffer zone around the sites.

B-2 Toano Range, South of I-80

Current Condition - Primary vegetation type is pinyon pine intermixed with mountain mahogany, bitterbrush, perennial grasses and sagebrush. This area's resource management goals are for woodland products, especially pine nut collection and Christmas tree production, and livestock grazing.

Future Desired Condition - Maintain current vegetative structure.

Constraints - None, unless archaeological sites are present.

Appropriate Fire Management Response - Hold unplanned ignitions to 300 acres at least 90 percent of the time. Fire history for the area is that of isolated occasional small (0-1 acre) fires. The vegetation type is conducive to large wind-driven or plume dominated fires that can burn 500 to 5,000 acres in one to two burning periods. Fire history for this area shows an average of 0.25 fire per year burning 0 acres.

Prescribed Fire/Fuels Management Opportunities - Use mechanical treatments to change vegetation age structure and composition. Chainings and seedings within this polygon can be maintained through the use of planned ignitions. These ignitions will not be considered part of the decadal burn targets since they are maintenance of existing developments.

B-3 District-wide Areas of Annual Vegetation Invasion

Current condition - Cheatgrass and other annuals dominate these polygons. Isolated areas of sagebrush in early to mid seral condition and native perennial grasses are also present.

Future Desired Condition - Resource management objectives for these areas are to restrict the expansion of cheatgrass into surrounding native plant communities and to increase the amount of native vegetation available for livestock grazing, wildlife habitat and watershed improvement.

Constraints - None, unless archaeological sites are present. Pole Creek on the south side of the Cortez Range and Pearl Creek on the west side of the Ruby Mountains are critical watersheds within these polygons. Primary emphasis is on preventing the spread of fire into areas of native vegetation.

Appropriate Fire Management Response - Hold unplanned ignitions to 300 acres at least 90 percent of the time. The Battle Mountain Field Office has their adjacent areas in a "C" category. They will prevent the spread of fire in their "C" polygon into this polygon. Fire history in these areas is dominated by large acreage fast-burning fires that often exceed 20,000 acres. They are dependent on the amount of winter/spring precipitation and the resultant amount of annual vegetation growth. These fires expand

the annual vegetation areas by burning into native vegetation, which allows the annuals to colonize the burned areas in the year after the fire. Fire history for this area shows an average of 21 fires per year burning 12,149 acres.

Prescribed Fire/Fuels Management Opportunities - Prescribed fire is to be used in a selective manner in these areas, usually in conjunction with mechanical or chemical treatments. Planned ignitions can be used in a limited way to accomplish specific management objectives within areas of native vegetation. Chainings and seedings within this polygon will be maintained through the use of planned ignitions. These ignitions will not be considered part of the decadal burn targets since they are maintenance of existing developments.

B-6 Low Sagebrush & Desert Shrub

Current Condition - These areas are dominated by plant communities that do not have fire as part of their natural ecology. Vegetation types are dominated by desert shrub and low sage communities with varying degrees of perennial grasses and forb composition. Management objectives in these areas are to maintain the native community, to provide for livestock and wildlife forage. Some of the areas are important for winter antelope habitat.

Future Desired Condition - Prevent annual vegetation or non-native plant incursions into this vegetation type resulting from disturbance of the existing community. Maintain native vegetation composition.

Constraints - Low vegetation response potential, limited precipitation and fragile soils mean that mechanized equipment will scar the land and make rehabilitation expensive. Engine usage should be the preferred alternative since most of the fires occur next to roads.

Appropriate Fire Management Response - Hold unplanned ignitions to 100 acres at least 90 percent of the time. All human caused fires will be fully suppressed using minimal impact suppression techniques (MIST). At low fire activity levels, natural ignitions may be monitored if this will cause less ecological impact than suppression. All fires will be fully suppressed using MIST. Ely Field Office has an acreage target for unplanned ignitions of 50 acres for adjacent areas (Steptoe Valley) in the same vegetative community. Elko Field Office will suppress all fires within two (2) miles of the boundary to the higher Ely standard. Fire history in these areas show an average of 6.5 fires per year burning 513 acres.

Prescribed Fire/Fuel Treatment Opportunities - Prescribed fire should be a very minor component in these areas and then only to achieve site specific resource objectives within the context of the larger area.

B-7 Big Sagebrush Areas with Low to Moderate Response Potential

Current Condition - The vegetation in these areas is dominated by big sagebrush and perennial grasses with bitterbrush on higher elevation sites. The management objectives in these areas are to maintain and improve the native vegetation conditions while protecting critical watersheds and providing forage for livestock and wildlife. These areas occur in lower precipitation zones (primarily 8-10"/year). The response potential following wildfire is limited due to current ecological conditions. This means that most wildfires in these areas will need rehabilitation to restore the native community and ground cover.

Future Desired Condition - Maintain and improve the native vegetation and species diversity. Increase perennial grass production. Improve riparian areas to make fully functioning.

Constraints - The low to moderate response potential of these sites means that mechanized equipment will leave long-term scars on the land and will increase the rehabilitation costs. Therefore, mechanized equipment should be used only to protect areas of high resource concerns or values, such as critical watersheds or streams and intermixed private property.

Appropriate Fire Management Response - Hold unplanned ignitions to 300 acres or less at least 90 percent of the time. Minimize disturbance and retardant use in critical watersheds. Fire history in these areas is moderate with most fires being limited to one to 100 acres but 10-15 percent of the ignitions burn from 500 to 5,000+ acres. These areas also contain intermingled private property. Fire history for these areas show an average of 11.3 fires per year burning 2,894 acres.

Prescribed Fire/Fuel Management Opportunities - Prescribed fire may be used in limited areas to achieve specific management goals. Chainings and seedings within this polygon will be maintained through the use of planned ignitions. These ignitions will not be considered part of the decadal burn targets since they are maintenance of existing developments.

B-8 Wood Hills, Pequops and North end of Toanos

Current Condition - These areas are dominated by woody vegetation consisting of pinyon pine, mountain mahogany and bitterbrush with associated perennial grasses and shrubs. The response potential of the lower elevation sagebrush/grassland types is limited due to lower precipitation and current ecological conditions. The potential for invasion by annual vegetation following wildfire is high. The vegetative response potential increases in the higher elevations. Management objectives are for woodland products, maintaining crucial big game habitat, and providing livestock forage.

Future Desired Condition - Maintain woodland characteristics of the area. Improve age structure class of woody vegetation. Maintain and improve wildlife forage production. Maintain perennial grass diversity and prevent the incursion of annual and non-native species.

Constraints- Vehicle access is fairly limited, so aerial delivery of resources may be effective at higher elevations. Potential for cheatgrass colonization is high so ground disturbance should be limited.

Appropriate Fire Management Response - Hold unplanned ignitions to 300 acres or less at least 90 percent of the time. This is a high fire occurrence area with primarily small (0-10 acres) fires; five to 10 percent of the fires burn between 100 and 500 acres. This vegetation type is conducive to wind-driven or plume-dominated fires that can burn 500 to 5,000 acres in one to two burning periods. Fire history for these areas show an average of 7 fires per year burning 353 acres.

Prescribed Fire/Fuels Management Opportunities - Prescribed fire can play a limited role in improving big game habitat where it does not conflict with woodland resources. Mechanical treatments are preferable in the woodland areas to change stand age structure and composition. Use mechanical vegetation treatments to create openings of 10 to 50 acres. Prescribed fire will be used to meet wildlife objectives only if mechanical treatments are not feasible. Chainings and seedings within this polygon will be maintained through the use of planned ignitions. These ignitions will not be considered part of the decadal burn targets since they are maintenance of existing developments.

B-9 North Pequops, Murdock and Toano Draws

Current Condition - These areas are dominated by Utah juniper, pinyon pine, bitterbrush and mountain mahogany at the higher elevations and by sagebrush and perennial grasses in the drainage bottoms. The management objectives for this area are for woodland products, maintaining crucial big game habitat, protecting the extensive cultural sites and producing forage for livestock.

Future Desired Condition - Maintain woody vegetation characteristics of this area. Maintain and improve woody species age class distribution. Improve wildlife habitat. Maintain perennial grass diversity. Prevent incursion of annual and non-native plant species.

Constraints - Extensive cultural sites limit mechanized equipment use. An archaeologist needs to be on-site to approve any such usage. Intermixed private lands and the town of Montello need higher levels of protection.

Appropriate Fire Management Response - Hold unplanned ignitions to 300 acres or less at least 90 percent of the time. Planned ignitions should not exceed 1,000 acres. Planned ignitions will be curtailed if unplanned ignitions accomplish management objectives. Fire history consists of primarily small (0-10 acres) fires with approximately 20 percent of the fires burning between 100 and 500 acres. This vegetation type is conducive to wind-driven or plume-dominated fires that can burn from 500 to 5,000 acres in one or two burning periods. Fire history for this area shows an average of 4.6 fires per year burning 330 acres.

Prescribed Fire/Fuels Management Opportunities - The Wells RMP identified 1,000 acres of prescribed fire in this polygon to achieve resource management goals. If the goals of prescribed fire are met with unplanned ignitions, no planned ignitions will be undertaken. Chainings and seedings within this polygon will be maintained through the use of planned ignitions. These ignitions will not be considered part of the decadal burn targets since they are maintenance of existing developments.

C-1 Wilderness Study Areas (WSA's)

Current Condition - The vegetation types in these areas vary from sagebrush and perennial grasses to pinyon-juniper woodlands to mixed conifer woodlands. Primary management objectives for these areas are to maintain their natural characteristics and to comply with the Interim Management Policy for Lands under Wilderness Review.

Future Desired Condition - Maintain the natural ecology of the areas including pre-settlement fire activity. Prevent the encroachment of annual and non-native vegetation into the areas.

Constraints - No mechanized equipment usage. All vehicular traffic must be on routes identified during the initial inventory (1979-1981). Use MIST and "light hand on the land" techniques. Several critical streams and watersheds are within the WSAs' boundaries, including the South Fork Little Humboldt River and tributaries, South Fork Owyhee River, Bruneau River and Salmon Falls Creek.

Appropriate Fire Management Response - Hold unplanned ignitions to 2,000 acres or less at least 90 percent of the time. The fire histories in these areas range from low to high with most being small (0-10 acres). Occasional large (10,000+ acres) fires have occurred in some areas. Both planned and unplanned ignitions can be managed to maintain fire as part of the natural ecology, to reduce fuel loadings and to meet specific management objectives. Fire history for these areas show an average of 3.2 fires per year burning 66 acres.

Prescribed Fire/Fuels Management Opportunities - Use planned ignitions to reintroduce fire into the ecology of the areas. Develop and apply fire prescription guidelines to allow for management of unplanned ignitions through monitoring and/or minimal suppression efforts in these areas if prescription guidelines are met. Planned ignitions will be curtailed if unplanned ignitions meet management objectives. Use MIST in all suppression actions.

C-2 Mixed Conifer

Current Condition - These are high elevation areas with the predominant vegetation type being white fir, limber pine, bristlecone pine and spruce. These stands isolated on the tops of the higher elevation mountain ranges in the eastern part of the district. Because of the lack of disturbance most of these stands are becoming even aged stands and are dominated by dead standing and down trees. There is a heavy fuel load associated with these areas, making them more susceptible to a large stand replacing fire. Desired management for this area is to restore the health of the forest community.

Future Desired Condition - Healthy mosaic of uneven aged conifer stands with reduced fuel loadings.

Constraints - Limited access into these areas makes aerial delivery of resources the most effective tool.

Appropriate Fire Management Response - Hold unplanned ignitions to 100 acres at least 90 percent of the time. Fire history in these areas is that of occasional very small (0-1 acre) fires. The present stand composition would make any large wildfire (unplanned ignition) a lethal, stand replacement fire.

Prescribed Fire/Fuels Management Opportunities - Prescribed fire should play a large part in this process. Because of the fuels build-up in these areas, a series of low-intensity prescribed fires should be done to reduce fuel loadings, open up mineral soil for seedling germination, and increase nutrient recycling and create a mosaic of uneven aged pockets within the stand while avoiding total destruction of the stand as a whole. Prescribed fire can be used in conjunction with thinning projects to reduce the number of stems per acre. Planned ignitions will be used in these areas to meet the management objective of maintaining a healthy stand. Planned ignitions will be low-intensity surface fires with allowable torching of pockets of heavy fuels and will be planned in cycles (five years prior to reentry) to gradually reduce fuel loadings and create a mosaic of different aged stands. The entire polygon will be put into a planned ignition plan. The decadal burn target of approximately 23,500 acres is based on burning one half the area once with low-intensity fire. Develop and apply fire prescription guidelines to allow for management of unplanned ignitions through monitoring and/or minimal suppression efforts in these areas if prescription guidelines are met. Planned ignitions will be curtailed if unplanned ignitions meet the decadal acreage target.

U-1 Small Towns, Mining Operations and Recreation Sites (Urban Interface)

Current Condition - The primary vegetation type around these areas is sagebrush and perennial grasses with intrusions of cheatgrass and other annual vegetation. The management objective for these areas is to preserve and protect the developed features, life and property. This area also includes the rapidly growing urban interface around Elko and Spring Creek Recreation sites may be developed or undeveloped, but receive from moderate to heavy use during the summer and fall months.

Future Desired Condition - Maintain or improve the native vegetation in the area. Use vegetation manipulation to create buffer areas around critical developed sites to provide for public safety.

Constraints - Construction of fire line within the recreation sites should be avoided. If necessary, the minimum line needed should be located outside of developed sites, areas of concentrated use or Special Recreation Management Areas. Efforts should be made to keep unplanned ignitions from reaching these areas. Powerlines, communication sites and other critical sites within the mining and oil/gas sites need full protection. Problems associated with these areas include powerlines and arcing and chemical and explosive storage areas. Fire history for these areas shows an average of 9.4 fires per year burning 2,901 acres.

Appropriate Fire Management Response - Hold unplanned ignitions to minimal acreage within this polygon. Fire history is minimal because of their size, however, many can be easily threatened by wildfire. .

Prescribed Fire/Fuels Management Opportunities - Use planned ignitions to reduce fuel loadings. Most of the mining areas (Carlin Trend) and urban interface are within Nevada Division of Forestry protection zones. Work with NDF and the mining companies to do hazard fuel reduction (either mechanical or planned ignitions) around critical sites. Area also has great potential for green stripping projects to create buffers around critical areas. The small towns in greatest risk from wildfire are Midas and Tuscorora and are priority for greenstripping or other fuels modification treatments.

Fire History

The Big Springs allotment has one of the highest wildland fire occurrences in the Elko Field Office. In the period from 1980 to 1996 there were 113 documented wildland fires within the boundaries of the allotment. There is no easily assessable data for the years 1997 to 1999, but based on prior history, there were probably an additional 30 to 40 wildland fires. The majority of these fires occur in the pinyon-juniper and mixed conifer vegetative areas on the Pequop Mountains, the Toano Range and Wood Hills. Most of these fires were small averaging less than ½ acre, with occasional fires of from 100 to 300 acres and from 1000 to 3500 acres. (See Map 10).

Fire History. Table 1

Polygon	Number of Fires	False Alarms	Largest Fire Size and Year	Total Acres
A3 Cultural Areas	6	0	10 - 1986	15.5
B2 Toano's South of I-80	2	2	0.1 - 1991	0.2
B3 Cheatgrass Areas	1		260 - 1984	260.0
B6 Low Sage/Desert Shrub	18	4	3871 - 1991	3,877.8
B7 Big Sagebrush	13	4	2 - 1981/84	9.0
B8 Toano Range	9	3	103.6 - 1989	116.2
B8 Wood Hills	17	5	3249.8 - 1994	3,254.4
B8 Pequops Mtns.	26	4	315.1 - 1984	380.7
B9 N. Pequops	11	2	1178 - 1985	2,208.5
C1 WSA	0 in Allot	0	0	0
C2 Mixed Conifer	7	0	1.0 - 1981	1.6
E1 Urban Interface	3	0	0.1 - 1990	0.3
Totals	113	24		10,125.3

Note: This includes total wildland fire ignitions from 1980 to 1996 and large fire occurrence from 1980 to 1999.

Wildland Fire Suppression Tactics:

- A. **Recommendation:** Maintain the current suppression strategies as called for in the 1998 Elko Field Office Fire Management Plan for “polygons” A3,B2,B3,B6,B7,B8,B9, and U1.

Rationale: The fire management plan takes into account fire occurrence and size and location of suppression resources to achieve the “Most Effective Level” of fire suppression for the district in its entirety. The effectiveness of suppression is monitored through periodic evaluations.

- B. **Recommendation:** Create Wildland Fire Use Areas in the Bluebell WSA (entire area), and the Pequops Mountains from 7,500 feet up. Allow fire to be re-introduced into the ecosystem to assist in maintaining the remnant mixed conifer forests and their associated aspen stands, grass and sage “balds” and associated brush species. This phase will include the cultural inventories necessary under the 1999 State Protocol Agreement between the BLM and the Nevada State Historic Preservation Office.

Wildland Fire Use Areas will follow the guidelines described in Wildland and Prescribed Fire Management Policy, Implementation Procedures Guide of August 1998 and future revisions. This includes:

1. Stage I: Initial Fire Assessment and Go-No-Go decision within two (2) hours of discovery.
2. Stage II: Short-Term Implementation Actions within 24 hours (currently under revision)
3. Stage III: Long Term Implementation Actions if periodic Fire Assessment indicates need.

Fires occurring in these areas may go through one or more of the above stages dependent on fire size, complexity and longevity. Stage 1 is the initial Go-No-Go decision. Stages II and III represent tactical implementation plans which include fire behavior, risk assessment, overall objectives and mitigation plans (holding, limited suppression actions, closures, etc.).

Prescriptive Parameters:

1. Remote Area Weather Station (RAWS) to be used is Spruce Mountain for National Fire Danger Rating System (NFDRS) fuel models F (pinyon-juniper) and G (mixed Conifer).
2. Local Fire Preparedness Levels: 1 to 5
3. Great Basin and/or National Preparedness Levels : 1 to 5. At levels 4 and 5 State and/or National Concurrence is needed.

4. Energy Release Component (ERC) of appropriate fuel model (F or G) as calculated as a seven day average of a maximum of 80%.

Rationale: Bluebell WSA - The Interim Management Policy and Guidelines for Lands Under Wilderness Review states that fire is a natural component of many wildernesses and that the natural role of fire and fire history be considered in fire management planning. The WSAs' vegetation, especially the pinyon-juniper, mixed conifer and higher elevation sagebrush meadows and "balds" had fire as a natural part of their ecology. Due to fire suppression and other management decisions, these areas have missed one to two fire cycles. Wildland fire use areas with the defined prescription parameters would allow fire be reintroduced as part of the natural landscape. The wildland fire use areas will cover the entire WSAs, not just the portions in the Sheep Complex. They will also be covered in allotment specific fire management plans for the Big Springs and the Spruce Allotments.

Mixed Conifer on the Pequops - Allowing natural ignitions within defined prescription parameters would allow fire to start assuming its natural role in the higher elevation mixed conifer, aspen and sagebrush communities on the Pequops Mountains. The use of natural ignitions in conjunction with prescribed fire and mechanical treatments will maintain the vegetation communities above 7,500 feet. This will also include portions of pinyon-juniper on the steeper rocky slopes. This is based on the following reasons: 1- The steep slopes in these areas pose definite safety hazards to the firefighter, 2- The fuels on the slopes are very broken and discontinuous, 3- There is visual evidence that naturally ignited fires only burn one or two trees per ignition, 4- The cost of suppressing a fire in the steep rocky slopes far exceeds any resource damage done by occasional one tree fires, 5- The natural fire regime in this area is that of infrequent, single tree fires with little potential to become large.

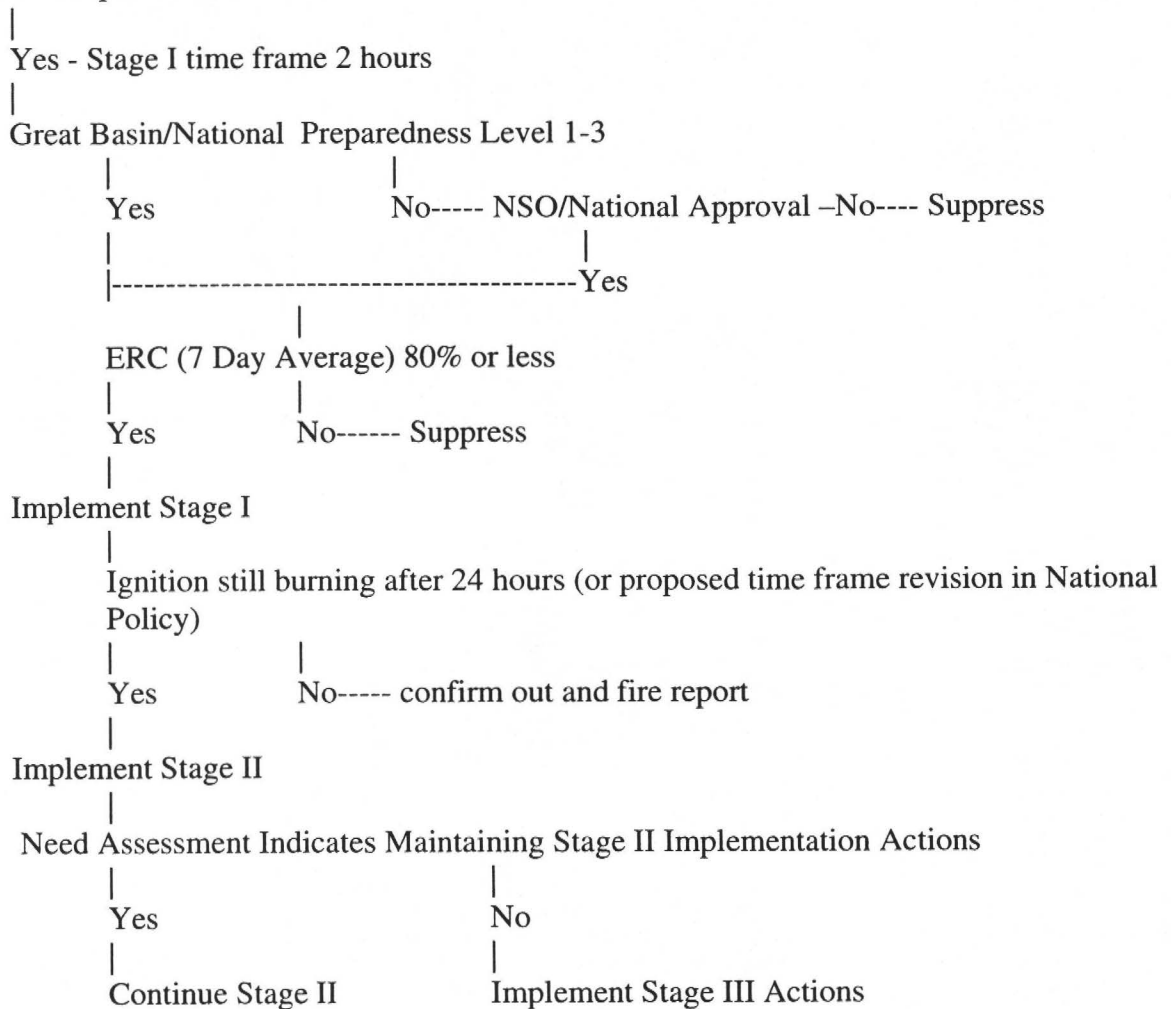
Table 2. Dispatch Run Card for Wildland Fire Use Areas

Unit Priority	Staffing Class	#Units
E-1W*	1-5	1 engine for monitoring purposes or aerial recon Based on Duty Officer Decision. Immediately start WFIP process.

NOTE : USE SPRUCE MOUNTAIN RAW'S SITE FOR ERC CALCULATIONS

**Table 3. Goshute Peak, Bluebell WSAs, Sugar Loaf, White Horse and Kinsley Mountains
Wildland Fire Implementation Plan Flow Chart**

Local Fire Preparedness Level 1-5



Prescribed Fire and Fuels Management Objectives

For an in-depth discussion of fire effects on fire dependent vegetation types, see "Vegetation Treatment by Fire" Environmental Assessment BLM/EK/PL-98/026.

This fire plan establishes baseline/minimum prescribed fire and fuels management goals for this complex. Other projects may be incorporated into this plan at a future date depending on additional resource needs.

A. Mixed Conifer Sites on the Pequop Mountains

Recommendation: Initiate an aggressive prescribed burn program to reduce fuel loadings and to reduce stand density. Use fire to create uneven-aged stands to reduce the possibility of large stand replacement fires. Concentrate management ignited fire in the areas of white fire domination to eliminate disease problems (spruce budworm) and to open up mineral soil for new seedling establishment. Use natural ignitions in conjunction with this to allow fire to reestablish itself as part of the naturally functioning ecosystem. Mechanical treatments should also be used in the mixed conifer. These treatments can consist of 1- Thinning from below and either piling or lopping the slash accumulation; 2- Burning of the thinning piles after thinning; 3- Using commercial harvest for wood products - this may be difficult without an established logging economy. The target goal is to treat 50 percent of the mixed conifer acreage within the next 10 years.

Rationale: The mixed conifer on the Pequop Mountains is a remnant forest. The current conditions are such that a stand replacement fire could eliminate portions of this forest. An aggressive fuels management program through mechanical treatments (thinning) and prescribed fire would reduce fuel loadings, create uneven aged stands and reduce the amount of disease (spruce budworm) within the stands. These objectives would increase the health of the stands and reduce the size of stand replacement events (crown fires). The goal of maintaining these remnant stands in a healthy condition and as a viable part of the ecosystem would be met.

B. Bluebell WSA

Recommendation: Institute an aggressive prescribed fire program in the mixed conifer within this WSA.

Rationale: The mixed conifer areas within this WSA are remnant forests where the lack of fire and extended drought periods have decreased the health of the forests and increased fuel loadings. Using prescribed fire in these areas would create a mosaic of uneven aged stands, reduce fuel loadings and reduce the incidence of diseased trees. These actions would lead to the increased health of the forest and reduce the chances of large stand replacement fires that may eliminate these remnants from the ecosystem. Opening up the stands would increase the numbers of pine trees while reducing white fir composition. Forest health in these stands is of great importance so that the mixed

conifer forests can be retained. These areas are managed as wilderness, so mechanical treatments are not possible.

C. Pinyon-Juniper Areas around West Spring and Pequop Mountains South of I-80.

Recommendation: Evaluate these areas for using prescribed fire or mechanical thinning to reduce juniper encroachment into sagebrush/grass and bitterbrush areas.

Rationale: Fire has played a role in preserving the sagebrush grasslands from encroachment of woodlands. These areas because of their importance to deer winter range must be evaluated more thoroughly prior to establishing fuels treatment objectives for the area.

Monitoring and Evaluation

All prescribed fires and fuels treatment projects will be monitored. Plots will be established prior to the treatment. The plots will be read pre-treatment and post-treatment to ascertain if project objectives were met. Wildland fire suppression activity will be evaluated periodically to ensure that suppression objectives are being met. This information will be used in modifying future objectives.

Sites with mechanical thinning and/or natural ignition plans will have a cultural inventory meeting the standards as outlined in the 1999 State Protocol Agreement between the Nevada State Historic Preservation Office (SHPO) and the BLM. All mixed conifer and aspen sites will be inventoried to obtain accurate data on stand size and location and fire history.