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FOX-LAKE HMA

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I. INTRODUCTION

- A. Allotment Name Rodeo Creek
Allotment Number 00129
- B. Permittee(s) Stan Ceresola
- C. Evaluation Period 1988-1992
- D. Selective Management Category I
Priority 3
- E. Allotment Description

The allotment is located in northern Washoe County with the northern perimeter near Gerlach, Nevada.

The typical physiographic features of the allotment are the high elevation north-south trending Fox and Lake Ranges to the valley floors of the San Emidio, Black Rock and Smoke Creek deserts. The allotment is approximately 25 miles long in a north-south direction and 16 miles wide in a west-east direction.

Vegetation types in the allotment include those from the greasewood- saltbush flats to the sagebrush-Bluegrass-needlegrass vegetative types at the higher elevations.

Land Status			Total
<u>Public Land</u>	<u>Other Land</u>		
193,402 (Acres)	97%	5,373 (Acres)	3% 198,775

II. INITIAL STOCKING RATE

A. Livestock Use:

1. Total Preference 9336 AUMS
Active Preference 5820 AUMS
Suspended Preference 3516 AUMS
2. Season of Use Yearlong
 03/01 - 02/28
3. Kind and Class of Livestock
Cow/ Calf
4. Grazing System



5820
Summer

Turnout will be made in the winter use area of the Rodeo Creek Allotment. The winter use area includes the eastern portion of the Rodeo Creek Allotment and that area east of

the Fox Range to include the San Emidio Desert, the Lake Range and the southern portion of the Black Rock Desert.

For the period 05/01 - 05/30 cattle ~~will~~ utilize the spring use area which includes the foothills of the Fox Range along both the east and west sides.

are
On 06/01 cattle ~~will~~ be moved into the summer use area which includes the high country of the Fox Range and will remain on the Fox Range until 10/30.

as
On 11/01 cattle ~~will~~ be moved back to the winter use area as described above and will remain until 04/30.

5. Other - none

B. Wild Horse and Burro Use:

Recommended Wild Horse/ Burro Numbers from the ^{Land Use Plan} 1988 Evaluation

	Wild Horse/ Burro AUMS <i>available</i>	Wild Horse/ Burro AUMs
Fox and Lake HMA	334/1	4008/12

C. Wildlife Use:

1. Reasonable Numbers (from Sonoma- Gerlach MFPIII - 1982)

Mule Deer - (Odocoileus hemionus) 177 AUMs
Pronghorn - (Antilocapra americana) 137 AUMs
Big Horn Sheep - (Ovis canadensis nelsoni) 150 AUMs

2. Key or Critical Management Areas within the allotment.

No Habitat Management Plan currently exists for this area, but mule deer, pronghorn, potential California big horn sheep, and sage grouse habitat has been identified on the Fox Range portion of the Rodeo Creek Allotment in the Sonoma - Gerlach MFPIII. Maps of these areas can be found in the Winnemucca District Office.

Conclusions

III. SUMMARY OF THE 1988 EVALUATION AND ALLOTMENT OBJECTIVES

A. Summary of the 1988 Allotment Evaluation *Conclusions*

1. Based on field observations it appears that the upland and wetland riparian utilization objectives are not being met.
2. Use pattern mapping on the winter range show that the objectives are being met except for White Sage Flat and

Rodeo Creek Canyon.

3. Wild horse numbers are above AMLs.

B. Allotment objectives from the 1988 Evaluation

1. Short Term

- a. Utilization of key plant species in 596 acres of wetland riparian habitat shall not exceed 50% except where adjusted by an approved activity plan. (WL-1.10)
- b. Total utilization of antelope bitterbrush (PUTR2) shall not exceed 50% and 40% on quaking aspen (POTR5) except where adjusted by an approved activity plan. (WL-1.7) and WL-1.9)
- c. Maintain an acceptable allowable use level on key forage species that will provide a sustained yield.

Key forage species whose use serves as an indicator to the degree of use of associated species; or those species which must, because of their importance, be considered in a management program.

2. Long Term

- a. Improve to and maintain the condition of 596 acres of wetland riparian habitat type to good or better. (WL-1.10)
- b. Protect sage grouse strutting grounds and nesting wintering habitat and improve brooding habitat by: (WL-1.11)
 - 1) Following NDOW's guidelines for Vegetal Control Programs in Sage Grouse Habitat in Nevada.
 - 2) Maintain sagebrush canopy at 30% in sage grouse nesting and wintering areas where sagebrush does not exceed (3) feet in height.
- c. Manage, maintain and improve public rangeland habitat condition to provide forage on a sustained yield basis, with an initial forage demand for big game of 177 AUMs for mule deer, 137 AUMs for pronghorn and 150 AUMs for bighorn sheep by:
 - 1) Improve or maintaining Fox Range DY-1 (16,224

- acres) mule deer habitat to good condition.
- 2) Improving or maintaining Fox Range AY-5 (38,100 acres) pronghorn habitat to good condition.
 - 3) Improving or maintaining Fox Range BY-3 (32,530 acres) potential California bighorn habitat at 75% of optimum.
 - 4) Improve bitterbrush from severely hedged form class to lightly hedged form class.
- d. Manage, maintain and improve rangeland conditions to provide forage on a sustained yield basis with an initial stocking level of 6,462 AUMs.
- e. Improve range/ecological condition 1/ from: poor to fair on 162,458 acres fair to good on 27,076 acres good to excellent on 1,934 acres.
- f. Manage, maintain and improve public rangeland conditions to provide an initial level of 4,020 AUMs of forage on a sustained yield basis for 335 (AMLS) 2/ wild horses in the Fox and Lake Range Herd Use Area.
- 1/ The range/ecological conditions in this document are forage condition that will be replaced with ecological status condition as information becomes available. The objective will be redefined/quantified to obtain a particular ecological status when site potential and identified uses are combined to meet vegetative objectives.
- 2/ AML refer to adult horses and burros (i.e. two years or older).
- g. Maintain and improve the free-roaming behavior of wild horses and burros by protecting and enhancing their home range.
- h. Maintain/Improve wild horse/burro habitat by assuring free access to water.

III. MANAGEMENT ACTIONS FROM AGREEMENT OR DECISION

The Rodeo Creek Allotment had been traditionally licensed for cattle at a level of 835 animals in the summer mountain pasture and then reduced to the number 150 animals in the lower elevation and flats during the winter season.

The Agreement For Implementation And Changes In Available Livestock Forage And Livestock Grazing Use Adjustments For The Rodeo Creek Allotment was signed September 15, 1988 by the permittee, Stan Ceresola, and the Sonoma Gerlach Area Manager, Gerald Branvold. The agreement changed the number of livestock for each use area within the allotment and added a spring use area to the already existing winter and summer use areas. The agreement provided for 485 cattle to be grazed in the mountain pasture which amounts to a reduction of 350 head for the summer season. The 485 cattle would then be moved into the lower winter pasture for the remainder of season. This reduction of 42% is designed to reduce the grazing use on the summer wildlife habitat and wet areas of the mountain pasture. The lower pasture will be used when vegetation is dormant and then allowed to grow during the summer months. The agreement resulted in a net decrease of livestock use by 10% or 646 AUMS for 5 years.

No recommendations could be made based on existing data. However, the livestock permittee recognized the imbalance between summer and winter use areas and agreed to the following modifications:

1. A five year reduction in the active preference from 6,462 AUMs to 5,816 AUMs and reduce livestock numbers in the summer country. The 10% reduction would total 646 AUMs. The yearlong stocking rate at 10% reduction would be 485 cattle. Livestock use will then maintain 485 cattle yearlong rather than changing numbers in the summer and winter use areas. The 485 cattle would be a reduction from past use in the summer country from 835 cattle. This would increase numbers in the winter country from the historical use of approximately 150. This management change would reduce stocking level in the summer country where a reduction is needed, but would increase use in the winter country where forage can withstand more grazing pressure.
2. Maintain the past winter and summer use areas and initiate use in the spring area. Make use as follows;

Turnout will be made in the winter use area of the Rodeo Creek Allotment. The winter use area includes the eastern portion of the Rodeo Creek Allotment and that area east of the Fox Range to include the San Emidio Desert, the Lake Range and the southern portion of the Black Rock Desert.

For the period 05/01 - 05/30 cattle will utilize the spring use area which includes the foothills of the Fox Range along

both the east and west sides.

On 06/01 cattle will be moved into the summer use area which includes the high country of the Fox Range and will remain on the Fox Range until 10/30.

On 11/01 cattle will be moved back to the winter use area as described above and will remain until 04/30.

Range Improvements will continue to be identified for better distribution and livestock control in all areas. Livestock will be distributed and controlled by horseback and placement of mineral supplements during the grazing period to achieve even distribution and proper utilization levels. This will reduce the concentration of animals on White Sage Flat and Rodeo Creek Canyon.

3. Develop an AMP for the allotment.
4. Allow habitat types in key sage grouse brooding areas to improve to good or better and then graze to the benefit of sage grouse within the prescribed grazing schedule.
5. Remove wild horses from the HMA in the allotment to AML's.

IV. MANAGEMENT EVALUATION

A. Summary of Studies Data

1. Actual Use

Actual Use means where, how many, what kind or class of animals, and how long the animals graze on an allotment.

a. Livestock

The data is obtained from an actual use report which documents the actual livestock grazing use submitted by the permittee.

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Table #1. Actual Use for the Rodeo Creek Allotment by Pasture.

Pasture	Grazing Year	Number of Livestock	Period of Use	AUMs
	1988			
<u>Winter</u>		485	03/28 - 04/30	542
<u>Spring</u>		485	05/01 - 05/31	494
<u>Summer</u>		485	06/01 - 10/31	2440
		380	11/01 - 11/16	412
<u>Winter</u>		335	12/20 - 02/28	782
<u>Allotment Yearly Total:</u>				4925
	1989			
<u>Winter</u>		335	03/01 - 03/14	154
		485	03/15 - 04/30	749
<u>Spring</u>		485	05/01 - 05/31	494
<u>Summer</u>		485	06/01 - 10/31	2440
<u>Winter</u>		485	11/01 - 02/28	1913
<u>Allotment Yearly Total:</u>				5750
	1990			
<u>Winter</u>		485	03/01 - 04/30	973
<u>Spring</u>		485	05/01 - 05/31	494
<u>Summer</u>		485	06/01 - 10/31	2440
<u>Winter</u>		485	11/01 - 02/28	1913
<u>Allotment Yearly Total:</u>				5820

	1991			
<u>Winter</u>		485	03/01 - 04/30	973
<u>Spring</u>		485	05/01 - 05/31	494
<u>Summer</u>		485	06/01 - 10/31	2440
<u>Winter</u>		485	11/01 - 02/28	1913
<u>Allotment Yearly Total:</u>				<u>5820</u>

	1992			
<u>Winter</u>		485	03/01 - 04/30	973
<u>Spring</u>		350	05/01 - 05/31	357
		350	06/01 - 07/01	357
<u>Summer</u>		100	07/02 - 10/31	401
<u>Winter</u>		non-use	11/01 - 02/28	0
<u>Allotment Yearly Total:</u>				<u>2088</u>

b. Wild Horses and/or Burros

Actual use data for wild horses is derived from the total number of horses (adults and foals) inhabiting a Herd Management Area multiplied by 12 months (March 1 through February 28). The number of wild horses is based on the most recent helicopter census of an HMA. For years in which an aerial census was not conducted a population estimate is calculated by multiplying the previous year's census or population estimate by 11% as outlined in the Draft Sonoma-Gerlach Grazing Environmental Impact Statement. The 11% rate of increase is based on an analysis of helicopter census data collected by experienced personnel in the Sonoma-Gerlach Resource area in 1974, 1977, and 1980 and has been verified by data gathered during wild horse removals.

The census population is obtained by utilizing a helicopter to conduct a direct count of all adults and foals found within an HMA. This method assumes complete coverage of the HMA and observation of all animals. However, Cauley (1974) found in his study and literature search that the closest an aerial survey ever came to the actual population size was 89%. Wagner reported that studies conducted in four horse management areas (Nevada - 2, Oregon and Wyoming) showed about 93% accuracy in areas of low vegetation and moderate terrain, while 60% of the animals in wooded and mountainous topography were

missed (Forty-eighth North American Wildlife Conference). Actual use is calculated using the total census population to closely approximate the true forage demand made by wild horses recognizing that all animals are not observed during a census.

When conducting a census, an HMA is flown in a modified transect pattern utilizing topography and natural or man-made barriers to ensure complete coverage and that animals are not counted twice.

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Table #2. Actual Use for the Fox and Lake HMA within the Rodeo Creek Allotment.

<u>Year</u>	<u># Horses/# Burros</u>	<u>AUMs</u>
1988	492/1	5904
1989	497/1	5964
1990	477/1	5724
1991*	529/1	6348
1992	525/1	6300

* Not censused that year, so an increase of 11% from the previous year was used.

c. Wildlife Trend

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Table #3. Wildlife Trend using the Fawn Recruitment Ratios.

<u>Year</u>	<u>Fall</u>	<u>Mule Deer Status Unit 022</u>		Percent Change <u>(+/-)</u>
		<u>Fawn</u>	<u>Spring</u>	
1988	17	39	8	- 53%
1989	34	30	29	- 15%
1990	50	31	27	- 46%
1991	36	29	23	- 36%
1992	15	33	4	- 73%

Evaluation of Table #3.

The short term trend for mule deer is declining. The fawn recruitment ratio is below 35 fawns/ 100 adults during the spring count which indicates a downward trend. NDOW has determined that 35 fawns/ 100 adults is the required minimum recruitment for maintenance of the herd. The trend has been declining statewide since 1988. The long term trend is that the mule deer

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were at an all time low in 1974-75. The numbers increased to an all time high during the mid 80's with an all time high density. The drought began at that time resulting in lower mortality rates during the winter and thus artificially high numbers. Once the density of the mule deer reached a certain height, the fawn ratio began declining. In other words the mule deer herd trend is declining because of the density of the mule deer in the mid 80's and the drought.

The pronghorn population is at a low density in the 022 Management Unit and the count numbers would not be statistical valid to determine the trend for this area. The sample size is low and the trend is probably following the trend on the adjacent management areas (1 & 2). The trend has been up on these two management areas during the last 8-10 years. This would mean an increase of 10-20 animals per year in the Fox and Lake Range area. There is probably 125-150 pronghorn utilizing the Fox and Lake Range area.

2. Climate

Table #4. Climate Data

STATION NORM ₃	ELEVATION	ANNUAL NORM ₁	GROWING NORM ₂		WINTER	
Gerlach	3950'	7.46		3.52		2.63
<u>1989</u> Gerlach		Ann. 6.69 %/Norm 90%	Grow 3.80	%/Norm 108%	Win. 1.29	%/Norm 49%
<u>1990</u> Gerlach		10.38 139%	6.28	178%	1.43	54%
<u>1991</u> Gerlach		8.11 109%	4.27	121%	1.57	60%
<u>1992</u> Gerlach		6.00 80%	2.99	85%	1.72	65%

¹ Annual is January - December

² Growing Season is March - August

³ Winter Snowfall is November - January

Climatological Data provided by the Western Regional Climate Center - Atmospheric Sciences Center, Desert Research institute.

Evaluation of Table #4.

Since 1987 the state of Nevada has been experiencing drought conditions. This has effected the vegetative resource in many ways. It has caused a reduction in plant growth, seedling development, plant vigor, quality and quantity in varying degrees and in different areas of the country. Springs and creeks have had reduced flows.

Specifically on the Rodeo Creek Allotment, the annual percent of normal precipitation was below average in 1989 ↗ and 1992, but above average in 1990 and 1991. The growing season percent of precipitation was below average in 1992, ↗ but above average in 1989-1991. The winter precipitation has been below average throughout the entire evaluation period. In general winter precipitation below average results in increased windblown erosion, reduced soil moisture content, and lower spring flows. No specific measurements, however, regarding these results were monitored during this evaluation period. ↗ 11%

3. Utilization

Use Pattern Maps (UPM) were used to determine utilization zones and levels within each pasture. Key Forage Plant Utilization transects were completed on upland and riparian sites to supplement use pattern maps and to differentiate and ascertain use zones and their levels. The data is used to document the effectiveness of management and forage demand. The procedures used to collect this data can be found in the Nevada Rangeland Monitoring Handbook and BLM Handbook 4400-3. Pre-livestock monitoring measures the amount of wild horse and wildlife use occurring before livestock are turned out. Post-livestock and total use monitoring measure combined utilization levels of all users.

UPM data has been conducted for the last four years over the period of 1989, 1990, 1991, and 1992.

Refer to the UPMs in the study files at the Sonoma Gerlach Resource Area.

We can not expect to maintain or improve rangeland conditions if they are continually receiving heavy use. So we must limit the amount of heavy and severe utilization within the allotment. Ideally the majority of the allotment should be in the moderate category of 41-60%. Table #5 shows only the moderate, heavy, and severe use classes. Moderate use is what we are managing for and the repeatedly heavy and severe use areas need to be limited to an acceptable use level.

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 Table #5. Moderate, Heavy, and Severe Utilization by
 Pasture by Year - Reflects Post-livestock Monitoring.

Year	1989	Percent	1990	Percent	1991	Percent	1992	Percent
Winter Use Area								
Moderate	3979	7%	61363	68%	17370	43%	25844	33%
Heavy	35201	58%	6845	8%	4851	12%	33607	44%
Severe	0	0%	0	0%	0	0%	0	0%
Spring Use Area								
Moderate	--	--	--	--	0	0%	0	0%
Heavy	--	--	--	--	0	0%	2789	13%
Severe	--	--	--	--	0	0%	0	0%
Summer Use Area								
Moderate	11683	52%	0	0%	22717	99%*	10366	25%
Heavy	5287	24%	5214	49%	236	1%*	18657	45%
Severe	0	0%	0	0%	0	0%*	0	0%
3 Pasture Total Acres & % by Allotment								
Moderate	15662	19%	61363	61%	40087	63%	36210	26%
Heavy	40488	49%	12059	12%	5087	8%	55053	39%
Severe	0	0%	0	0%	0	0%	0	0%
Total AUMs	11714	AUMs	11545	AUMs	12178	AUMs	6160	AUMs

* The total use for the summer use area for 1991 production was mapped during the spring of 1992, but is listed under 1991. Pasture #2 was mapped along with Pasture #1 and Pasture #3 in 1989 and 1990.

a) Winter Use Area

In the past (before the 1988 evaluation) 150 cows used the winter use area. Presently, with the exception of the 1992 grazing season, 485 cows use the winter use area from November 1 through April 30 each year. The pre-livestock use is monitored using current years production after the end of the growing season. Post-livestock use is monitored on the previous years production. The winter use area ranges from the valley floor of the San Emidio and Black Rock Deserts to the gentle slopes of the Lake Range. The vegetation varies from the desert shrub communities on the valley floor (greasewood, shadscale, spiny hopsage, budsage, and winterfat) to Lahontan sagebrush and Wyoming big sagebrush on the Lake Range. The grass species in the desert shrub communities currently make up 10% or less of the total composition by weight. The majority of the use is on the shrub species with heavy use on bottlebrush squirreltail and Indian ricegrass when present. The Lake Range has a

good grass component of Idaho Fescue, bottlebrush squirreltail, Thurbers needlegrass, and Indian ricegrass. Moderate use has been found on the Lake Range during the post-livestock monitoring. While monitoring the upper country of the Lake Range, most of the sign found was from horses. There is only one winter pasture, so it is used each year by livestock at the same time each year. Wild horses are found yearlong at White Sage Flat Well, Trail Canyon, from Manure Canyon to Three Canyon and from the mouth of Cottonwood Creek to the playa. Antelope use the burn area on the Lake Range north to Empire. A group of sixty animals have been seen in this area in November at least during the last two years. The plants are dormant during the majority of the period of use, so that grazing the plants each year should not effect the plants physiologically. Use done on current years growth was monitored in June of 1991 and 20% use was found, which is below the allowable use level. Seven years of drought has occurred, but the allotment received spring moisture except for in 1992, so the vegetation grew. In 1992, however, in the absence of spring moisture the grasses only grew 1/2 to 2 inches before seeding out. A barren area from White Sage Flat Well southwest to the boundary fence exists. This is an area of heavy concentration of livestock and wild horse. This is the only developed water on the flats. Also the White Sage Flat Well area is the location of corrals used for gathering the cows and working them. Another barren area was noted in 1992 along the main road going into the San Emidio where the permittee hauls water for the livestock. This area was burned over also in 1984 and the vegetation in previous years consisted of halogeton and cheatgrass. Until the fall of 1992, this was the only water available on the entire Lake Range. In the fall of 1991, the permittee added a trough to the well that ORMAT had originally put in at the mouth of Three Mile Canyon. Water availability on the winter use area includes: the White Sage Flat Well, troughs off of the main road where the permittee hauls water, the standing water on the playa, from the canyons along the east side of the Fox Range if they are still running, and after the fall of 1991 the Three Mile Well. Both wells operate only while the livestock are using the winter use area.

H2O's in Winter

- 1) Trough @ Empire Farms.
- 2) Trough - field closest to Cottonwood
- 3) hauled H₂O by powerline Lake Range Spring Use Area
- 4) hauled H₂O to (N) Lake Range - Road up to tower

The spring use area was separated out from the summer use area through the 1988 evaluation process. The period of use for livestock is from May 1 through May

31 each year. No separate use area currently exist for the spring use area, so it is used each year at the same time during grass flowering. Continued utilization of the key forage plants during the critical growing stages does not allow these plants to store food reserves, reproduce, and gain vigor. The pre-livestock monitoring occurs after the start of growth, but before flowering of the grasses. The post-livestock monitoring occurs during the peak of flowering. The spring use area includes the foothills on both the east and west sides of the Fox Range and on the sodic flats, sodic dunes, and sodic terraces on the west side of the Fox Range. The foothills consist of mostly Lahontan sagebrush and shadescake sites. The use consisted of slight and light use with areas of moderate use at the area surrounding Cottonwood Creek and from Lost Creek to Wild Horse Canyon. An area of heavy use has been found on the flats at the mouth of Smith Canyon. Water availability for the spring use area consists of a trickle at Little Rattlesnake Canyon, a trough at Rattlesnake Canyon, Bull Basin Spring, Coyote and Willow Creeks as long as they are flowing, a trough at the mouth of Cottonwood Canyon, Smith Creek, Lost Creek, and Wild Horse Canyon Creek.

c) Summer Use Area

In the past 835 cows used the summer use area from May 1 through October 31. Presently, the period of use is from June 1 through October 31 each year. Pre-livestock monitoring occurs at the peak of flowering for grasses, while post-livestock monitoring occurs after the end of the growing season, but may have regrowth depending on the timing of the precipitation and the temperatures. The summer use area includes the high country of the Fox Range which ranges from steep rocky slopes to the more open basins. The vegetation varies from Lahontan Sagebrush to Wyoming big sagebrush with pockets of Basin big sagebrush and with scattered Juniper trees. The predominate grasses include bottlebrush squirreltail and Sandbergs Bluegrass with less amounts of Thurbers needlegrass and bluebunch wheatgrass. Seven years of drought has impacted the vegetation. The spring moisture that did occur maintained the grass species present, but did not allow for any new seedling development. In 1992 no spring rain occurred and the grass species only grew 1/2 to 2 inches before seeding out. Precipitation did occur in October of 1992 and green-up on Thurbers needlegrass was noted while use pattern mapping. Water availability is distributed throughout the

entire use area. Water sources include: Cottonwood Creek, Smith Creek, Willow Creek, a trough between Willow Creek and Juniper flat, a trough at Juniper Flat Spring, Mud Trough Spring, a trough at Bull Basin Spring, a trough at Coyote Creek, a trough between Mud Trough Spring and Rodeo Creek, Wild Horse Canyon from the creek and a trough up in the canyon, Wild Horse Spring, and Summit Spring.

Due to the inaccessibility of the summer use area, use pattern mapping in this area did not occur extensively until May of 1990. Before 1992, pre-livestock monitoring showed light to moderate use. The moderate use occurred: south of Rodeo Creek to Pah Rum Peak; Bull Basin Spring to Juniper Flats over to Mud Trough Springs; and a small area in Cottonwood Canyon. Post-livestock monitoring in the same areas showed heavy use from Rodeo Creek south to Pah Rum Peak; high moderate to heavy use at Bull Basin Spring to Juniper Flats on over to Mud Trough Springs; and moderate to heavy use at the mouth of Cottonwood Canyon. In 1992, the pre-livestock monitoring showed moderate use from Bull Basin Spring to Coyote Creek and a small area southwest of Rodeo Creek. The rest of the area mapped had heavy use. Horses and antelope were seen throughout the Mapped area with the only cows seen at Pah Rum Peak. During the post-livestock monitoring, Cottonwood Basin had light use on grasses and heavy use on shrubs (spiny hopsage, shadescale, black greasewood, and rabbitbrush). The bitterbrush looked decadent and the only had slight use. From Willow Creek to Bull Basin Spring south had heavy use on grasses as well as rabbitbrush and snowberry. The use on shrubs during the evaluation period can be characterized as moderate to heavy on select plants of rabbitbrush, snowberry, and bitterbrush with the remaining plants receiving no apparent use to slight use south of Rodeo Creek. Bitterbrush, however, did not occur frequent enough to be considered a key species using the Key Forage Plant Utilization method. North of Rodeo Creek bitterbrush had slight use. The bitterbrush appears to be decadent and is occurring at the limit of the soil capabilities. Before 1992 ^{based on ecological sites} select plants were utilized, but in 1992 the use on shrubs was more extensive and the animals were less selective as to which plants they used. Aspen stands had no apparent use. Scattered serviceberry plants have been heavily hedged in past, but where stands of serviceberry exist no apparent use was found.

4. Trend

At present all the trend sites established within the Rodeo Creek Allotment are located within the winter livestock use area. Four trend locations exist in the winter livestock use area. Two of the sites are photo trend sites and were established in 1989 and photographed in 1992 for the second time. The photo plots are scheduled to be done again in 1997. The other two sites measure trend by the quadrat frequency method.

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Table #6. Frequency of Key Species

<u>Key Area #1</u>	<u>Years Read</u>	
	<u>1989</u>	<u>1992</u>
RC EMPIRE		
squirreltail	.5	1.0 NS*
Indian ricegrass	1.5	3.5 NS*
winterfat	48.0	46.0 NS
shadescale	13.5	20.0 SI
budsage	5.0	8.5 NS*
<u>Key Area #2</u>		
RC3MILE		
bluegrass	.0	.5 NS*
squirreltail	9.0	9.5 NS*
Indian ricegrass	1.0	2.0 NS*
shadescale	16.5	22.0 SI
budsage	41.5	48.0 SI

Coding for table: NC=No change, NS= Not significant, SI= Significant increase, SD= Significant decrease.

NOTE: Figures below 20% frequency data does not approximate a normal distribution on the range. Frequency changes of less than 5% are invalid for statistical verification, and are indicated above with a star*.

Evaluation of Frequency Data Table #6

Key Area #1

Squirreltail, Indian ricegrass, and budsage are invalid for statistical verification, but they all did increase slightly, however non significantly. There was no significant change in winterfat from 89 to 92. There was a significant increase of shadescale and presently at 20% we will be able to statistically follow the trend at this key area. A significant decrease of undesirable cheatgrass from 79.5% to 62.5% occurred from 89 to 92.

Key Area #2

Squirreltail and Indian ricegrass are invalid for statistical verification. They did increase slightly, however not significantly. There was significant increase of budsage from 89 to 92. There was a significant increase of shadescale and presently at 22% we will be able to statistically follow the trend at this key area. A significant decrease of undesirable cheatgrass from 93% to 30% occurred from 89 to 92.

5. Ecological Site Inventory

An Ecological site is a distinctive kind of rangeland that differs from other kinds of rangeland in its ability to produce a characteristic natural plant community. An ecological site is the product of all environmental factors responsible for its development. It is capable of supporting a native plant community typified by an association of species that differ from that of other range sites in the kind or proportion of species or in total production.

Ecological sites are a basic component of rangeland inventories. They are ecological subdivisions into which rangeland is divided for study, evaluation, and management. The ecological site map provides the basic ecological data for planning the use, development, rehabilitation, and management of the rangeland.

Ecological site information can be interpreted as to suitability of a site for a single use as grazing or for many other uses such as: wildlife habitat, recreation, natural beauty, watershed, and open space. Ecological Site Inventory (ESI) data was used to develop Desired Plant Communities (DPC). Desired Plant Communities are the plant communities that produce the kind, proportion, and amount of the vegetation necessary for meeting or exceeding the Land Use Plan goals and activity plan objectives established for the site.

An ecological status inventory was completed during the 1990 field season. The following lists the acres and percentage by seral stage for the allotment.

<u>Seral Stage</u>	<u>Acres</u>	<u>Percent</u>
Potential	37,610	19%
Late	85,940	43%
Mid	65,525	33%
Early	5,236	3%
Unclassified*	4,401	2%

* The unclassified acres equals the Juniper woodland site and is not classified as far as Ecological Condition.

6. Wildlife Habitat

No habitat suitability studies have been initiated on this allotment.

Only two ecological sites on the Rodeo Creek Allotment have the potential to have bitterbrush. One site is a 23-39 Loamy 10-14" precipitation zone with big sagebrush and bluebunch wheatgrass as the dominate vegetation types. The site is found on slide slopes of the lower mountains, hills, and plateaus between 4500' and 6500'. At the lower elevations the site is usually restricted to the northern exposures. Bitterbrush, at potential, makes up 2-5% by weight of the total composition. The second ecological site is 23-20 Loamy 10-12" precipitation zone with big sagebrush and bluebunch wheatgrass as the dominate vegetation. The site is found on the upper piedmont slopes and hills between 5500 and 6500' elevation. Bitterbrush makes up 2-10% by weight of the total composition at potential. 5 percent of the Rodeo Creek Allotment is comprised of 23-39 ecological site and .4 percent of the allotment is a 23-20 ecological site.

The area identified as wetland riparian habitat in the Land Use Plan has limited potential for the stream riparian, except adjacent to springs and seeps. The Washoe County, Central Part Soil Survey identifies the potential ecological site for this 596 acres as NV027XY029 Gravelly Fan 8 to 10 inch P.Z. The soils are Xeric Torriorthents, sandy-skeletal, mixed, mesic. The soils are well drained and lack frequent flooding and the duration (seven days or greater) to be hydric soils. The potential vegetation is basin big sagebrush, spiny hopsage, Indian ricegrass and basin wildrye. The soils and ecological sites lack the potential for hydrophytic vegetation.

7. Fisheries Habitat

No fisheries habitat occurs within the Rodeo Creek Allotment.

8. Wild Horse and Burro Distribution

Data on the distribution of wild horses has been collected from the ground and by aircraft (helicopter and fixed-wing) since 1988. Distribution of horses in the allotment appears to be primarily affected by weather conditions and forage

availability. During the period covered by this evaluation there was very little snow pack on the mountains, which allowed the horses to occupy all habitats from the lower to the higher elevations yearlong.

When collecting distribution data by fixed-wing aircraft the objective is to identify those areas that wild horses are utilizing at that point in time, not to obtain a count as accurate as a helicopter census. The entire HMA is flown in a transect pattern with the flight lines ranging from 1/2 mile to 2 miles apart depending on visibility and flight conditions. In steep mountainous country the straight line transects are modified to follow the topography of the area to ensure complete coverage. Aircraft altitude ranged from approximately 300 to 600 feet above ground level, depending on visibility and local flight conditions.

During the evaluation period data was collected from two different fixed-wing aircraft: Maule M-5 and Cessna 210. In addition to the fixed wing distribution data, each helicopter census provides distribution information on wild horses. When utilizing the Cessna there were two observers on board, one individual recorded flight lines, animal locations, and the number of animals (adults and foals) seen at each location while the other individual did the counting. In areas of high concentrations a total count of all bands was recorded on the map rather than each individual band.

When conducting a flight using the Maule there were two observers on board; an observer and pilot. Distribution data collected by the Maule is stored in an on-board computer system. As horses were seen, the observers would call out the number of adults and foals to the pilot who would enter the data into the on-board computer system. The computer records the number of horses seen, the location of the animals by latitude and longitude using a global positioning system, and any remarks the observer may want to record for a specific sighting. Once the flight is completed, the results are printed and transferred by hand to a HMA map. This system does not record the general flight path as is done with the Cessna. Again, in areas of high concentrations a total count of all bands is recorded in the computer system.

Aerial distribution maps are on file in the District Office. Appendix ? shows the results of each distribution flight, the date flown, and the number of horses observed. An analysis of the distribution data collected during the evaluation period for the entire allotment is as follows:

During the evaluation period the winters have been very mild

with minimal snowpack until the 1992-1993 winter. These mild winters have allowed the wild horses to remain at the higher elevations throughout the entire year. During the winter, wild horses were found throughout all elevations with the major concentration areas being between Cottonwood Creek and Coyote Creek; between Juniper Flat and Trail Canyon; the flats between Smith Canyon and Wild Horse Canyon; and between Three Mile Canyon and Manure Canyon in the Lake Range. The availability of water on the Lake Range limits their numbers during the warm months which accounts for the horse movement pattern- increased wild horse numbers in the Lake Range and livestock winter use area during the winter months, that stay through the first green-up, and then most of the wild horses move out of the lower elevations. Horses can also be found along the lower elevations on the east side of the Fox Range yearlong from Cottonwood Creek north about three or four miles. The horses travel between the water at Cottonwood Creek and the standing water on the Playa. Horse trails, fresh stud piles, and sightings as well as the distribution flights demonstrate this.

During the spring (March), the horses were distributed at the lower elevations with the major concentrations being: between Cottonwood and Coyote Creek; from Smith Canyon to Juniper Flat; with the highest concentration being from Bull Basin to Rattlesnake Canyon. Horses were also still on the Lake Range and around White Sage Flat.

During the summer, distribution flights found most of the horses at the higher elevations. The highest concentration was from Juniper Flat to Wild Horse Canyon with smaller concentrations being from Cottonwood Creek to Rodeo Creek and at Rattlesnake Canyon. Horses also were found from Three Mile Canyon to Manure Canyon with most right around Manure Canyon. There is an undeveloped spring on the Pyramid Lake Indian Reservation, which only runs a trickle, at the head of Manure Canyon for the horses to water. The horses that use the area between Manure Canyon and Three Mile Canyon also use the San Emidio Spring for water on the Pyramid Lake Indian Reservation.

During the fall, distribution flights found horses throughout all elevations with the major concentrations being from Cottonwood south to Trail Canyon and from Juniper Flat to Wild Horse Canyon. Horses were also seen between Three Mile Canyon and Manure Canyon extending to the Pyramid Lake Indian Reservation.

Movement of horses between the Rodeo Creek and Pole Canyon Allotments has been minimal at the upper elevations because the fence between the two allotments has been maintained.

Horses do, however, move between the two allotments at the mouth of Wild Horse Canyon utilizing the flats between Lost Creek in the Rodeo Creek Allotment and Rough Canyon in the Pole Canyon Allotment.

In the fall of 1992, the number of wild horses utilizing the livestock winter use area doubled from what it has been in previous years.

9. Wild Horse and Burro Removal Data

84 Horses were removed from the Rodeo Creek Allotment on December 12, 1988.

303 Horses were removed from the Rodeo Creek Allotment in January of 1993. 63 animals were returned to the allotment on May 7, 1993. 32 studs and 9 mares were released just north of Willow Creek. 22 mares were also released just south of Cottonwood Canyon. Both groups of horses headed for the higher elevations after being released.

→ Mares w/foals returned June 15, 1993.

10. Other

A census flight flown on April 22 counted 143 adult horses and 6 foals. The distribution of horses found on the census flight was as follows: 55 horses on the Lake Range between Three Mile Canyon and the Pyramid Lake Indian Reservation. A major horse trail is on the top of the Lake Range going onto the reservation. A water hole was filled on top of the mountain. It is probably a depression that the snow melted into. When this water is gone the horses will have to go onto the reservation to water at San Emidio spring. 57 horses were counted south of Rodeo Creek concentrated between Rattlesnake Canyon and the Pyramid Lake Indian Reservation and around Pah Rum Peak. 13 horses were found between Rodeo Creek and Willow Creek. 18 horses were found between Willow Creek and Cottonwood Creek. 6 horses were counted on the flats on the west side of the Fox Range. A water hole was found on a saddle in T.30N., R.21E., sec 24 Sel/4. This is a depression that has not been filled with water in several years.

Monitoring data was collected at three of the utilization cages on the Fox Range during April. At Bull Basin the bottlebrush squirreltail and Thurbers needlegrass had 3" of new growth. The amount of forbs present this year is greater than in 1992 ~~wahen ther~~ was almost no forbs present. At the cage between Bull Basin Spring and Coyote Creek the Thurbers needlegrass and Poa++ had 1 1/2 - 2" of new growth and the bottlebrush squirreltail had 2-3" growth. The protected plants (the ones growing underneath the sagebrush) were taller and more vigorous than those plants found in the

open. This could be the result of a microclimate from being underneath the shrubs or the physiological stress the plants in the open have received in the past or a combination of both. At the third utilization cage at the saddle near Pah Rum Peak the Thurbers needlegrass, Poa++, and bottlebrush squirreltail had about 3-4" of new growth. At all three cages no apparent use was observed. No residual forage was present from last year.

V. EVALUATION OF OBJECTIVES

A. Short Term

1. Utilization of key plant species in 596 acres of wetland riparian habitat shall not exceed 50% except where adjusted by an approved activity plan. (WL-1.10)

See Long Term Objective 1.

2. Total utilization of antelope bitterbrush (PUTR2) shall not exceed 50% and 40% on quaking aspen (POTR5) except where adjusted by an approved activity plan. (WL-1.7) and WL-1.9)

PUTR2 - Unknown. No specific study sites were used to measure PUTR2 during the evaluation period. Use on PUTR2 was noted on select plants ranging from slight to heavy use, but PUTR2 did not have enough hits on our Key Forage Plant Utilization transects to be considered a key species.

POTR5 - Met. No apparent use was monitored on the POTR5.

Refer to page 15.

3. Maintain an acceptable allowable use level on key forage species that will provide a sustained yield.

Key forage species whose use serves as an indicator to the degree of use of associated species; or those species which must, because of their importance, be considered in a management program.

Not Met. This objective was not fully met. We still have areas of heavy use above the acceptable use

levels. The weighted average utilization varied on the winter use area from 61% in 1989 to 42% in 1991. The spring use area has shown 20% use during pre-livestock monitoring and 35% during the post-livestock monitoring. The summer use area ~~weighted~~^{SP} average utilization has varied from 50% in 1990 and 1991 to 53% in 1992. The weighted average utilization has been within our acceptable allowable use except for in 1992. in the summer use area. This is a result of below average spring moisture that is critical for growth of perennial species. The large percentage of ~~SP~~ ~~heavy~~ use shown on Table #5 on page 12 therefore shows a distribution problem.

Refer to page 12.

B. Long Term

1. Improve to and maintain the condition of 596 acres of wetland riparian habitat type to good or better. (WL-1.10)

The area identified as wetland riparian habitat in the Land Use Plan has limited potential for the stream riparian, except adjacent to springs and seeps. The Washoe County, Central Part Soil Survey identifies the potential ecological site for this 596 acres as NV027XY029 Gravelly Fan 8 to 10 inch P.Z. The soils are Xeric Torriorthents, sandy-skeletal, mixed, mesic. The soils are well drained and lack frequent flooding and the duration (seven days or greater) to be hydric soils. The potential vegetation is basin big sagebrush, spiny hopsage, Indian ricegrass and basin wildrye. The soils and ecological sites lack the potential for hydrophytic vegetation.

Willow, Coyote, Wild Horse, Cottonwood Creeks as well as the area mentioned above in Rodeo Creek would be good sites to manage for desired plant communities beneficial for sage grouse and chukar.

2. Protect sage grouse strutting grounds and nesting wintering habitat and improve brooding habitat by: (WL-1.11)
 - a) Following NDOW's guidelines for Vegetal Control Programs in Sage Grouse Habitat in Nevada.
 - b) Maintain sagebrush canopy at 30% in sage grouse nesting and wintering areas where sagebrush does not exceed (3) feet in height.

Met. This objective has been met. There were no vegetal manipulations as a result of new range improvement projects such as fencing, brush control, or pipelines or alterations to the vegetation by wildland fires.

3. Manage, maintain and improve public rangeland habitat condition to provide forage on a sustained yield basis, with an initial forage demand for big game of 177 AUMs for mule deer, 137 AUMs for pronghorn and 150 AUMs for bighorn sheep:
 - a) Improve or maintaining Fox Range DY-1 (16,224 acres) mule deer habitat to good condition.
 - b) Improving or maintaining Fox Range AY-5 (38,100 acres) pronghorn habitat to good condition.
 - c) Improving or maintaining Fox Range BY-3 (32,530 acres) potential California bighorn habitat at 75% of optimum.
 - d) Improve bitterbrush from severely hedged form class to lightly hedged form class.

Unknown. No habitat condition ratings have been monitored within the Rodeo Creek Allotment during the evaluation period.

Refer to page 9.

4. Manage, maintain and improve rangeland conditions to provide forage on a sustained yield basis with an initial stocking level of 6,462 AUMs.

Met the active preference of 5820 AUMs from the Livestock Agreement signed in 1988. During the 1988 evaluation process the livestock permittee recognized that an imbalance existed and voluntarily agreed to a 10% reduction to 5820 AUMs. 5820 AUMs were activated by the permittee until 1992. In 1992 only 2088 AUMs were activated due to low forage production as a result of below average spring precipitation. It is unknown however if a stocking level of 5820 AUMs will provide forage on a sustained yield basis at ~~his~~ time due to the timing and amount of precipitation and the number of wild horses being above what was recommended in the Land Use Plan since this change occurred.

Refer to pages 5, 8, & 10

5. Improve range/ecological condition 1/ from: poor to fair on 162,458 acres fair to good on 27,076 acres good to excellent on 1,934 acres.

Unknown. The Ecological Site Inventory was not completed until 1990 and so the information was not available during the last evaluation to know what the starting point was to see if we are progressing. Move toward using desired plant communities.

Refer to page 18.

6. Manage, maintain and improve public rangeland conditions to provide an initial level of 4,020 AUMs of forage on a sustained yield basis for 335 (AMLS) 2/ wild horses in the Fox and Lake Range Herd Use Area.

1/ The range/ecological conditions in this document are forage condition that will be replaced with ecological status condition as information becomes available. The objective will be redefined/quantified to obtain a particular ecological status when site potential and identified uses are combined to meet vegetative objectives.

2/ AML refer to adult horses and burros (i.e. two years or older).

Met. Exceeded the initial level of 4020 AUMs by 140 - 160%, but not at a sustained yield basis. Use above proper levels. Areas of heavy use are associated with the areas which our distribution maps are also showing are our yearlong high concentration areas for horses.

Refer to page 9.

7. Maintain and improve the free-roaming behavior of wild horses and burros by protecting and enhancing their home range.

Met.

8. Maintain/Improve wild horse/burro habitat by assuring free access to water.

Met. Wild horses have had free access to water. Water may need to be developed for wild horses in the winter use area because all water available now is what the permittee provides. If the permittee does not use the allotment during the winter like in 1992, no water would be available to horses except for the

standing water on the playa or from the snow.

VI. CONCLUSIONS

Information used for this analysis was limited to the four years following the 1988 evaluation (1989-1992). Since that time the area has been experiencing below average winter precipitation, which is usually the high precipitation time. Conclusions based on collected data has taken that into account.

Conclusions from Table #1. Livestock numbers remained stable throughout the evaluation period. In 1992, however, the permittee only used 36% of his active preference because he recognized that the grasses did not have sufficient production to meet the forage demand of his livestock.

Conclusions from Table #2. Wild horse numbers during the evaluation period have been 140 to 160% above the recommended numbers in the Land Use Plan. In 1992 an emergency gather occurred on the Rodeo Creek Allotment portion of the Fox and Lake Herd Management Area. In 1992, the below average growing season precipitation resulted in low productivity of the forage species and the animals going into the winter in poor condition. The emergency gather was conducted to prevent major die offs as a result of starvation and dehydration.

Conclusions from Table #3. The wildlife trend for mule deer is down for the management unit Rodeo Creek lies in. The trend is declining because of the high density of mule deer in the mid 80's and the drought. It is part of the natural cycle of trend. Pronghorn, during this time, have been in an upward trend. (Dobel, Comm.)

Conclusions from Table #4 & #5. The annual precipitation was below normal in 1989 and 1992. In these same two years the amount of heavy use occurring on the allotment was significantly higher than in 1990 and 1991 when the annual precipitation was above average. The growing season precipitation was fifteen percent below average in 1992. Thus the grass plants only grew a half inch to two inches before seeding out. The shrub plants exhibited less production than normal also. Consequently not enough forage was provided to meet the forage demand and heavy use resulted.

Conclusions from Table #6. Key areas have only been established on the winter use area. No key areas have been established currently on the spring or summer use areas. However utilization cages have been placed in these two areas. The trend at Key Area 1 Empire is static. The winterfat showed no significant change. The other key species are too small to accurately measure. For statistical accuracy it is preferable that the key species be within 20-80% frequency. The trend at Key Area 2 Three Mile is in an upward trend shown by the significant increase of the budsage. The grass species are too small to accurately measure statistically. At potential though the grasses just become frequent enough for statistical accuracy at 25%. The grasses did increase, but ~~not~~

significantly.

Conclusions from Table #1 & #6

Before 1988, 150 cows used the winter use area. The 1988 evaluation changed the number of the cows on the winter use area from 150 to 485. Based on trend studies established in 1989 the increased numbers has not had an adverse affect on the vegetative community. Frequency data collected in 1992 showed a static to upward trend on the winter use area.

Use Pattern Mapping - Winter Use Area. The use during the evaluation period has been concentrated around the water sources at White Sage Flat Well and at the troughs at the north end of the Lake Range where the permittee hauls water. The permittee acquired the water rights to an existing well and added a trough, so a third water source is now available. The horses have free access to the water, but the water is only turned on while the permittee is actually using the winter use area. Therefore if the permittee is not using the winter use area like during the winter of 1992, the water available to horses is limited to the standing water on the playa ~~and~~ eating the snow. Adding two additional waters to the winter use area would improve the livestock distribution so that better use of the area is made and lessen the concentration of use at the existing water sources. Also adding the waters would enable the BLM to provide water for the horses during the winter months even if the permittee was not using the winter use area.

Use Pattern Mapping - Spring Use Area. Continued utilization of the key forage species during the critical growing stages does not allow these plants to store food reserves, reproduce, and gain vigor. Furthermore this continual early use reduces the total plant size and decreases the viability of the seedheads. Continual repeated grazing in this fashion will cause a downward trend. A grazing system needs to be designed so that there are different spring use areas so that a portion of the spring area is rested each year.

Use Pattern Mapping - Summer Use Area. Pre-livestock monitoring showed light to moderate use. Post-livestock monitoring showed these same areas increasing to moderate and heavy use respectively. The amount of moderate use occurring before the livestock are turned out and the amount of heavy use post-livestock indicates that are too many animals using the high country of the Fox Range. Use on bitterbrush was noted on select plants, but bitterbrush did not have enough hits on our Key Forage Plant Utilization transects to be included as a key species. An exclosure is located near Rodeo Creek that has bitterbrush growing inside and outside of it. Need to set up a study on the bitterbrush inside and outside of the exclosure.

Wild Horse Distribution. During the evaluation period the winters have been very mild with minimal snowpack until the 1992-1993 winter. These mild winters have allowed the wild horses to remain at the higher

elevations throughout the entire year. Year round the highest concentrations have been from Juniper Flat to Wild Horse Canyon with smaller concentrations being from Cottonwood Creek to Rodeo Creek and at Rattlesnake Canyon. Horses also were found year round from Three Mile Canyon to Manure Canyon with most right around Manure Canyon. These horses move onto the Pyramid Lake Indian Reservation for water. The availability of water on the Lake Range and the winter use area limits their numbers during the warm months which accounts for the horse movement pattern- increased wild horse numbers in the Lake Range and livestock winter use area during the winter months, that stay through the first green-up, and then most of the wild horses move out of the lower elevations. Areas of heavy use are also the areas with the higher concentrations of wild horses.

APPENDIX # USE PATTERN MAPPING

I. Winter Use Area

A. 1989

1. May 8 Post-livestock

21% No Apparent Use; 14% Light Use; 7% Moderate Use; 58%
Heavy Use.

Heavy use occurred in the loamy 5-8", droughty loam 4-8", and silty 4-8" ecological sites where the availability of preferred forage was present. The lower productive sites (ie sodic terrace ecological sites) received less utilization due to the scarcity of the key grass species (Indian ricegrass - Oryzopsis hymenoides and bottlebrush squirreltail - Sitanion hystrix) in these ecological sites.

2. August 29 & 30 Pre-livestock

59% No Apparent Use; 34% Light Use; 3% Moderate Use; 4% Heavy Use

Two areas of moderate use were found. One was at the north end of the Lake Range where the permittee hauls water to troughs. This was the only water on the Lake Range at the time of this mapping. The other area was on the sodic terrace between Bull Creek and Willow Creek. Two areas of heavy use occurred. The first area is around White Sage Flat Well and the second was at key area 0129-03 at Trail Canyon on a sodic terrace 6-8" site. The rest of the area had light to no apparent use. Utilization at Cottonwood Creek, the southwest part of the Lake Range, and the northeast portion of the Fox Range was primarily made by wild horses. The other use areas appeared to be mostly from cattle.

B. 1990

May 3 & 4 Post-livestock

24% Light Use; 68% Moderate Use; 7% Heavy; 1% Barren

Heavy use was found in the vicinity of White Sage Flat Well extending northward approximately three miles. There was also an area approximately one mile wide beginning south of White Sage Flat Well to the allotment fence that was void of any vegetation except for scattered halogeton. Another area of heavy use was on the east side of the Lake Range in an old burn area where the only

perennial grass growing was bottlebrush squirreltail - Sitanion hystrix. The rest of the winter use area had moderate use with two areas of light use.

C. 1991

1. April 29 & 30, May 1 & 2 Post-livestock

7% Slight Use; 38% Light Use, 43% Moderate Use; 12 % Heavy Use

Four areas of moderate use and three areas of heavy use were found. The moderate use areas included: the area on the north end of the Lake Range where the permittee hauls water; the basin up in the Lake Range; a large area along the south end of the San Emidio Desert and up along the west side of the desert to Rodeo Creek; and on the west side of the Fox Range on the flats near the mouth of Smith Canyon. The basin up in the Lake Range had good grass production this year. The species found were Idaho Fescue - Festuca idahoensis, bottlebrush squirreltail - Sitanion hystrix, Indian ricegrass - Oryzopsis hymenoides, and bluegrass - Poa+. The use surrounding the San Emidio Desert was on bottlebrush squirreltail - Sitanion hystrix, Indian ricegrass - Oryzopsis hymenoides, winterfat - Eurotia lanata, and shadscale - Atriplex confertifolia. Most of the use on the west side of the Fox Range was made on the desert shrubs since the perennial grasses are naturally very sparse. The three heavy use areas included: up along the powerline road from the flats on the east side of the Lake Range up into the higher country; at the mouth of Three Mile Canyon; and on the flats on the west side of the Fox Range from south of Smith Canyon to Reynard. On the west side of the Fox Range, the wild horses have pawed at the shrubs to get to the grasses underneath. The rest of the area mapped had slight to light use. Most of the use on the west side of the Fox Range is from wild horses and the rest of the spring/ winter use areas is from both the wild horses and the livestock.

2. June 4 & 5 Post-livestock

52% Slight Use; 48% Light

The use on current year's growth was light to no apparent use on the spring use area and the Lake Range. The Lake Range was utilized by wild horses during the winter (50-60%), stayed through the early spring, utilizing the first green up, and then moved out. There was evidence of current horse use (tracks, trails, manure, and sightings), but availability of water in the range limits their numbers in the warm months. No evidence of current livestock use. Use

on the east side of the Fox Range ranged from no apparent use to light use (30-35% on basin wildrye - Elymus cinereus, bottlebrush squirreltail - Sitanion hystrix, Thurber needlegrass - Stipa thurberana, and bluegrass - Poa++). On most of the mountain saddles large stud piles and trails heading in all directions were seen indicating horses use the entire area, but at a different time of the year than this mapping.

D. 1992

1. May 4-6 Post-livestock

12% Slight Use; 10% Light Use; 33% Moderate Use; 44% Heavy Use; 1% Barren

Last years growth was monitored. A big difference in production from last year was noted. Unseasonably warm weather with temperatures in the 90's. Cows were kept on the southern part of the winter pasture until right before the cows were suppose to go onto the spring pasture. Heavy use occurred wherever bottlebrush squirreltail - Sitanion hystrix, Indian ricegrass - Oryzopsis hymenoides were present. The desert shrub communities (winterfat - Eurotia lanata, and shadscale - Atriplex confertifolia, and spiny hopsage - Grayia spinosa) had light to slight use generally. Two winterfat - Eurotia lanata sites, near the mouth of Three Mile Canyon and at a cage along the powerline north of Empire Farms, did have moderate use. A barren area around White Sage Flat Well exists. North of Cottonwood Creek had slight use on shadscale - Atriplex confertifolia, and spiny hopsage - Grayia spinosa. Fresh stud piles present and heavy trailing through the area to the standing water on the playa. No cow sign was seen.

2. October 5,6,19 and November 4 Pre-livestock

3% Slight Use; 64% Light Use; 30% Moderate; 1% Severe Use; 2% Barren

Two large areas of moderate use occurred from Needle Rock on the flats along the highway north about fifteen miles. The key species was bottlebrush squirreltail - Sitanion hystrix. The other area of moderate use occurred on the flats north of the Lake Range. The severe use area was at White Sage Flat Well. This has been a high livestock concentration area in the past with water availability from the well and is also a gathering place for the permittee because corrals are located here. A barren area was also mapped. This is another high concentration area for both cows and wild horses because the permittee hauls water to troughs here.

This is one of two places water is available on the Lake Range.

II. Spring Use Area

A. 1989

November 8 Post-livestock

see summary under summer use area

B. 1990

The spring use area was mapped with the winter and summer use areas.

C. 1991

1. See summary of winter use area dated April 29- May 2.

2. June 4 & 5 Post-livestock

52% Slight Use; 48% Light Use

The use on current year's growth was light to no apparent use on the spring use area and the Lake Range. The Lake Range was utilized by wild horses during the winter (50-60%), stayed through the early spring, utilizing the first green up, and then moved out. There was evidence of current horse use (tracks, trails, manure, and sightings), but availability of water in the range limits their numbers in the warm months. No evidence of current livestock use. Use on the east side of the Fox Range ranged from no apparent use to light use (30-35% on basin wildrye - Elymus cinereus, bottlebrush squirreltail - Sitanion hystrrix, Thurber needlegrass - Stipa thurberana, and bluegrass - Poa++). On most of the mountain saddles large stud piles and trails heading in all directions were seen indicating horses use the entire area, but at a different time of the year than this mapping.

D. 1992

1. April 20-23 Pre-livestock

Rodeo Creek Allotment

23% No Apparent Use; 53% Slight Use; 10% Light Use; 13% Moderate Use; 1% Heavy Use

Two areas of moderate use and one area of heavy use were found. Cottonwood basin had moderate use on Sandberg

bluegrass - Poa secunda and slight use on bottlebrush squirreltail - Sitanion hystrix. Twenty-one horses were sighted in this area. The other area of moderate use was around Lost Creek on the west side of the Fox Range. Wild horses and cows were sighted using this area. This is one of the few places for the animals to water while using the flats. The area of heavy was found two canyons north of Smith Canyon. The grass species were very sparse and when found were under the protection of the shrubs. Heavy use was on Nevada ephedra - Ephedra nevadensis, black greasewood - Sarcobatus vermiculatus, and Douglas rabbitbrush - Chrysothamnus viscidiflorus.

Pole Canyon Allotment

46% No Apparent Use; 40% Slight Use; 14% Moderate Use

Generally the use was slight with an area of light use on top of the Fox Range. The use was on the Sandberg bluegrass - Poa secunda and bottlebrush squirreltail - Sitanion hystrix. On the previous year's production the use was heavy on Sandberg bluegrass - Poa secunda and moderate on bottlebrush squirreltail - Sitanion hystrix.

2. June 1 & 2 Post-livestock

18% No Apparent Use; 7% Slight Use; 62% Light Use; 13% Heavy

On the east side of the Fox Range from Trail Canyon north, the use was slight to light on Sandberg bluegrass - Poa secunda and Thurber needlegrass - Stipa thurberana. The grass was sparse and showing the effect of the drought. On the west side of the Fox Range, the grass is once again sparse. The grasses being sparse however is a natural occurrence in these types of ecological sites. Use was made primarily on spiny hopsage - Grayia spinosa, rabbitbrush - Chrysothamnus viscidiflorus, and Nevada ephedra - Ephedra nevadensis. Very little leaf development on spiny hopsage - Grayia spinosa this year. The area from Lost Creek to Wild Horse Canyon was barren except for scattered black greasewood (Sarcobatus vermiculatus) plants, which were heavily utilized, and dried up tumblemustard - Sisymbrium altissimum. Water in Lost Creek and the surrounding canyons were only a trickle at the time of this mapping.

III. Summer Use Area

A. 1989

November 8 Post-livestock

Rodeo Creek Allotment

9% No Apparent Use; 15% Light Use; 52% Moderate Use; 24% Heavy Use

The heavy use areas included the lower reaches of Cottonwood Creek; the surrounding area at Bull Basin Spring; the mouth of Rattlesnake Canyon; and from Trail Canyon south to the road that goes over Sheep Pass. These areas are all associated with water. The moderate use areas included: the upper reaches of Cottonwood Creek; the foothills south of Cottonwood Creek; between Rattlesnake and Trail Canyon; and on the flats from Wild Horse Canyon north to about one mile south of Reynard.

Pole Canyon Allotment

O horses

38% No Apparent Use; 62% Not Mapped

Only the flats in the Pole Canyon Allotment were monitored. No apparent use was found on the flats.

B. 1990

1. May 30 Pre-livestock

Rodeo Creek Allotment

97% Light Use; 3% Moderate Use

Utilization on the west side of the Fox Range in the flats had light use overall except for one small area of moderate use near the mouth of Lost Creek going south to the next canyon. This is where the animals water. Most of the use is made on the desert shrub species (shadscale - Atriplex confertifolia, spiny hopsage - Grayia spinosa, lanceleaf rabbitbrush - Chrysothamnus viscidiflorus lanceolatus, green molly kochia - Kochia americana, littleleaf horsebrush - Tetradymia glabrata, and black greasewood - Sarcobatus vermiculatus) which showed signs of severe hedging during the winter. The majority of use was made by wild horses. From Rodeo Creek to the head of Wild Horse Canyon the overall use was light with two small areas of moderate use north of Pah Rum Peak. Winter use on lanceleaf rabbitbrush - Chrysothamnus viscidiflorus lanceolatus was severe with all plants hedged into the old growth, no apparent use was found on the current year's production. A small quaking aspen - Populus tremuloides stand in Rodeo Creek appeared to be static to slightly improving trend with most age classes present. Above the quaking aspen - Populus tremuloides stand is a Saskatoon serviceberry - Amelanchier alnifolia stand, which appeared to be in good condition. The Cottonwood basin generally had light use with one wash having moderate use. Severe winter use was found on spiny

hopsage - Grayia spinosa, Nevada ephedra -Ephedra nevadensis, and black greasewood - Sarcobatus vermiculatus.

Pole Canyon Allotment

58% No Apparent Use; 31% Light Use; 11% Moderate Use

Light use was found on the loamy 4-8" and the droughty loam 8-10" sites at the mouth of Rough Canyon. The sodic terrace and the sodic flat had no apparent use. At the head of Wild Horse Canyon, the loamy 10-14" and the clay slope 8-12" had moderate use just inside the allotment fence with light use on the sideslopes.

2. November 6-9 Post-livestock

Rodeo Creek Allotment

51% Light Use; 49% Heavy Use

Heavy use areas included: the Juniper Flat area; the immediate vicinity of Mud Trough Spring; from Rodeo Creek south going into the Pole Canyon Allotment, from the mouth of Cottonwood Canyon east to the powerline; and along Smith Creek in Smith Canyon. Most of the grasses in the Juniper Flats area were found within the sagebrush cover with the ones in the open used heavily. Large interspaces occurred between the grass plants in the open. The heavy use that was found along Smith Creek and the adjacent springs is where the animals come to water. spiny hopsage - Grayia spinosa and black greasewood - Sarcobatus vermiculatus were severely hedged due to the drought conditions and harsh windblown sites on the upper ridges. A decadent antelope bitterbrush - Purshia tridentata stand was found west of Cottonwood and north of Smith Canyon. Use appeared to be heavy from Rodeo Creek south to the Pole Canyon Allotment on antelope bitterbrush - Purshia tridentata, snowberry - Symphoricarpos spp, and rabbitbrush - Chrysothamnus viscidiflorus.

Pole Canyon Allotment

100% Heavy

Heavy use was found from the allotment boundary near Pah Rum Peak down to Fox Canyon Spring. Only this area was mapped. The rest of the allotment was unmapped.

C. 1991

May 15 & 16 Pre-livestock

Rodeo Creek Allotment

50% Light Use; 50% Moderate Use

On current year's production two areas of moderate use were found - the area from Rodeo Creek up to Pah Rum Peak had moderate use on bluegrass - Poa++ and area from Bull Basin Spring to Juniper Flats and over to Mud Trough Springs. All three of those areas have water available to livestock and wild horses. The area from Rodeo Creek to Bull Basin had light use. A map was done also on 1990 production with all heavy use except for from Bull Basin Spring to Coyote Creek which had light use.

Pole Canyon

100% Heavy Use

Heavy use on bottlebrush squirreltail - Sitanion hystrrix and bluegrass - Poa++. Light use on Thurber needlegrass - Stipa thurberana at the head of Wild Horse Canyon just inside the allotment fence. Heavy use also occurred on 1990's production. Lanceleaf rabbitbrush - Chrysothamnus viscidiflorus lanceolatus had been heavily hedged over the winter.

D. 1992

1. April 6-9 Post-livestock

Rodeo Creek Allotment - 99% Moderate Use; 1% Heavy Use.
Pole Canyon Allotment - 100% Heavy Use

Use on 1991 forage production was monitored. Moderate use was found throughout the summer country with one area of heavy use. Juniper Flats is a highway of horse trails and is close to Juniper Flat Springs. The heavy use area was at Pah Rum Peak extending to Wild Horse Canyon Spring and on over to the saddle where the boundary fence between the Pole Canyon Allotment and the Rodeo Creek Allotment is located. snowberry - Symporicarpos spp and Saskatoon serviceberry - Amelanchier alnifolia have had heavy use in the past from Rodeo Creek south going on into the Pole Canyon Allotment. At this time the snowberry - Symporicarpos spp had moderate use and the scattered rabbitbrush - Chrysothamnus viscidiflorus had heavy use. 1992 production is behind what it was the same time in 1991.

2. June 2 & 4 Pre-livestock

20% Moderate Use; 80% Heavy Use

The use was all moderate and heavy. The two moderate use

areas were from Bull Basin Spring to Coyote Creek and an area south and west of Rodeo Creek. The rest of the area mapped had heavy use. No spring rains caused low grass production. Most of the grasses only grew 2" or less and then seeded out.

3. November 2-5 Post-livestock

Rodeo Creek Allotment

2% Slight Use; 28% Light Use; 25% Moderate Use; 45% Heavy Use

Only 100 dry cows out of a possible 485 cow/calves were put onto the summer country of the Rodeo Creek Allotment this year due to the low forage production. The area received very little snow this past winter and very little rain during the spring. The grass species present only grew 1/2-2" leaf growth before seeding out this year. Cottonwood Basin to Willow Creek had light use on the grass species while the browse species, black greasewood - Sarcobatus vermiculatus and spiny hopsage - Grayia spinosa, had moderate to heavy use. Shadscale - Atriplex confertifolia had heavy use on select plants. Rabbitbrush - Chrysothamnus viscidiflorus had heavy to severe use and Tamarisk - Tamarix spp had moderate to heavy use. The antelope bitterbrush - Purshia tridentata in this area was decadent with low vigor. Slight use was found on it. Willow Creek to Bull Basin Spring had moderate use on bottlebrush squirreltail - Sitanion hystrrix, heavy to severe use on rabbitbrush - Chrysothamnus viscidiflorus, and some of the Lahontan sagebrush - Artemisia spp had been hedged. From Bull Basin Spring south to the allotment fence heavy use was found on bottlebrush squirreltail - Sitanion hystrrix, Thurber needlegrass - Stipa thurberana, and Sandberg bluegrass - Poa secunda. The rabbitbrush - Chrysothamnus viscidiflorus and snowberry - Symporicarpos spp were heavily hedged. An area of moderate use was found also at Little Rattlesnake Canyon.

Pole Canyon Allotment

37% Light Use; 63% Heavy Use

Fresh stud Piles were seen throughout the area. No cows have used the Pole Canyon Allotment for the last three years because of lack of water and forage. The upper elevations had heavy use on the loamy 10-14" and clay slope 8-12" ecological sites. Heavy use was found on bottlebrush squirreltail - Sitanion hystrrix and Sandberg bluegrass - Poa secunda. snowberry - Symporicarpos spp, rabbitbrush - Chrysothamnus viscidiflorus, and eriogonum - Eriogonum spp (shrub) had severe use whenever they were seen. The use on

the sodic terrace ecological sites generally had light use on bottlebrush squirreltail - Sitanion hystrix and Sandberg bluegrass - Poa secunda, which composed less than 10% of the total composition by weight. Shadscale - Atriplex confertifolia spiny hopsage - Grayia spinosa had slight use and the Ephedra - Ephedra spp when present had heavy use. Horse sign was scarce on the lower elevations, but horses were seen using these areas. No cow sign was seen in the allotment while conducting the mapping.

APPENDIX # DISTRIBUTION FLIGHTS

Rodeo Creek Distribution

<u>Date</u>	<u># Horses</u>	<u># Burros</u>	<u>Aircraft</u>
10/88*	492		Bell 47G3B-1
7/89*	497		Bell 47G3B-S (Soloy)
2/90	267		Cessna 206
9/90*	477	1	Hughes 500D
1/91	301		Cessna 210
7/91	286		Maule M-5
3/92	329	1	Cessna 210
5/92	282		Maule M-5
7/92	288		Maule M-5
9/92		1	Maule M-6
10/92*	525	1	Hiller II-E (Soloy)

* Census Flights

October 1988 Census

During this census, horses were distributed along the higher elevations of the Fox Range from Cottonwood Creek to Trail Canyon, and from Juniper Flat to Wild Horse Canyon. Horses were scattered from Three-mile Canyon to Manure Canyon on the Lake Range.

July 1989 Census

The horses were found at the higher elevations throughout the Fox Range. The area of highest concentration was from Juniper Flat to Wild Horse Canyon and from north Juniper Flat to Cottonwood Creek. The majority of the horses, on

the Lake Range, were found slightly north of Manure Canyon in the higher elevations.

February 1990 Distribution

This distribution flight found the horses scattered throughout all elevations. The highest concentrations, on the Fox Range, were distributed from Juniper Flat to Trail Canyon, and on the flats from Smith Canyon to Wild Horse Canyon. The horses on the Lake Range were concentrated from Three-mile Canyon north, and around Manure Canyon.

September 1990 Census

Most horses were observed in the higher elevations with a few animals in the foothills and flats. There was a high concentration of horses, in the Fox Range, from Juniper Flat to Pah-Rum Peak and in Rattlesnake Canyon. A lower concentration of animals existed from Cottonwood Creek to Rodeo Creek. On the Lake Range, the horses were found at all elevations between Three-mile Canyon and Manure Canyon. The burro was at the mouth of San Emidio Canyon.

January 1991 Distribution

Horses were distributed fairly evenly throughout the high and low elevations. Areas of high concentration, on the Fox Range, were between Bull Basin and Trail Canyon, from Cottonwood Creek to Coyote Creek, and along the west side of the range on the flats. Horses on the Lake Range were scattered evenly throughout the range.

July 1991 Distribution

Horses were observed in both the lower and higher elevations. The highest concentrations, on the Fox Range, were from Juniper Flat to Wild Horse Canyon, south of Smith Canyon, and on the flats from Reynard to Wild Horse Canyon. The horses on the Lake Range were found north of Manure Canyon.

March 1992 Distribution

The horses were mainly distributed in the lower elevations. The highest concentrations were found along the both sides of the Fox Range; from Cottonwood Creek to Coyote Creek, from Smith Canyon to Juniper Flat, and from Bull Basin to Rattlesnake Canyon which had the highest density. On the Lake Range, horses were scattered in the lower elevations, around White Sage Flat. The burro was located west of Three-mile well.

May 1992 Distribution

The horses observed were at the higher elevations in the Fox Range. The heaviest concentration of animals were distributed from Juniper Flat to Pah-Rum Peak. No horses were observed on the Lake Range within the HMA boundary.

July 1992 Distribution

Observation found the horses scattered throughout the high and low elevations. Major areas of concentration were north of Pah-Rum Peak, between Bull Basin and Rodeo Creek, and between Rattlesnake Canyon and the Reservation Boundary. The Lake Range horses were distributed from Three-mile Canyon south to Manure Canyon.

September 1992 Distribution

On this flight the horses were found at the lower elevations. The burro was observed north of Three-mile Canyon on the Lake Range.

October 1992 Census

Horses were distributed throughout all elevations, on both the Fox and the Lake Ranges. Areas of high concentration were Smith Canyon, from Juniper Flat to Wild Horse Canyon, and from Coyote Creek to Trail Canyon. The burro was located in Rattlesnake Canyon on the Fox Range. On the Lake Range, most of the horses were concentrated from Three-mile Canyon south to the Reservation boundary.

APPENDIX #?

I. Winter Use Area

~~POST-LIVESTOCK
WINTER USE AREA~~

~~X~~
PRE-LIVESTOCK
WINTER USE AREA

<u>YEAR</u>	<u>AUMs</u>	<u>YEAR</u>	<u>AUMs</u>
1989	2760	1989	206
1990	4804	1990	
1991	5292	1991	
1992	3972	1992	296
AVERAGE	4207	AVERAGE	251

A. May 8-11, 1989 post-livestock

1. weighted average utilization

$$\frac{(3979 \text{ acres} \times .5) + (35,201 \text{ acres} \times .7)}{39,801 \text{ acres}} = .68$$

2. potential stocking level

a) actual use

1) livestock = 2097 AUMs

2) wild horses = 1032 AUMs

b) potential stocking level

$$\frac{2097 \text{ livestock AUMs} + 1032 \text{ W. Horse AUMs}}{.68} = \frac{X}{.6}$$

$$.68X = 1877$$

$$X = 2760 \text{ AUMs}$$

B. August 29, 1989 pre-livestock

1. weighted average utilization

$$\frac{(1623 \text{ acres} \times .5) + (2463 \text{ acres} \times .7)}{4086 \text{ Acres}} = .62$$

2. potential stocking level

a) actual use

$$\frac{(94 \text{ W. Horses})(61 \text{ days})}{30.41666} = 188 \text{ AUMs}$$

$$\frac{(60 \text{ W. Horses})(121 \text{ days})}{30.41666} = 239 \text{ AUMs}$$

b) potential stocking level

$$\frac{427 \text{ W. Horse AUMs}}{.62} = \frac{X}{.3}$$

$$.62X = 128$$

$$X = 206 \text{ AUMs}$$

C. May 3-4, 1990 post-livestock

1. weighted average utilization

$$\frac{(61,363 \text{ acres} \times .5) + (6845 \text{ acres} \times .7)}{68,208 \text{ Acres}} = .52$$

2. potential stocking level

a) actual use

1) livestock = 2886 AUMs

2) wild horses = 1277 AUMs

b) potential stocking level

$$\frac{2886 \text{ livestock AUMs} + 1277 \text{ W. Horse AUMs}}{.52} = \frac{X}{.6}$$

$$\begin{aligned}.52X &= 2498 \\ X &= 4804 \text{ AUMs}\end{aligned}$$

D. April 29 - May 2, 1991 post-livestock

1. weighted average utilization

$$\frac{(17,370 \text{ acres} \times .5) + (4851 \text{ acres} \times .7)}{22,221 \text{ Acres}} = .54$$

2. potential stocking level

a) actual use

1) livestock = 2886 AUMs

2) wild horses = 1887 AUMs

b) potential stocking level

$$\frac{2886 \text{ livestock AUMs} + 1887 \text{ W. Horse AUMs}}{.54} = \frac{X}{.6}$$

$$\begin{aligned}.54X &= 2858 \\ X &= 5292 \text{ AUMs}\end{aligned}$$

E. May 4-6, 1992 post-livestock

1. weighted average utilization

$$\frac{(25,844 \text{ acres} \times .5) + (33,607 \text{ acres} \times .7)}{59,451 \text{ Acres}} = .61$$

2. potential stocking level

a) actual use

1) livestock = 2886 AUMs

2) wild horses = 1153 AUMs

b) potential stocking level

$$\frac{2886 \text{ livestock AUMs} + 1153 \text{ W. Horse AUMs}}{.61} = \frac{X}{.6}$$

$$.61X = 2423$$

$$X = 3972 \text{ AUMs}$$

F. October 5-6, 19 & Nov 4, 1992 pre-livestock

1. weighted average utilization

$$\frac{(16,408 \text{ acres} \times .5) + (49 \text{ acres} \times .9)}{16,457 \text{ Acres}} = .5$$

2. potential stocking level

a) actual use

wild horse AUMs = 493 AUMs

b) potential stocking level

493 W. Horse AUMs = X
.5 .3

$$.5x = 148$$

AVERAGE = 4207

Livestock (62%) = 2608

W. Horses (38%) = 1599

$$\underline{(\text{Livestock } \# \text{'s})(181 \text{ days})} = 2608$$

30.41666

(W. Horse #'s) (12 months) = 1599

Livestock #'s = 438 cows

W. Horse #'s = 133 W. Horses

30% use before November 1 (pre-livestock)

$$\underline{(\text{W. Horse } \#') (\text{245 days})} = 251$$

30.41666

W. Horse #'s = 31 W. Horses

II. Spring / Summer Use Areas

<u>POST-LIVESTOCK SUMMER USE AREA</u>		<u>PRE-LIVESTOCK SUMMER USE AREA</u>	
<u>YEAR</u>	<u>AUMs</u>	<u>YEAR</u>	<u>AUMs</u>
1989	5702	1989	

1990	4269	1990	350
1991	8140	1991	288
1992	3738	1992	398
AVERAGE	5462	AVERAGE	345

A. November 8, 1989 post-livestock

1. weighted average utilization

$$\frac{(11,683 \text{ acres} \times .5) + (5287 \text{ acres} \times .7)}{16,970} = .56$$

2. potential stocking level

a) actual use

$$1) \text{ livestock} = 2934 \text{ AUMs}$$

$$2) \text{ wild horses} = 3452 \text{ AUMs}$$

b) potential stocking level

$$\frac{2934 \text{ livestock AUMs} + 3452 \text{ W. Horse AUMs}}{.56} = \frac{X}{.5}$$

$$.56X = 3193$$

$$X = 5702 \text{ AUMs}$$

B. May 21, 22, 24, 1990 pre-livestock

1. weighted average utilization

$$\frac{(61,363 \text{ acres} \times .5) + (6845 \text{ acres} \times .7)}{68,208 \text{ Acres}} = .52$$

2. potential stocking level

a) actual use

$$\frac{(301 \text{ W. Horses})(61 \text{ days})}{30.41666} = 604 \text{ AUMs}$$

$$\frac{(396 \text{ W. Horses})(21 \text{ days})}{30.41666} = 273 \text{ AUMs}$$

b) potential stocking level

$$\frac{877 \text{ W. Horse AUMs}}{.52} = \frac{X}{.2}$$

*(Mod heavy severe)
might have used
slight + light)*

$$.52X = 175$$
$$X = 350 \text{ AUMs}$$

C. November 6-9, 1990 post-livestock

1. weighted average utilization

$$\frac{(5214 \text{ acres} \times .7)}{5214 \text{ Acres}} = .7$$

2. potential stocking level

a) actual use

$$1) \text{ livestock} = 2934 \text{ AUMs}$$

$$2) \text{ wild horses} = 3042 \text{ AUMs}$$

b) potential stocking level

$$\frac{2934 \text{ livestock AUMs} + 3042 \text{ W. Horse AUMs}}{.7} = \frac{X}{.5}$$

$$.7X = 2988$$

$$X = 4269 \text{ AUMs}$$

D. May 15-16, 1991 pre-livestock

1. weighted average utilization

$$\frac{(4601 \text{ acres} \times .5)}{4601 \text{ Acres}} = .5$$

2. potential stocking level

a) actual use

$$\frac{(238 \text{ W. Horses})(61 \text{ days})}{30.41666} = 469 \text{ AUMs}$$

$$\frac{(508 \text{ W. Horses})(15 \text{ days})}{30.41666} = 250 \text{ AUMs}$$

b) potential stocking level

$$\frac{719 \text{ W. Horse AUMs}}{.5} = \frac{X}{.2}$$

$$.5X = 144$$

$$X = 288 \text{ AUMs}$$

E. April 6-9, 1992 post-livestock

1. weighted average utilization

$$\frac{(22,717 \text{ acres} \times .5) + (236 \text{ acres} \times .7)}{22,953 \text{ Acres}} = .5$$

2. potential stocking level

a) actual use

$$1) \text{ livestock} = 2934 \text{ AUMs}$$

$$2) \text{ wild horses} = 5205 \text{ AUMs}$$

b) potential stocking level

$$\frac{2934 \text{ livestock AUMs} + 5205 \text{ W. Horse AUMs}}{.5} = \frac{X}{.5}$$

$$.5X = 4070$$

$$X = 8140 \text{ AUMs}$$

F. June 2&4, 1992 pre-livestock

1. weighted average utilization

$$\frac{(1089 \text{ acres} \times .5) + (4232 \text{ acres} \times .7)}{5321 \text{ Acres}} = .66$$

2. potential stocking level

a) actual use

$$\frac{(419 \text{ W. Horses})(61 \text{ days})}{30.41666} = 840$$

$$\frac{(525 \text{ W. Horses})(32 \text{ days})}{30.41666} = 552$$

b) potential stocking level

$$\frac{840 \text{ livestock AUMs} + 552 \text{ W. Horse AUMs}}{.66} = \frac{X}{.2}$$

$$.66X = 278$$

$$X = 421 \text{ AUMs}$$

G. November 2-5, 1992 post-livestock

1. weighted average utilization

$$\frac{(10,366 \text{ acres} \times .5) + (18,657 \text{ acres} \times .7)}{29,023 \text{ Acres}} = .63$$

2. potential stocking level

a) actual use

1) livestock = 1115 AUMs

2) wild horses = 3595 AUMs

b) potential stocking level

$$\frac{1115 \text{ livestock AUMs} + 3595 \text{ W. Horse AUMs}}{.63} = \frac{X}{.5}$$

$$.63X = 2355$$

$$X = 3738 \text{ AUMs}$$

AVERAGE = 5462

Livestock (62%) = 3386

W. Horses (38%) = 2076

$$\frac{(\text{Livestock } \#') \times (184 \text{ days})}{30.41666} = 3386$$

$$(\text{W. Horse } \#') \times (12 \text{ months}) = 2076$$

Livestock #'s = 560 cows

W. Horse #'s = 173 W. Horses

20% use before April 30 (pre-livestock)

$$\frac{(\text{W. Horse } \#') \times (61 \text{ days})}{30.41666} = 353$$

W. Horse #'s = 176 W. Horses

