m 12-18-89

SECTION I

A. Herd Management Area: Nevada Wild Horse Range

B. Coordination/ Consultation Checklist (active in past management efforts):

1. Five Party
   a) U.S. Air Force
   b) Department of Energy
   c) U.S. Fish and Wildlife Service
   d) Nevada Department of Wildlife
   e) Bureau of Land Management
2. Consultation and Coordination Committee (participated in development of the Nevada Wild Horse Range Herd Management Area Plan):
   a) National Wild Horse Association, Butch Condon, Pres.
   b) Wild Horse and Burro Committee for the National Academy of Sciences
   c) National Mustang Association ✓
   d) Center for Wild Horse/ Burro Research
   e) International Society for Protection of Wild Horses and Burros
   f) Sierra Club ✓
   g) NORA
   h) Nevada Wildlife Federation ✓
   i) Fraternity of the Desert Bighorn ✓
   j) Clark County Game Management Board ✓
   k) American Humane Association
   l) United States Humane Society
   m) People's Animal Welfare
   n) Nevada State Division of Agriculture
3. Interested Parties since development of the herd management plan:
   a) Animal Protection Institute of America
   b) Nevada Commission for the Preservation of Wild Horses
4. Solicitation of affected interests (refer to solicitation letter and mailing list in appendix). Solicitaion period from March 19 to April 19, 1990.

DRAFT

C. Maps Refer to maps specific to each section of the evaluation.

D. History

The Nellis Air Force Range was established by President Roosevelt in 1940 as the Las Vegas Bombing and Gunnery Range. The newly formed military range overlapped what is now known as the Desert National Wildlife Range (created in 1936 for the protection of resident populations of bighorn sheep). This overlap has resulted in co-use of a portion of the area by the U.S. Fish and Wildlife Service (USFWS) and the U.S. Air Force (USAF). The co-use area is managed by the USFWS. A limited portion of the Nellis Air Force Range is managed by U.S. Department of Energy (DOE).

Cooperative agreements for the conservation and development of fish and wildlife resources and the protection of wild horses were implemented

in 1961, 1963, 1965, 1969, and 1973. In 1977, the USAF, BLM, DOE, USFWS, and Nevada Department of Wildlife (NDOW) signed the Five-Party Cooperative Agreement to provide for the protection, development, and management of natural resources, including fish and wildlife, vegetation, watershed, and wild horses, on the Nellis Air Force Range and the Nevada Test Site.

The Nevada Wild Horse Range (NWHR) was created in 1963. The NWHR located in the north-central portion of the Nellis Air Force Range consists of 394,000 acres. It is managed for the protection of wild horses and the maintenance of ecologically balanced population levels. When the NWHR was created an estimated 200 horses roamed mainly within the designated boundaries of the NWHR. Since 1962 the wild horses have expanded their range and roam over most of the north side of the NRC. By 1989 the population had increased to 6,255 horses that roam an estimated 1.8 million acres.

Historically the Nellis Air Force Range was grazed by livestock, wild horse and wildlife. Although the area was withdrawn in 1940 for military purposes, livestock grazing continued until 1979. In 1979 a fence along the northern boundary was completed, eliminating livestock grazing and movement in and out of the Nellis Air Force Range and Nevada Wild Horse Range by wild horses.

One range conservationist stationed in Caliente is assigned to all wild horse activiites within the NWHR and the wild horse program within the Caliente Resource Area.

A herd area management plan was implemented for the NWHR in 1985. Based on the plan, horses would be managed only within the NWHR at a population of 2,000 horses. Horses outside of the boundaries of the NWHR would be removed. Removals started in 1985 and continued through 1986 and '87. In all 3,429 horses were removed.

In 1988 all horse removals were appealed by Animal Protection Institute of America. No horses were removed in 1988.

The expansion of wild horses into areas outside the NWHR has resulted in horses moving onto military operation areas, the Nevada Nuclear Test Site and the Tonapah Test Range. In the case of the Tonapah Test Range, the horses are moving into the building and airstrip complex. Horses in these areas pose a safety hazzard to equipment and personnel working in the area and to the horses themselves. In November 1988, 61 horses died of ammonia toxicity as the result of drinking urea laden water that had been rinsed out of trucks used by one of the military contractors. This incident could have been avoided if the horses had not been in the area (building and airstrip complex) and horse numbers had not bordered exceeding the avaiable supply of perennial water.

By 1989 horse numbers had reached a record 6,255 horses. Three dry years combined with record horse numbers cumulated in the number of horses outstripping the supply of permanent water. The situation became so grave at Silver Bow/ Breen Creek that a emergency gather was

instituted in December 1989. Six hundred and eighty horses were removed from Silver Bow/ Breen Creek.

To eliminate confusion that has existed in previous documents. Areas outside the Nevada Wild Horse Range are referred to as adjacent withdrawal lands (AWL).

E. Evaluation Period: 1986-1989

IN REPLY REFER TO:

United States Department of the Interior

BUREAU OF LAND MANAGEMENT

CALIENTE RESOURCE AREA
P.O. Box 237
Caliente, Nevada 89008

MAR 1 3 1990

4700
(NV-055.14)

Dear Citizen,

The Caliente Resource Area has initiated an evaluation of the wild horses and wild horse habitat in the Nevada Wild Horse Range and adjacent withdrawn lands within the Nellis Air Force Range. The purpose of the evaluation is to assess the effectiveness of current management practices in meeting objectives specific to the "Nevada Wild Horse Range Herd Management Area Plan" and to recommend future actions to better manage wild horses and their habitat where the resource objectives are not being met.

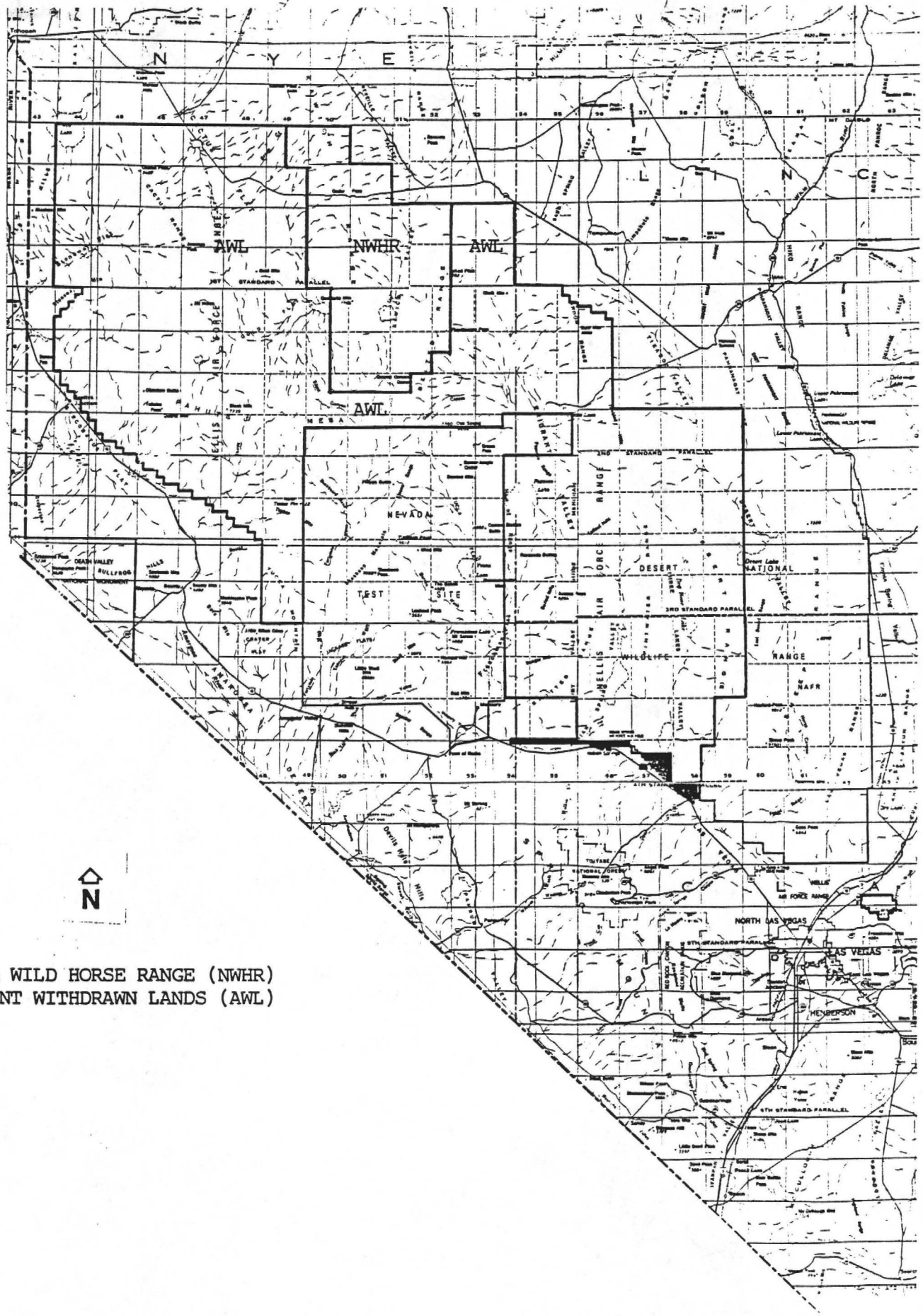
The evaluation is planned for completion by April 13, 1990. The attached map indicates the location of the Nevada Wild Horse Range.

All interested individuals, groups and agencies will be included in the evaluation process. If you would like to participate in the development of this evaluation or receive a copy of the document, please respond in writing to the above address within 30 days. Your comments should address your area of interest and your specific concerns. We are particularly intersted in any data that you may be able to provide us relating to wild horses and their environment within the area of evaluation.

Sincerely,

Curtis G. Tucker

Curtis G. Tucker
Area Manager



NEVADA WILD HORSE RANGE (NWHR)
ADJACENT WITHDRAWN LANDS (AWL)

RICHARD H. BRYAN
Governor

THOMAS W. BALLOW
Executive Director

SOUTHERN DISTRICT OFFICE
2300 McLeod
Las Vegas, Nevada
Telephone (702) 486-4690

MAILING ADDRESS
Mail Room Complex
Las Vegas, Nevada 89158

STATE OF NEVADA
DEPARTMENT OF AGRICULTURE

c2T

March 23, 1990

U.S. Dept. of Interior
Bureau of Land Management
Caliente Resource Area
P. O. Box 237
Caliente, NV 89008

Attn: Curtis G. Tucker

Dear Mr. Tucker:

We are interested in participating in the evaluation process of "Nevada Wild Horse Range Herd Management Area Plan" and would appreciate receiving a copy of the document. Please add the following to your mailing list:

Thomas W. Ballow, Executive Director
Nevada Department of Agriculture
P. O. Box 11100
Reno, NV 89510-1100

Thomas E. Smigel, Deputy Director
Nevada Department of Agriculture
Mail Room Complex
Las Vegas, NV 89158-4540

Sincerely,

Thomas E. Smigel

Thomas E. Smigel,
Deputy Director

TES:mla

cc: T. Ballow

ANIMAL PROTECTION INSTITUTE OF AMERICA

2831 Fruitridge Road, P.O. Box 22505, Sacramento, CA 95822 (916) 731-5521 FAX (916) 731-4467

March 23, 1990

Curtis Tucker
Area Manager
BLM
P.O. Box 237
Caliente, NV 89008

NELLIS WILD HORSE AREA

Dear Curtis:

Thank you for notifying API of your plans to review the Nellis Wild Horse Range Herd Management Area Plan. We are interested. Our major concern is the boundary for the Nellis Wild Horse Area and the fact the old "Wild Horse Range" is recognized as being but a small portion of the total acreage of the area where BLM recognized wild horses existed at the time of the 1971 law and agreed to manage for wild horses.

Sincerely,

Nancy Whitaker
Program Assistant

Nevada Cattlemen's Association
419 Railroad Street - Elko, Nevada 89801
(702) 738-9214

April 2, 1990

BLM
Caliente Resource Area
PO 237
Caliente, NV 89008

Dear Sir,

RE: 4700 (NV-055.14)

Please keep us up to date on what occurs during the evaluation process of the Nevada Wild Horse Range. We would also appreciate receiving a copy of the draft document. Thank you.

Sincerely,

Vickie Turner

Vickie Turner
Executive Director

April 4,1990

Curtis G. Tucker
Area Manager
Bureau of Land Management
Caliente Resource Area
P.O. Box 237
Caliente, Nevada 89008

Dear Curtis,

Please include me in the evaluation process of the wild horses on the Nevada Wild Horse Range.

I am particularly concerned about the physical condition of individual horses on the range as well as the over population of the entire horse herd and the destruction of their range. The horse herd has out grown its food and water supply and the environmental disaster at Breen Creek was a result. It is my hope that emergency removals of wild horses due to a lack of water/ and or feed will be avoided by aggressive horse herd management.

Current management practices are not effective!
You have not met the objectives as set out in the "Nevada Wild Horse Range Herd Management Area Plan".

1) The wild horse population has not been "managed" at the 2000 head level {as recommended by the "Consultation & Coordination process"} until the appropriate management level could be determined from monitoring studies. [last paragraph section 1 page D-2]

2) The horses have not been maintained in "Fair to Good" physical condition. [section B.-1 page D-9]

a) Sixteen horses of 682 head captured during the emergency gather of 1989 had to be destroyed due to poor physical condition and inability to survive shipment or 2.3%. Another 4-6 head were destroyed within the first week of arrival at Palomino Valley (Dr. Rich Sanford pers. comm.)

b) Many of the horses captured and shipped would not have survived much longer if left on their range in its poor condition.

c) Necropsies on horses destroyed showed dehydration, emaciation and severe parasitism.

3) The wild horse "home range" extends well beyond the boundaries of the Nevada Wild Horse Range. [B.-6 page D9]

a) The summer census of 1989 showed a population of 6,200 head of wild horses on the Nellis Range Complex. The larger share of these horses were counted off of the Nevada Wild Horse Range. Six thousand and two hundred head of wild horses will not fit on the N.W.H.R. and survive.

Sincerely,

Dan Love DVM

Dan Love D.V.M.

BOB MILLER
Acting Governor

STATE OF NEVADA

TERRI JAY
Executive Director

COMMISSIONERS

Deloyd Satterthwaite, *Chairman*
Spanish Ranch
Tuscarora, Nevada 89834

Dawn Lappin
15640 Sylvester Road
Reno, Nevada 89511

Michael Kirk, D.V.M.
P.O. Box 5896
Reno, Nevada 89513

COMMISSION FOR THE
PRESERVATION OF WILD HORSES
Stewart Facility
Capitol Complex
Carson City, Nevada 89710
(702) 885-5589

April 10, 1990

Curtis Tucker, Area Manager
Caliente Resource Area
P.O. Box 237
Caliente, Nevada 89008

Dear Mr. Tucker,

This letter is in response to your document number 4700 (NV-055.14), which we received on April 9, 1990, regarding the evaluation process for the Nevada/Nellis Wild Horse Range.

The Commission would be very interested in participating in the evaluation process. We are interested in all aspects of management of this area, and particularly in providing sufficient water for the horses.

Please include us as an interested and affected party in this evaluation process.

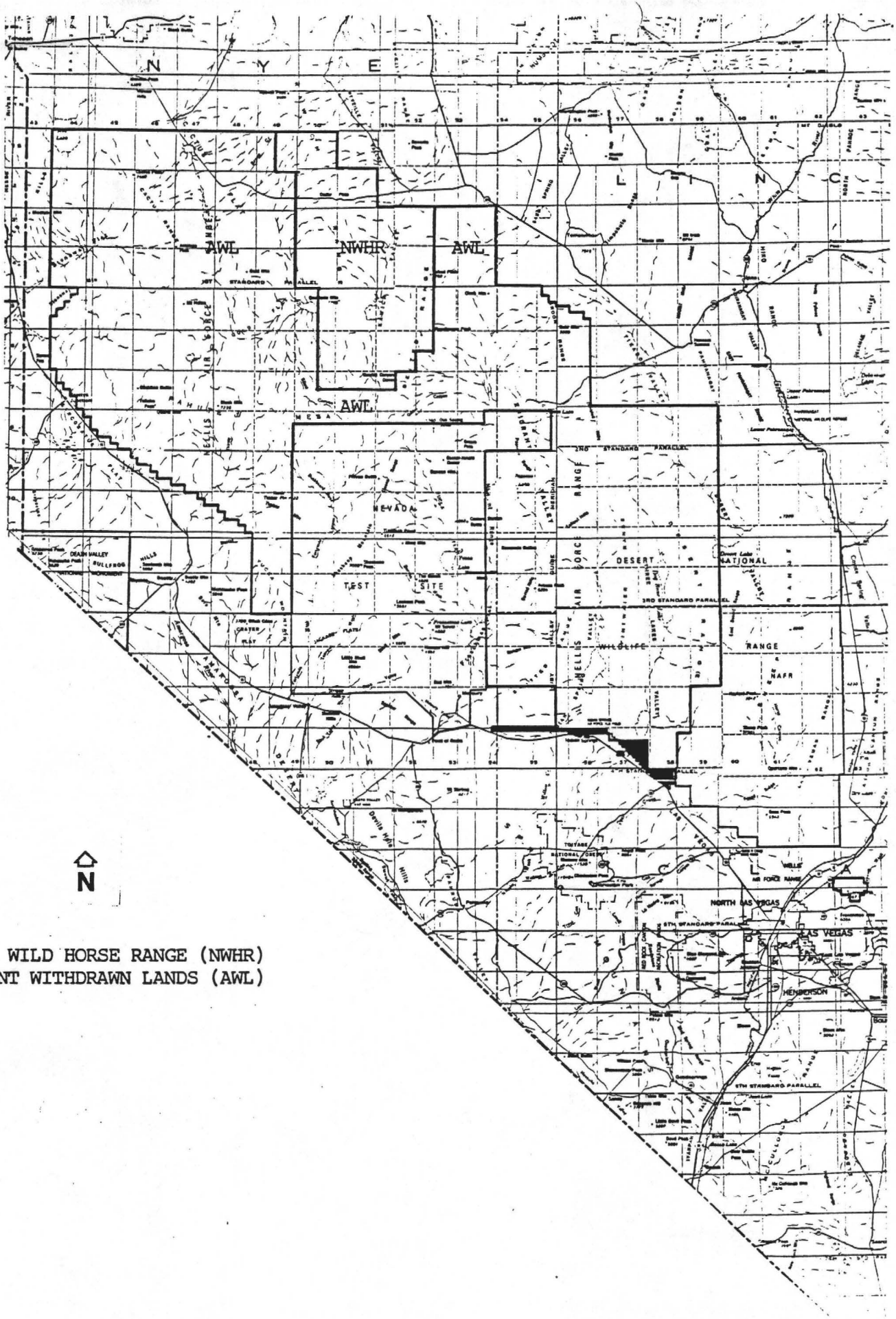
We thank you for the opportunity to participate and look forward to working with you.

Sincerely,

Terri Jay

TERRI JAY
Executive Director

Enc.
TJ/cb



NEVADA WILD HORSE RANGE (NWHR)
ADJACENT WITHDRAWN LANDS (AWL)

SECTION II

RANGELAND MONITORING - ANALYSIS, INTERPRETATION, AND EVALUATION

EVALUATION INFORMATION CHECKLIST

PLANS

- [ ] *Land Use Plan*
- [ ] *Monitoring Plan*
- [ ] *AMP*
- [ ] *CRMP*
- [ ] *HMP*
- [x] *HMAP*
- [ ] *Watershed*
- [ ] *Other* _____
- [ ] *SCS/FS Cooperative Plan*

MONITORING FILES/DATA

- [x] *Actual Use*

Estimated Utilization

- [ ] *Livestock*
- [ ] *Wildlife*
- [x] *Wild Horses*
- [ ] *Wild Burros*
- [ ] *Other Biological Agents*

- [x] *Weather/Climate*
- [x] *Trend*
- [ ] *Photography*
- [ ] *Other* _____

- [ ] *Operator Case File*
- [ ] *Historical Case Files*
- [ ] *Project Files*

- [x] *BLM Manuals/Handbooks*
- [x] *BLM Technical References*
- [x] *Field Notes*

- [x] *ES/EIS*
- [ ] *EAs*
- [ ] *Range Program Summary (RPS)*

INVENTORY DATA/MAPS

- [ ] *Soils*
- [ ] *Vegetation*
- [ ] *Range Site Guides*

- [ ] *Special Studies*

OTHER MAPS

- [ ] *Historical*
- [ ] *GIS*

- [x] *ADP*
- [ ] *Advisory Board/Council Minutes*

- [x] *Textbooks (e.g. flora, range management)*
- [x] USE PATTERN MAPS ON FILE AT THE CALIENTE RESOURCE AREA OFFICE
- [ ] _____

SECTION II

NARRATIVE SUMMARY

This section is a compilation of all management objectives relevant to the Nevada Wild Horse Range. Management objectives were obtained from Nevada Wild Horse Range Herd Management Area Plan.

For the purpose of this evaluation, only those management objectives which are measurable and may be impacted by wild horses are identified in this section. Activity Plan Objectives are presented, if applicable with respective quantifiable management objectives. For this evaluation, six (6) quantifiable management objectives have been identified.

The Nevada Wild Horse Range Herd Management Area Plan has been in place for five years. These objectives were developed based upon current knowledge of wild horse habitat requirements and professional judgement of wild horse and burro specialists.

I. Resource Plan Objectives:

The proposed resource management plan is currently under protest.

II. Activity Plan Objectives (Nevada Wild Horse Range Herd Management Area Plan, 1985):

OBJECTIVE- HABITAT

1. Determine key areas and key forage plant species for wild horses.

2. Allow utilization of key forage plant species by horses to exceed the allowable use factor by no more than ten percent on the NWHR as established by the Nevada Range Monitoring Task Group (1984).

3. Maintain static to upward apparent trend in vegetation characteristics through control of grazing pressure.

4. Minimize incidence of wild horses being unable to obtain sufficient drinking water at specific water sources.

OBJECTIVE- POPULATION

1. Monitor the physical condition of wild horses and maintain animals in fair to good condition.

2. Acquire additional data on wild horses to better understand the forces that affect wild horse populations.

3. Determine wild horse seasonal movement and distributions patterns within the next five years.

4. Enhance the gray and roan color markings in the Kawich Valley area and palomino, dun and buckskin in Cactus Flat and Gold Flat Areas.

5. Preserve 10 head of pintos fron the Stonewall Mountain Area by relocating them in appropriate HMA.

6. Manage wild horses on the NRC with the objective to maintain the home range wholly within the NWHR.

SPECIFIC OBJECTIVES
QUANTIFICATION OF ACTIVITY PLAN OBJECTIVES

Short term objectives:

1. Maintain total annual utilization at or below 50% of the current years production on perennial grasses and palatable shrubs within the Nevada Wild Horse Range. (Habitat #2)

Warm Season Grasses:
galleta grass (HIJA)
sand dropseed (SPCR)

Cool Season Grasses:
Indian rice grasss (ORHY)
bottlebrush squirreltail (SIHY)

Shrub Species:
bud sage (ARSP5)
winterfat (CELA)

This level of utilization will provide for yearlong grazing, satisfaction of plant growth requirements, and standing crop in reserve for drought years.

2. Manage horse numbers in thriving ecological balance (equilibrium) with available supplies of perennial water and forage to assure drinking water at 10 gal/day/horse (minimum) and forage at 33 lb/day/horse. (Habitat #4)

   Ten gallon a day minimum will be applied to the NWHR as a whole and also to individual water sources within the NWHR. By managing horse numbers in equilibrium with available forage and water a thriving ecological balance should result.

3. Maintain horse condition at a body class condition score of 4 or better. (Population #1)

   A body class condition score of 4 is defined as some fat cover over ribs. There will be fat along the backbone and in the hind quarters (per. comm. J.N. Wiltbank, 1986).

Long term objectives:

1. Key Area Frequency Objectives:

   Key area A: Maintain frequency of galleta grass (HIJA) at 26% and bottle brush squirrel tail (SIHY) at 35%. Decrease frequency of rabbit brush (CHVI) from 64% to 55% in 10 years.

   Key area B: Maintain frequency of bottle brush squirrel tail at 28%, spiny sage (ARSP) at 34% and globe mallow at 31% .

   Key area C: Maintain frequency of galleta grass at 24%, Indian rice grass (ORHY) at 31%, sand dropseed (SPCR) at 32%, spiny sage at 19% and globe mallow at 53%.

   Key area D: Maintain frequency of galleta grass at 40%, sand dropseed at 43% and bottle brush squirrel tail at 19%.

   Key area E: Maintain frequency of galleta grass at 54%, Indian rice grass at 19% and globe mallow at 47%.

Key area F: Maintain frequency of sand dropseed at 52% and winterfat (CELA) at 72%.

2. Manage for static to upward apparent trend in key areas A-F. (Habitat #3)

3. Reduce the percentage of bays, blacks, browns and sorrels in the population from 75% to 45%. Increase the percentage of greys, pintos, palominos, buckskins and roans from 25% to 55% of the population. (Population #4)

SECTION III

NARRATIVE SUMMARY

I. Frequency / Trend Data Summary:

Frequency studies were initiated on the Nevada Wild Horse Range and the adjacent withdrawn lands in 1986. Normally frequency studies are read every five years. To date, insufficient time has elapsed to make a second reading.

Frequency data is tabulated in Table 1. Frequency is expressed as a percentage of the number of occurrences out of 200 readings. The frequencies of all plants encountered in a transect when added together will not equal 100. There are six frequency transects A-F located within the NWHR and AWL. Plant species having a frequency between 20-80% are considered to have a sample size adequate for analysis. Of the plant species found within this range, plants considered important for forage and/or soil stability were chosen and long range frequency objectives developed.

Table 1. Frequency Data Nellis Range Complex 1986

Key area: A (NWHR)		Key area: B (AWL)	
Species	Frequency %	Species	Frequency %
HIJA	26	HIJA	5
ERPU	4	SIHY	28
SIHY	35	ORHY	11
ORHY	13	ERPU	2
BRTE	4	BRTE	10
SPCR	1	SPCR	6
STPA	2	AAFF	65
SPHA	16	SPHAE	31
AAFF	34	EROG	14
ERIOG	2	ATCO	36
ASTRA	3	CHIV	40
ATCO	16	ARSP5	34
CHIV	64	CELA	2
CELA	5		
ARSP5	27		
EPNE	0.5		

Key area: C (AWL)		Key area: D (AWL)	
HIJA	24	HIJA	40
ORHY	31	ORHY	6
SPCR	32	SPCR	43
BRTE	30	SIHY	19
ARPU	11	BRTE	6
AAFF	82	ARLU	1
SPHAE	53	EEPU	24
ASTRA	0.5	AAFF	48
ATCO	12	SPHAE	37

Table 1. Continued.

Key area: C (AWL) Species	Frequency %	Key area: D (AWL) Species	Frequency %
ARSP5	19	ATCO	26
CELA	16	CHVI	1
		ARSP5	26
		CELA	0.5
Key area: E (AWL)		**Key area: F (AWL)**	
HIJA	54	SPCR	52
ORHY	19	SIHY	6
SIHY	1	ORHY	6
BRTE	2	BRTE	49
AAFF	89	AAFF	83
SPHAE	5	SPHAE	47
ASTRA	0.5	OPUNT	0.5
SAIB	15	SAIB	0.5
ATCO	7	ATCO	11
ARSP5	11	ARSP5	60
CELA	7	CELA	72

Note: Only those plants with a frequency between 20-80% are considered for analysis.

Apparent trend ratings were conducted in 1986 and 1989. Six sites were read and the results tabulated in Table 2. In 1986 five of the six key areas showed a downward trend. In 1989 all six key areas showed a downward trend. Apparent trend is an interpretation of the trend in range condition as moving toward, away or as static in relation to desired conditions. Apparent trend is based on one time observations of soil and vegetative conditions on rangelands in the absence of or to supplement other trend data. It relies on soil and vegetation indicators.

Table 2. Results of apparent trend rating.

	APPARENT TREND	
Key area	1986 Rating	1989 Rating
A	down	down
B	down	down
C	down	down
D	down	down
E	static	down
F	down	down

II. Ecological Status:

There has been no ecological status inventory of the Nevada Wild Horse Range or adjacent withdrawn lands.

Est. 1989

SECTION IV NARRATIVE SUMMARY

I. UTILIZATION DATA SUMMARY:

Vegetation utilization data has been collected from thirty-one (31) sites located within the Nevada Wild Horse Range (NWHR) and adjacent withdrawn lands (AWL) using the Percent Ocular Estimate by Weight Method. Utilization data was first collected in 1985 and since then has been collected yearly at selected sites. Utilization monitoring at these thirty-one (31) sites has resulted in a combined total of eight (8) species being monitored. Four (4) species are classified as grasses and four (4) species are classified as shrubs. The eight (8) species monitored at the various sites included: Sporobolus cryptandrus (SPCR), Hilaria jamesii (HIJA), Oryzopsis hymenoides (ORHY), Sitanion hystrix (SIHY), Ephedra nevadensis (EPNE), Atriplex canescens (ATCA2), Artemesia spinescens (ARSP5) and Ceritoides lanata (CELA).

Of these thirty-one (31) sites, thirteen (13) sites within the NWHR and AWL have had only one year of utilization data collected during the period 1985-1989. Table 1 is a compilation of the utilization data for those two (2) sites located within the NWHR with only one reading of utilization data.

Table 1. Compilation of Utilization Data From Two (2) Sites With One Reading of Utilization Data From the NWHR.

UTIL. SITE #	KEY SPECIES	1985	1986	1989	UTIL. CATEGORY
2	ORHY		85		SV
	HIJA		70		H
	EPNE		40		L
	SIHY		64		H
6	ORHY		6		SL
	HIJA		4		SL

N=NO USE SL=SLIGHT L=LIGHT
M=MODERATE H=HEAVY SV=SEVERE

Table 2 is a compilation of utilization data for those eleven (11) sites located within the AWL with only one year of utilization data being recorded.

DRAFT

Table 2. Compilation of Utilization Data From Eleven (11) Sites With One Reading of Utilization Data From AWL.

UTIL. SITE #	KEY SPECIES	1985	1986	1989	UTIL. CATEGORY
	HIJA	25			L
	SIHY	41			M
	ORHY	58			M
1a	HIJA	14			SL
	CELA	90			SV
	ATCA5	14			SL
	ORHY		85		SV
2	HIJA		70		H
	EPNE		40		L
	SIHY		64		H
	ORHY	62			H
2a	HIJA	20			SL
	SPCR	15			SL
2b	ORHY	0			N
	CELA	0			N
	ORHY		88		SV
3	CELA		78		H
	HIJA		64		H
	ORHY	82			SV
3a	SPCR	42			M
	CELA	90			SV
	ORHY		68		H
4	HIJA		48		M
	CELA		74		H
	ORHY		42		M
5	HIJA		34		L
	CELA		52		M
6	ORHY		6		SL
	HIJA		4		SL
7	ORHY		62		H
	HIJA		36		L
8	ORHY		72		H
	HIJA		40		L
	ORHY			80	H
D	HIJA			60	M
	CELA			90	SV
	ARSP5			83	SV

N=NO USE SL=SLIGHT L=LIGHT
M=MODERATE H=HEAVY SV=SEVERE

Eighteen (18) sites have had more than one year of utilization data collected, ranging from two (2) to four (4) years, during the period 1986-1989. Average percent utilization has been calculated for each individual species for each of these eighteen (18) sites based upon the number of years data was available. The utilization category is presented based upon the calculated average percent utilization for each individual species.

Table 3 is a compilation of the utilization data for six (6) sites within the NWHR for the years 1986 through 1989.

Table 3. Compilation of Utilization Data From Six (6) Sites With More Than One Reading of Utilization Data From Within the NWHR.

UTIL. SITE #	SPECIES	1986	1987	1988	1989	AVG. UTIL.	UTIL. CATEGORY
	ORHY			74	67	71	H
A	HIJA			52	51	52	M
	SIHY			56	60	58	M
	CELA			90	84	87	SV
	ORHY	81	82	78	51	73	H
1	HIJA	56	62	58	34	5	M
	CELA	64	80	82	78	76	H
	ORHY		86	36	59	60	M
9	HIJA		48	19	12	26	L
	CELA		54	83	53	2	L
	ORHY		70	44	69	61	H
10	HIJA		38	13	17	23	L
	CELA		86	62	65	71	H
	ARSP5		80	9	57	49	M
11	ORHY		22	5	22	16	SL
	CELA		20	32	41	31	L
12	HIJA		60	40	20	40	L
	SIHY		68	42	66	59	M

N=NO USE SL=SLIGHT L=LIGHT
M=MODERATE H=HEAVY SV=SEVERE

Table 4 is a compilation of the utilization data for twelve (12) sites with more than one utilization reading from AWL for the years 1986 through 1989.

DRAFT

Table 4. Compilation of Utilization Data From Twelve (12) Sites With More Than One Reading of Utilization Data from AWL.

UTIL. SITE #	SPECIES	1986	1987	1988	1989	AVG. UTIL.	UTIL. CATEGORY
	ORHY		90	78	77	82	SV
B	HIJA		66	58	59	61	H
	SIHY		72	60	0	44	M
	CELA		90	90	89	90	SV
	ORHY		90	86	83	86	SV
C	HIJA				51	51	M
	CELA		90	86	82	86	SV
	SPCR		74	58		66	H
	ORHY		82	72	86	80	H
E	HIJA		36	48	38	41	M
	CELA		84	86	66	79	H
	ORHY		90	86	80	85	SV
F	SIHY		90	82		86	SV
	SPCR		75	50	17	47	M
	CELA		90	86	82	86	SV
	ORHY		78	64	82	75	H
13	HIJA		39	38	34	37	L
	CELA		70	72	49	64	H
14	ORHY		54	60	32	49	M
	HIJA		40	29		35	L
	ORHY		50	70	42	54	M
15	HIJA		40	50	7	32	L
	CELA		62	68	38	56	M
	ORHY		74	83	87	81	SV
16	HIJA		56	76	37	56	M
	CELA			70	64	67	H
	ORHY		78	80	88	82	SV
17	HIJA		56	76	37	56	M
	CELA		78	56	80	71	H
	ORHY			90	80	85	SV
18	HIJA			66	27	47	M
	CELA			90	65	78	H

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Table 4. Continued.

UTIL. SITE #	SPECIES	1986	1987	1988	1989	AVG. UTIL.	UTIL. CATEGORY
	ORHY			84	85	85	SV
20	HIJA			58	51	55	M
	CELA			80	80	80	H
	ORHY			82	89	86	SV
21	HIJA			52	21	37	L
	CELA			82	69	76	H

N=NO USE SL=SLIGHT L=LIGHT
M=MODERATE H=HEAVY SV=SEVERE

Table 5 identifies the site number, location and legal description for the thirty-one (31) utilization sites in which utilization data was collected during the period 1986 through 1989.

Table 5. Thirty-one (31) Utilization Sites Within the NWHR and AWL, Identified by Site Number, Area Located and Legal Description.

SITE NUMBER	AREA LOCATED	LEGAL DESCRIPTION
A	NWHR	T. 2 S., R. 50 E., Sec. 30
1	NWHR	T. 3 S., R. 51 1/2 E., NW1/4 Sec. 6
2	NWHR	T. 1 S., R. 50 E., SE1/4 Sec. 31
6	NWHR	T. 4 S., R. 51 E., SW1/4 Sec. 33
9	NWHR	T. 3 S., R. 51 E., SE1/4 Sec. 14
10	NWHR	T. 4 S., R. 51 E., SW1/4 Sec. 26
11	NWHR	T. 4 S., R. 51 E., NE1/4 Sec. 16
12	NWHR	T. 2 S., R. 51 E., NW1/4 SE 1/4 Sec. 8
B	AWL	T. 2 S., R. 49 E., SE1/4 Sec. 23
C	AWL	T. 2 S., R. 49 E., NE 1/4 SW1/4 Sec. 20
D	AWL	T. 1 S., R. 49 E., NW1/4 Sec. 25
E	AWL	T. 3 S., R. 49 E., Sec. 25
F	AWL	T. 3 S., R. 49 E., Sec. 3
1s	AWL	T. 5 S., R. 45 E., NE1/4 Sec. 8
1a	AWL	T. 1 S., R. 48 E., Sec. 15
2a	AWL	T. 1 S., R. 49 E., NW1/4 Sec. 31
2b	AWL	T. 5 S., R. 45 E., SE1/4 Sec. 4
3	AWL	T. 2 S., R. 48 E., NW1/4 Sec. 17
3a	AWL	T. 2 S., R. 49 E., NW1/4 Sec. 19
4	AWL	T. 3 S., R. 49 E., SW1/4 Sec. 12
5	AWL	T. 4 S., R. 49 E., NE1/4 Sec. 25
7	AWL	T. 3 S., R. 47 E., SE1/4 Sec. 5
8	AWL	T. 3 S., R. 47 E., SW1/4 Sec. 27

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Table 5. Continued.

SITE NUMBER	AREA LOCATED	LEGAL DESCRIPTION
13	AWL	T. 4 S., R. 49 E., SE1/4 Sec. 1
14	AWL	T. 4 S., R. 49 E., NW1/4 Sec. 36
15	AWL	T. 4 S., R. 48 E., SE1/4 Sec. 19
16	AWL	T. 3 S., R. 47 E., SE1/4 Sec. 23
17	AWL	T. 1 S., R. 47 E., SW1/4 Sec. 8
18	AWL	T. 3 S., R. 48 E., SE1/4 Sec. 8
20	AWL	T. 2 S., R. 47 E., NW1/4 Sec. 1
21	AWL	T. 2 S., R. 47 E., SE1/4 Sec. 33

Table 6 identifies the utilization category for each observed species within the NWHR with more than one year of utilization data. This utilization category has been figured for individual species based upon the average percent utilization for each species at each utilization site as identified in Table 3.

Table 6. Utilization Category of Species Based Upon Average Percent Utilization for Six (6) Sites Located Within the NWHR.

NEVADA WILD HORSE RANGE (NWHR)					
SITE NUMBER	UTILIZATION CATEGORY				
	SLIGHT	LIGHT	MODERATE	HEAVY	SEVERE
A			HIJA SIHY	ORHY	CELA
1			HIJA	ORHY CELA	
9		HIJA SIHY	ORHY		
10		HIJA	ARSP5	ORHY CELA	
11	ORHY	CELA			
12		HIJA	SIHY		

Within these six (6) sites in the NWHR, five (5) species were observed a total of eighteen (18) times during the period 1986 through 1989. Of these eighteen (18) observations, twelve (12) observations resulted in the species average percent utilization being in the moderate to severe categories.

The following figures, 1 through 6 illustrate the percent utilization observed for species monitored at six (6) utilization sites located within the NWHR. It can be seen that utilization levels of species monitored has consistently exceeded the fifty (50) percent utilization

level except for Figure 5 where utilization levels for all three (3) species for the three (3) year period were below the fifty (50) percent utilization level.

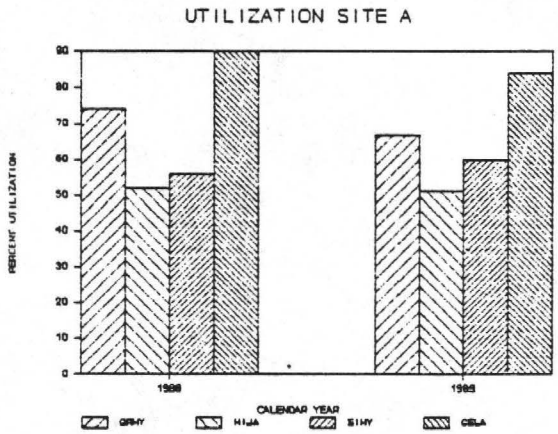

Figure 1. Percent Utilization of Species at Site A for 1988 and 1989.

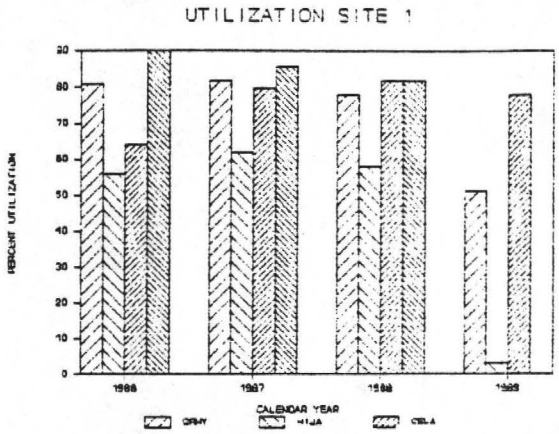

Figure 2. Percent Utilization of Species at Site 1 for 1986-1989.

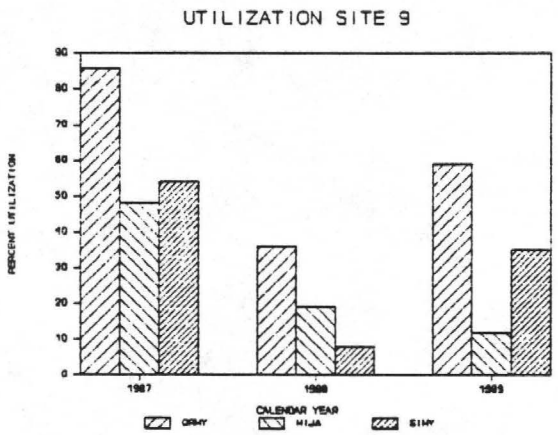

Figure 3. Percent Utilization of Species at Site 9 for 1987-1989.

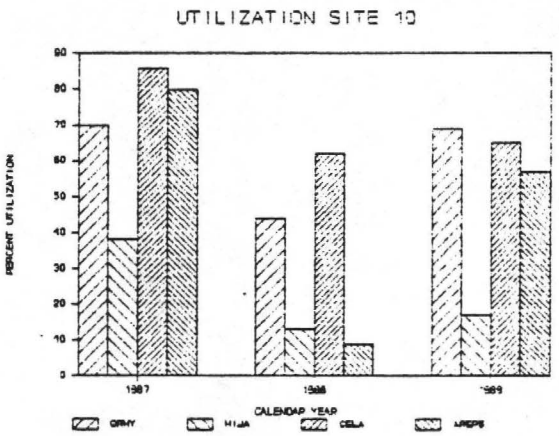

Figure 4. Percent Utilization of Species at Site 10 for 1987-1989.

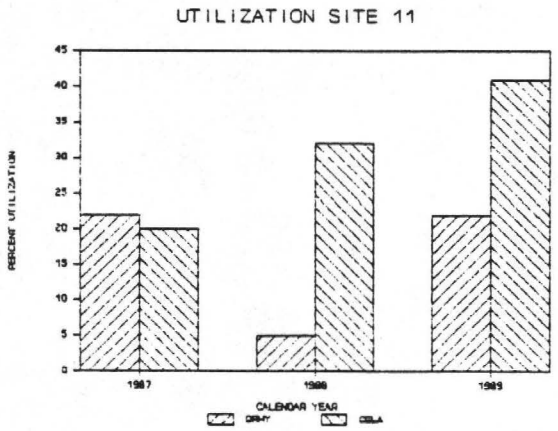

Figure 5. Percent Utilization of Species at Site 11 for 1987-1989.

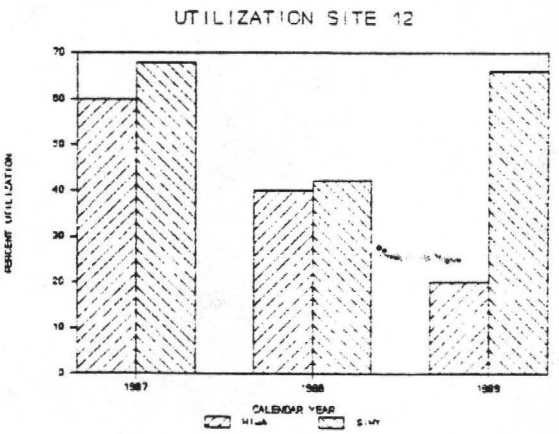

Figure 6. Percent Utilization of Species at Site 12 for 1987-1989.

Table 7 identifies the utilization category for each observed species within the AWL with more than one (1) year of utilization data. The utilization category has been figured for individual species based upon the average percent utilization for each species at each site.

Table 7. Utilization Category of Species Based Upon Average Percent Utilization for Sites Located Within the Adjacent Withdrawn Lands.

ADJACENT WITHDRAWN LANDS					
SITE NUMBER	UTILIZATION CATEGORY				
	SLIGHT	LIGHT	MODERATE	HEAVY	SEVERE
B			SIHY	HIJA	ORHY CELA
C			HIJA	SPCR	ORHY
E			HIJA	ORHY CELA	CELA
F			SPCR		HIJA ORHY CELA
13		HIJA		ORHY CELA	
14		HIJA	ORHY		
15		HIJA	ORHY CELA		
16			HIJA	CELA	ORHY
17			HIJA	CELA	ORHY
18			HIJA	CELA	ORHY
20			HIJA	CELA	ORHY
21		HIJA		CELA	ORHY

Within these twelve (12) sites, five (5) species were observed a total of thirty-eight (38) times during the period 1986 through 1989. Of these thirty-eight (38) observations, thirty-four (34) observations resulted in the average percent utilization being in the moderate to severe categories.

The following figures, 7 through 18 illustrate the percent utilization observed for species monitored at twelve (12) utilization sites located within the AWL. From these twelve (12) figures, utilization levels of species monitored has consistently exceeded the fifty (50) percent utilization level.

Table 5. Continued.

SITE NUMBER	AREA LOCATED	LEGAL DESCRIPTION
13	AWL	T. 4 S., R. 49 E., SE1/4 Sec. 1
14	AWL	T. 4 S., R. 49 E., NW1/4 Sec. 36
15	AWL	T. 4 S., R. 48 E., SE1/4 Sec. 19
16	AWL	T. 3 S., R. 47 E., SE1/4 Sec. 23
17	AWL	T. 1 S., R. 47 E., SW1/4 Sec. 8
18	AWL	T. 3 S., R. 48 E., SE1/4 Sec. 8
20	AWL	T. 2 S., R. 47 E., NW1/4 Sec. 1
21	AWL	T. 2 S., R. 47 E., SE1/4 Sec. 33

Table 6 identifies the utilization category for each observed species within the NWHR with more than one year of utilization data. This utilization category has been figured for individual species based upon the average percent utilization for each species at each utilization site as identified in Table 3.

Table 6. Utilization Category of Species Based Upon Average Percent Utilization for Six (6) Sites Located Within the NWHR.

NEVADA WILD HORSE RANGE (NWHR)					
SITE NUMBER	UTILIZATION CATEGORY				
	SLIGHT	LIGHT	MODERATE	HEAVY	SEVERE
A			HIJA SIHY	ORHY	CELA
1			HIJA	ORHY CELA	
9		HIJA SIHY	ORHY		
10		HIJA	ARSP5	ORHY CELA	
11	ORHY	CELA			
12		HIJA	SIHY		

Within these six (6) sites in the NWHR, five (5) species were observed a total of eighteen (18) times during the period 1986 through 1989. Of these eighteen (18) observations, twelve (12) observations resulted in the species average percent utilization being in the moderate to severe categories.

The following figures, 1 through 6 illustrate the percent utilization observed for species monitored at six (6) utilization sites located within the NWHR. It can be seen that utilization levels of species monitored has consistently exceeded the fifty (50) percent utilization

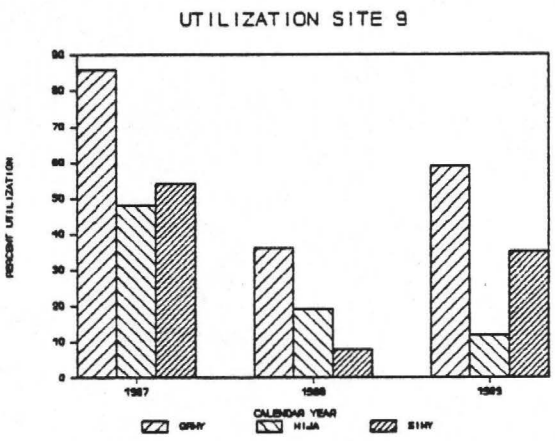

Figure 3. Percent Utilization of Species at Site 9 for 1987-1989.

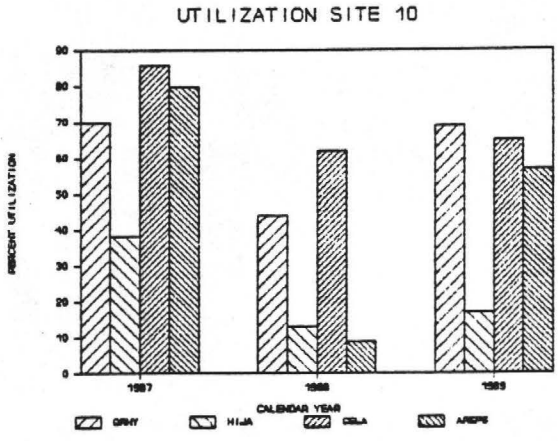

Figure 4. Percent Utilization of Species at Site 10 for 1987-1989.

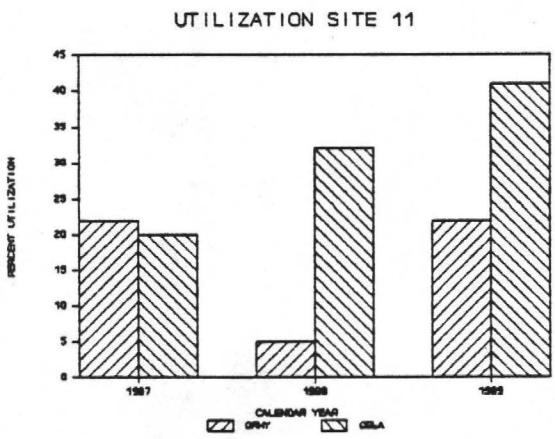

Figure 5. Percent Utilization of Species at Site 11 for 1987-1989.

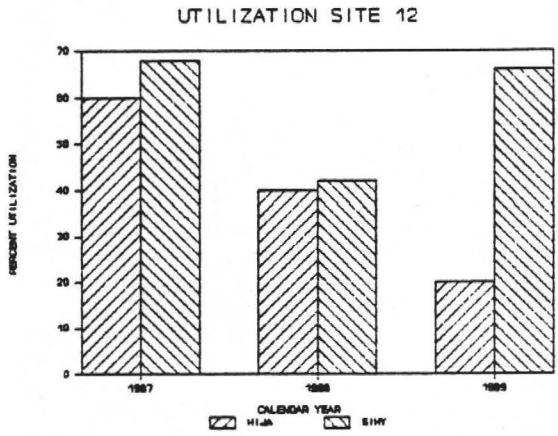

Figure 6. Percent Utilization of Species at Site 12 for 1987-1989.

Table 7 identifies the utilization category for each observed species within the AWL with more than one (1) year of utilization data. The utilization category has been figured for individual species based upon the average percent utilization for each species at each site.

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Table 7. Utilization Category of Species Based Upon Average Percent Utilization for Sites Located Within the Adjacent Withdrawn Lands.

ADJACENT WITHDRAWN LANDS					
SITE NUMBER	UTILIZATION CATEGORY				
	SLIGHT	LIGHT	MODERATE	HEAVY	SEVERE
B			SIHY	HIJA	ORHY CELA
C			HIJA	SPCR	ORHY CELA
E			HIJA	ORHY CELA	
F			SPCR		HIJA ORHY CELA
13		HIJA		ORHY CELA	
14		HIJA	ORHY		
15		HIJA	ORHY CELA		
16			HIJA	CELA	ORHY
17			HIJA	CELA	ORHY
18			HIJA	CELA	ORHY
20			HIJA	CELA	ORHY
21		HIJA		CELA	ORHY

Within these twelve (12) sites, five (5) species were observed a total of thirty-eight (38) times during the period 1986 through 1989. Of these thirty-eight (38) observations, thirty-four (34) observations resulted in the average percent utilization being in the moderate to severe categories.

The following figures, 7 through 18 illustrate the percent utilization observed for species monitored at twelve (12) utilization sites located within the AWL. From these twelve (12) figures, utilization levels of species monitored has consistently exceeded the fifty (50) percent utilization level.

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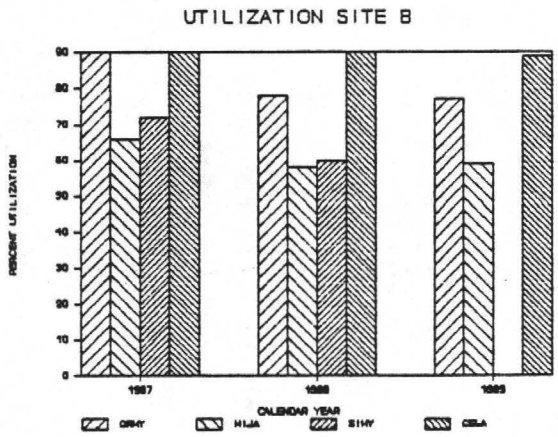

Figure 7. Percent Utilization of Species at Site B for 1987-1989.

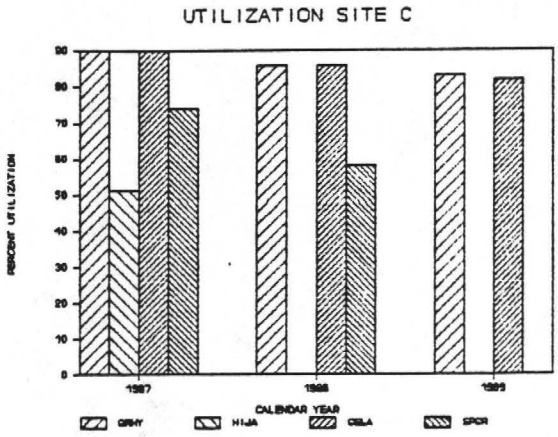

Figure 8. Percent Utilization of Species at Site C for 1987-1989.

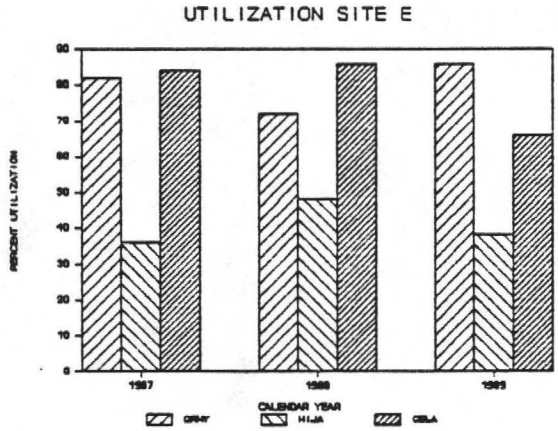

Figure 9. Percent Utilization of Species at Site E for 1987-1989.

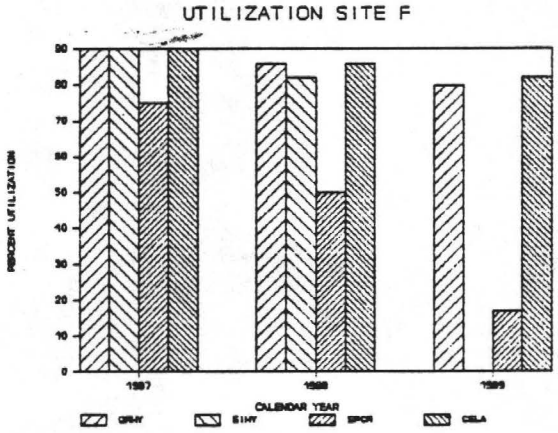

Figure 10. Percent Utilization of Species at Site F for 1987-1989.

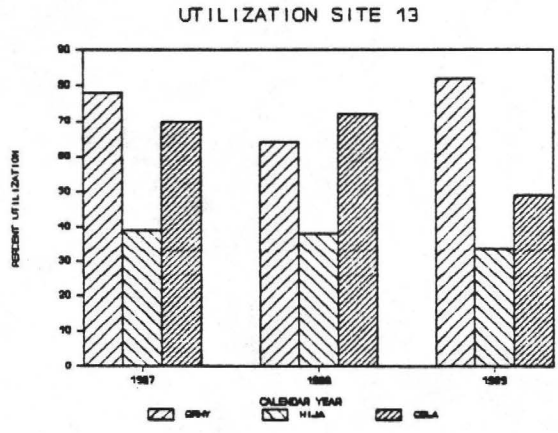

Figure 11. Percent Utilization of Species at Site 13 for 1987-1989.

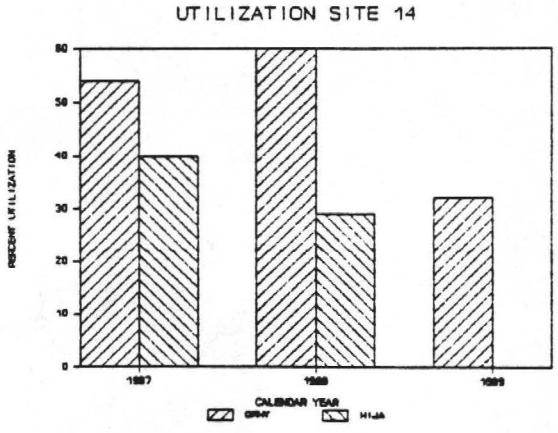

Figure 12. Percent Utilization of Species at Site 14 for 1987-1989.

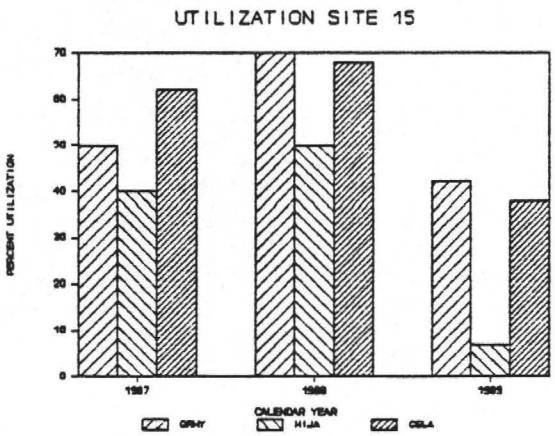

Figure 13. Percent Utilization of Species at Site 15 for 1987-1989.

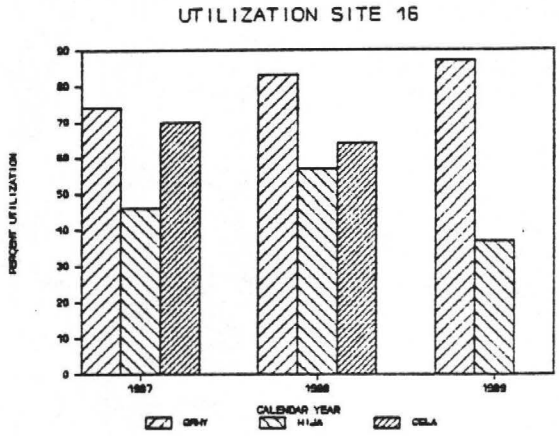

Figure 14. Percent Utilization of Species at Site 16 for 1987-1989.

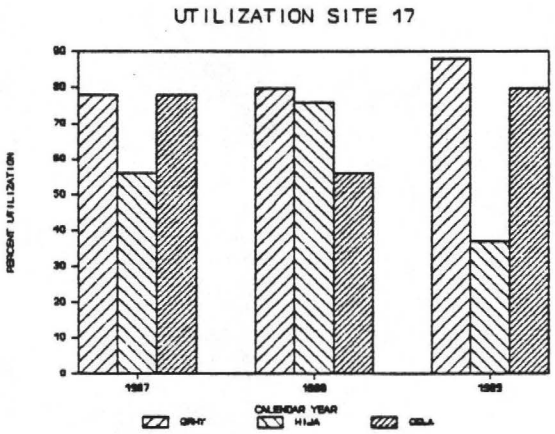

Figure 15. Percent Utilization of Species at Site 17 for 1987-1989.

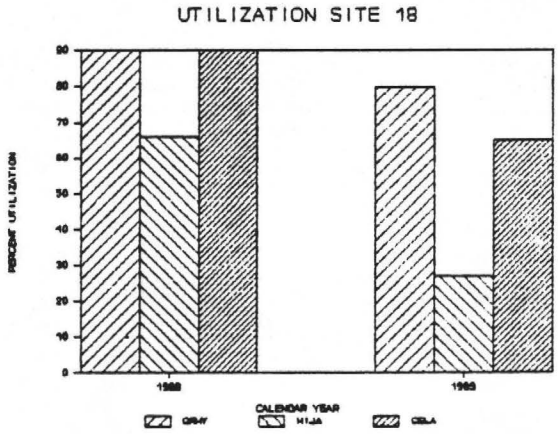

Figure 16. Percent Utilization of Species at Site 18 for 1988-1989.

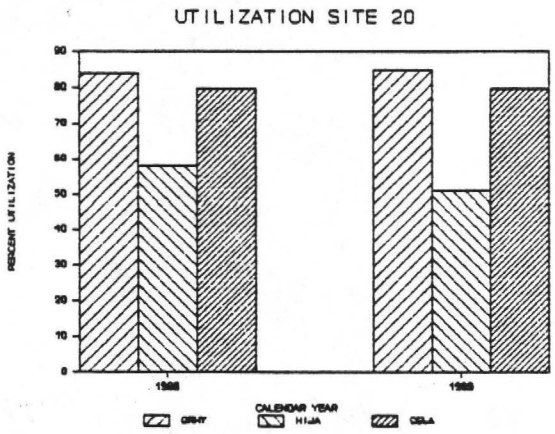

Figure 17. Percent Utilization of Species at Site 20 for 1988-1989.

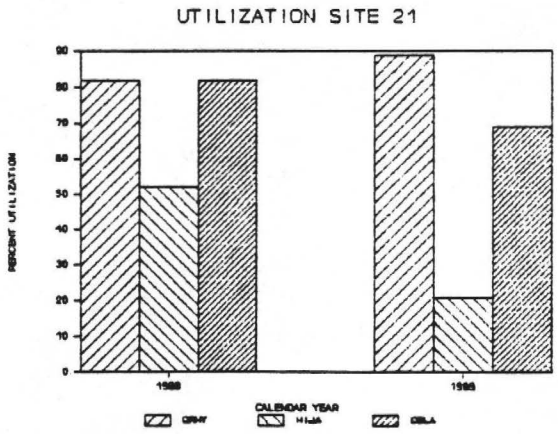

Figure 18. Percent Utilization of Species at Site 21 for 1988-1989.

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Figures 19 and 20 graphically illustrate the relationship between number of species observed per utilization category as presented in Tables 6 and 7 respectively for the NWHR and AWL.

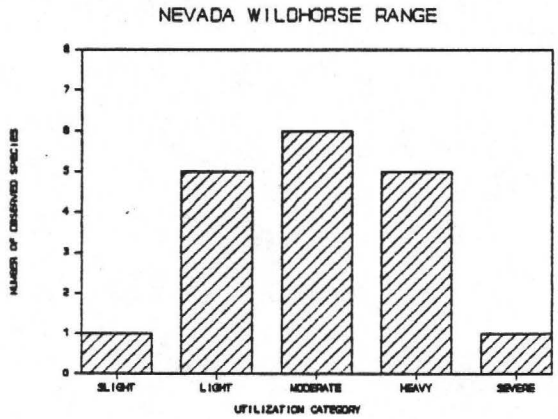

Figure 19. Number of Species Observed Per Utilization Category for Six Sites on the NWHR.

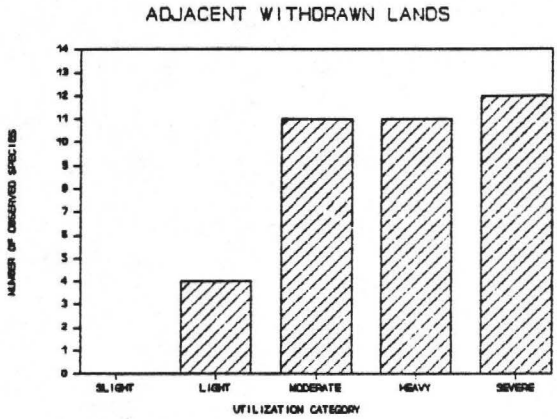

Figure 20. Number of Species Observed Per Utilization Category for Twelve Sites on the Adjacent Withdrawn Lands.

In Figure 19, which specifically refers to the NWHR, the moderate category has the greatest number of species observations with six (6). The light and heavy categories each have five (5) and the slight and severe categories each have one (1). In comparison, Figure 20, which specifically refers to the AWL, the severe category has the greatest number of species observations with twelve (12). The heavy and moderate categories each have eleven (11) and the light category has four (4). There were no species observations in the slight utilization category.

Forage resources in the AWL are consistently being utilized in higher utilization categories than those forage resources in the NWHR as demonstrated by comparison of these two (2) figures, 19 and 20.

II. SUMMARY OF USE PATTERNS:

Utilization pattern mapping of the NWHR and the AWL was completed in 1985, 1986, 1987 and 1988. Use pattern maps are maintained in the Caliente Resource Area office. Table 6 is a compilation of acreage by use category for the NWHR and AWL for the period 1985-1987. Differences in acreage totals are due to variances in computations and mapping procedures.

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Table 8. Number of Acres By Utilization Category for the NWHR and AWL for Years 1985-1987.

CALENDAR YEAR	UTIL. CATEGORY	NWHR ACRES	AWL ACRES
1985	NO USE	0	0
	SLIGHT	145040	112114
	LIGHT	43520	200911
	MODERATE	60800	198402
	HEAVY	34240	143595
	SEVERE	110400	88395
	TOTALS	394000	743417
1986	NO USE	0	0
	SLIGHT	111232	341853
	LIGHT	56320	63404
	MODERATE	52800	164768
	HEAVY	20416	107008
	SEVERE	150656	168960
	TOTALS	391424	745993
1987	NO USE	100560	152057
	SLIGHT	85120	263680
	LIGHT	59520	59520
	MODERATE	64000	44160
	HEAVY	67520	75520
	SEVERE	17280	148480
	TOTALS	394000	743417

Use pattern maps developed for the period 1985-1987 did not delineate acres unsuitable for wild horse grazing. Many of the areas that fall within the slight utilization level category are located within unsuitable areas for wild horse grazing. Acreage figures for the different use categories included dry lake beds, playas, rock outcrops and steep mountainous terrain which would be unsuitable for wild horse use.

In 1989, wild horse use within the NWHR was mapped and acreage not suitable for wild horse grazing was delineated accordingly. Those areas identified as unsuitable for wild horse grazing were dry lake beds, rock outcrops and steep mountainous terrain. In addition, the use pattern map was stratified to show the number of acres per use category within a six (6) mile service area for each known perennial water source. Observations of use patterns in the AWL for 1989 were similar to those mapped in 1985-1987.

Table 9 lists the acres per category for the entire NWHR and acres per category within a six (6) mile service area of known perennial waters based upon 1989 monitoring.

Table 9. Acres By Use Category for the NWHR and Within a Six (6) Mile Service Area of Known Perennial Waters Based Upon 1989 Monitoring.

CATEGORY	PERCENT USE	TOTAL NWHR ACRES	6 MILE RADIUS ACRES
UNSUITABLE[1]	0	113920	56320
NO USE	0	0	0
SLIGHT	1-20	0	0
LIGHT	21-40	104320	48640
MODERATE	41-60	92800	57600
HEAVY	61-80	64640	53120
SEVERE	81-100	1280	1280

[1]Includes dry lakes, playas, rock outcrops, steep mountainous terrain.

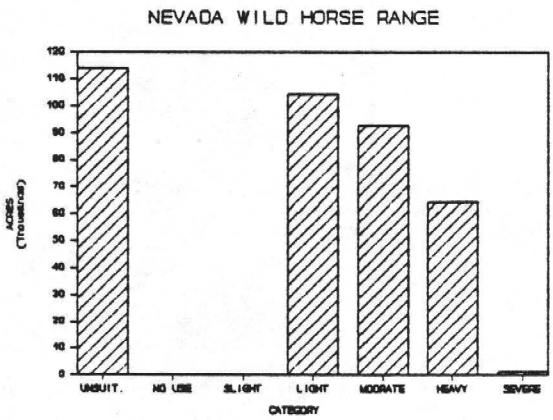

Figure 21. Acres Per Use Category for the NWHR in 1989.

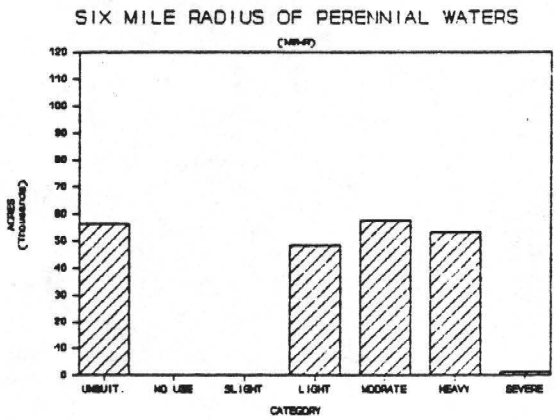

Figure 22. Acres Per Use Category Within a Six Mile Radius Service Area of Known Perennial Waters in 1989.

Figures 21 and 22 graphically illustrate the acres per use category for the NWHR and those acres within the six (6) mile radius service area of known perennial water sources in 1989. Forty-two (42) percent of the entire NWHR had use occurring in the moderate to severe use categories. Within the six (6) mile radius service area of known perennial waters moderate to severe use occurred over fifty-two (52) percent of this area. The six (6) mile radius service areas encompass fifty-eight (58) percent of the NWHR.

III. SUMMARY OF ACTUAL USE AND WILD HORSE CENSUS DATA:

Wild horses graze the NWHR and AWL year long. From spring until late fall, horses use perennial water sources and forage within a six (6) mile radius of these waters. With the coming of winter snows, horses have less dependency on perennial water sources and range further south utilizing the snow cover as a water source.

Since 1963 periodic census of wild horse numbers has taken place within the NWHR. The first census was a ground survey that counted 200 horses. In 1976 due to herd expansion, the ground survey census area

included Cactus Flat/Gold Flat outside the NWHR resulting in 1,064 horses being counted. The NWHR, comprised of Kawich Valley and eastern one-third of Cactus Flat and Gold Flat have no natural barriers or management facilities present to deter wild horses from roaming between the NWHR and AWL (Gold Flat and Cactus Flat areas).

The first aerial census of the NWHR and AWL was conducted in 1977 when 1,300 horses were counted. Since 1977 aerial census has been conducted, including Kawich Valley, Mud Lake/Goldfield, Stonewall Mountain, Cactus Flat/Gold Flat. Wild horse census data, prior to 1989 was recorded based upon geographical location (ie. Cactus Flat or Gold Flat) resulting in overlap of the NWHR and AWL. Census data since 1989 has been recorded by identifying the actual location of horses on appropriate maps. This has allowed determining how many wild horses are within or outside of the NWHR.

Table 10 identifies census numbers for the period 1980-1990. Census area maps are in Appendix I.

Table 10. Wild Horse Census Data (Actual Count) by Year and Month for the NWHR and AWL 1980-1990.

YEAR	MONTH	HORSES
1980	April	3,122
1982	June	4,045
1983	August	4,860
1984	March	4,890
1985	May	5,642
1986	September	4,178[1]
1989	July	6,255[2]
1990	January	3,275[3]

[1]Post Gather Total
[2]2517 Horses counted within NWHR and 3738 in AWL.
[3]Winter Census Total, 1101 counted in NWHR, 2174 counted in AWL.

Wild horse numbers have increased since the 1980 census with the greatest number having been counted in 1985 and in 1989. From 1963 to 1989, census of horse numbers shows an increase from 200 to 6255. The number of wild horses censused significantly increased from 4178 after the 1986 gather to 6255 in 1989.

Wild horse gathers have resulted in the removal of horses from both the NWHR and AWL. Table 11 identifies the time of year, location and number of horses removed during the period 1985-1987 and 1989.

Table 11. Time of Year, Location and Number of Horses Removed From the NWHR and AWL During the Period 1985-1987 and 1989.

MONTH YEAR	LOCATION	NUMBERS REMOVED
June 1985	Rose Spr. Middle Trough NWHR	1156
	Rose Spr. Lower Trough NWHR	80
	Corral Spring NWHR	185
	Cedar Wells NWHR	77
		total = 1498
June 1986	Stonewall Mtn. AWL	534
	Wildhorse Spring AWL	224
	Corral Spring NWHR	285
		total = 1043
July-August 1987	Camp Spring NWHR	76
	Rose Spr. Lower Trough NWHR	484
	Breen Creek Reservoir AWL	362
	Pedro Lake AWL	288
		total = 1210
December 1989	Breen Creek/Silver Bow NWHR	683
		total = 683

A total of 4434 wild horses have been gathered and removed from the NWHR and AWL during the period 1985-1987 and 1989. In December 1989 an emergency gather and removal of 683 wild horses was conducted in the Breen Creek/Silverbow Area. Dry conditions reduced the availability of perennial water at this location to an insignificant amount which could not support the number of wild horses dependent upon this spring source. After the removal of these horses, winter snow in January 1990 blanketed the NWHR and AWL prompting wild horses to disperse over a greater area. The lower January 1990 census data (Table 10) reflects this dispersal of wild horses due to snow cover and those removed in December 1989.

IV. POTENTIAL STOCKING LEVEL:

A. Forage Resources:

The limiting factor to manage for a thriving ecological balance is the area within a six (6) mile service area of perennial water. Available water and forage within that area is used during the spring, summer and fall. This period of time corresponds with the foaling period. Lactating mares would be under the greatest amount of stress due to increased forage and water requirements. It is also the time of year when drought would be expected to have the greatest impact.

Use pattern map acreage by utilization category (moderate, heavy and severe) within a six (6) mile service area (Table 9) and census data

(Table 10) for 1989 were used to calculate a potential stocking level for the NWHR. Calculation of a potential stocking level was based upon a weighted utilization described in Technical Reference (4400-7), *Rangeland Monitoring Analysis, Interpretation and Evaluation* (1985).

The potential stocking level for the NWHR based upon 1989 (use pattern acreage and census data) information and a desired level of utilization of fifty (50) percent was determined to be 2099 wild horses.

This potential stocking level of 2099 wild horses is the level of use that could be achieved on the NWHR, at a fifty (50) percent level of utilization, assuming wild horse distribution and utilization patterns are completely uniform. This calculated potential stocking level must be examined and judged based upon all monitoring data presented in this section; other resource data and with the knowledge that wild horse distribution and utilization patterns are not uniform.

V. CONCLUSIONS:

The following conclusions can be made based upon the monitoring data (utilization levels, use pattern mapping figures and census numbers) presented in this section.

1) Utilization levels of species monitored for only one (1) year during the period 1985-1989 have consistently exceeded the desired fifty (50) percent level of utilization.

2) Of thirty-seven individual percent utilizations calculated for the period 1985 through 1989, twenty-four (24) were in the moderate to severe category.

3) Utilization levels of species monitored for more than one year in both the NWHR and AWL have consistently exceeded the desired fifty (50) percent level of utilization.

4) Of fifty-six (56) individual averaged percent utilizations calculated for the period 1986 through 1989, forty-six (46) were in the moderate to severe category.

5) Forage resources in the adjacent withdrawn lands (AWL) are consistently being utilized in higher utilization categories than those forage resources within the NWHR.

6) Use pattern mapping (1985-1987, 1989) documents extensive use above the desired maximum of fifty (50) percent utilization.

7) Use pattern mapping (1985-1987, 1989) reveals wild horse use has expanded and is constantly occurring outside of the NWHR.

8) Current levels of wild horses within the NWHR exceed calculated potential stocking levels which assumes completely uniform wild horse distribution and utilization patterns.

Utilization data, use pattern mapping information and wild horse census data strongly demonstrate that the current number of wild horses along with distribution of permanent water sources and

varied terrain does not nor can not result in the complete uniform distribution of wild horses within the NWHR.

9) Current wild horse numbers, 2517 counted in 1989 within the NWHR have resulted in the desired level of utilization (50 percent) being exceeded consistently. Thus, the calculated potential stocking level of 2099 can not be supported by the existing forage base.

SUPPLEMENTAL ILLUSTRATIONS:

SITES MONITORED WITH

ONE YEAR OF

DATA

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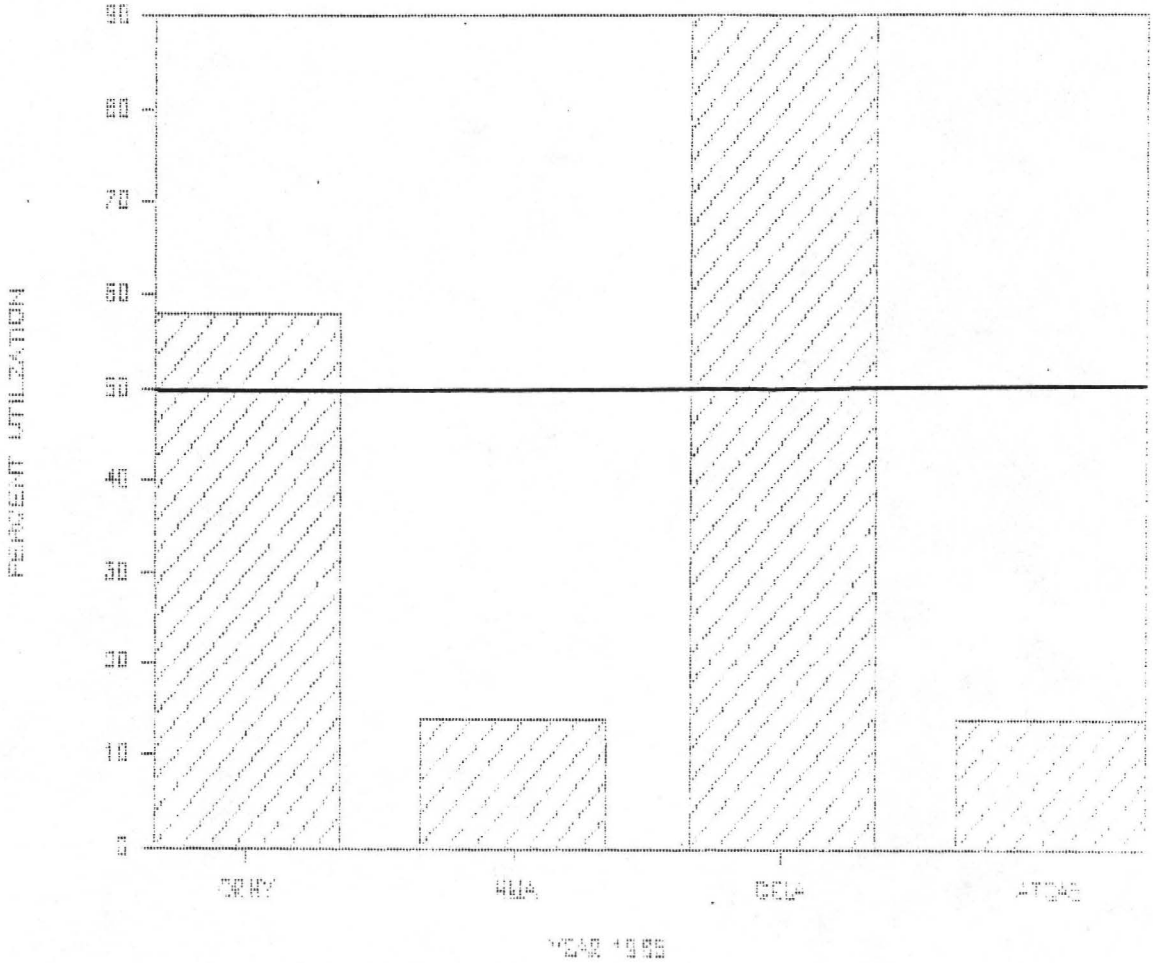

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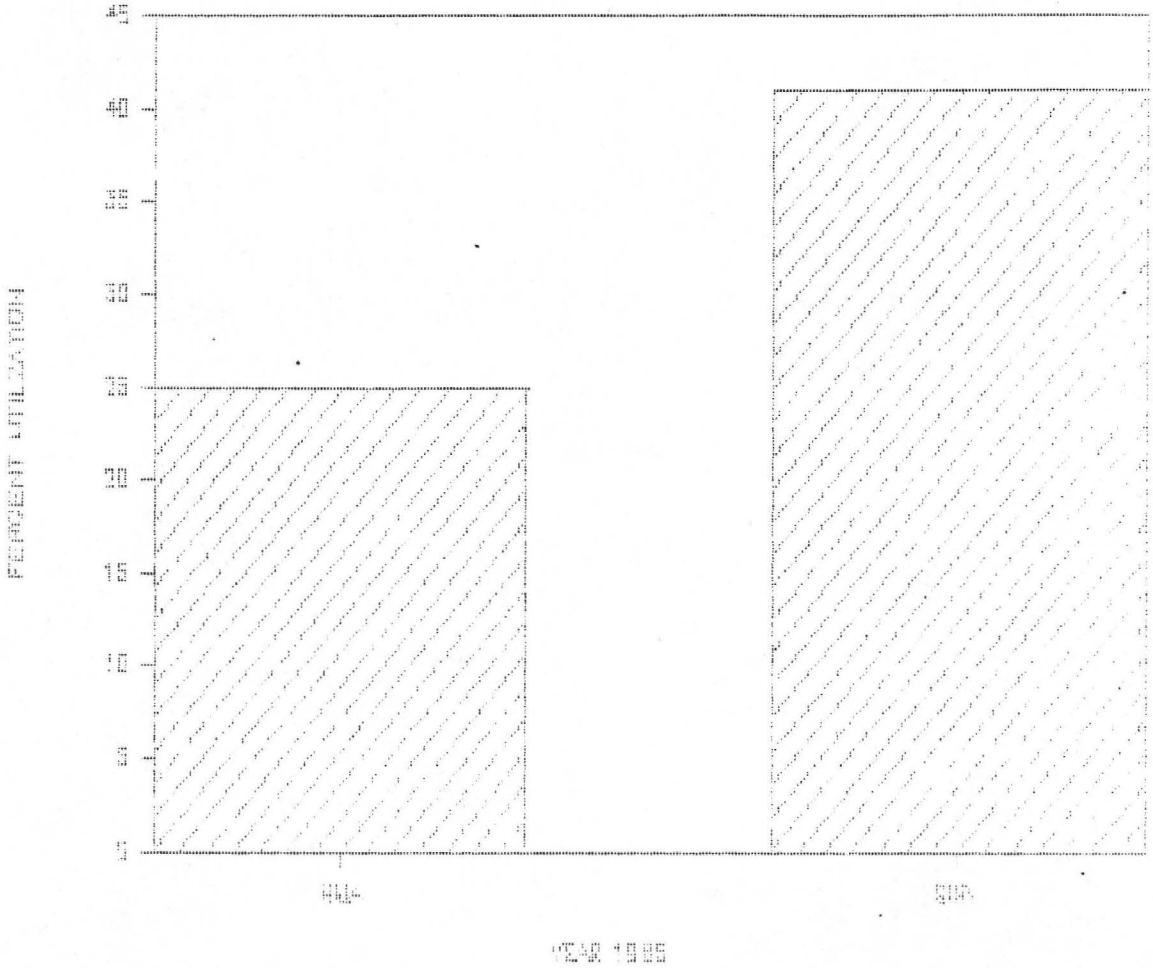

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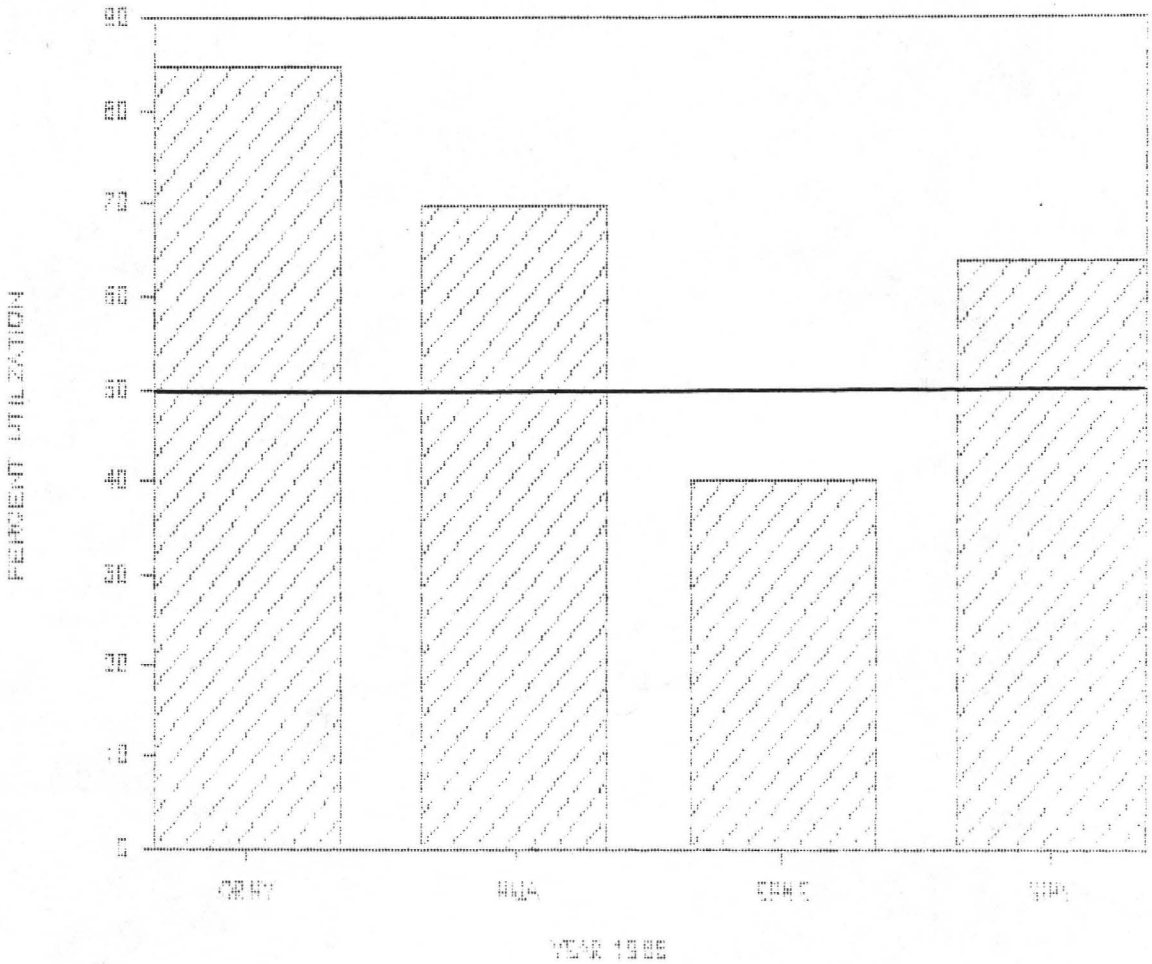

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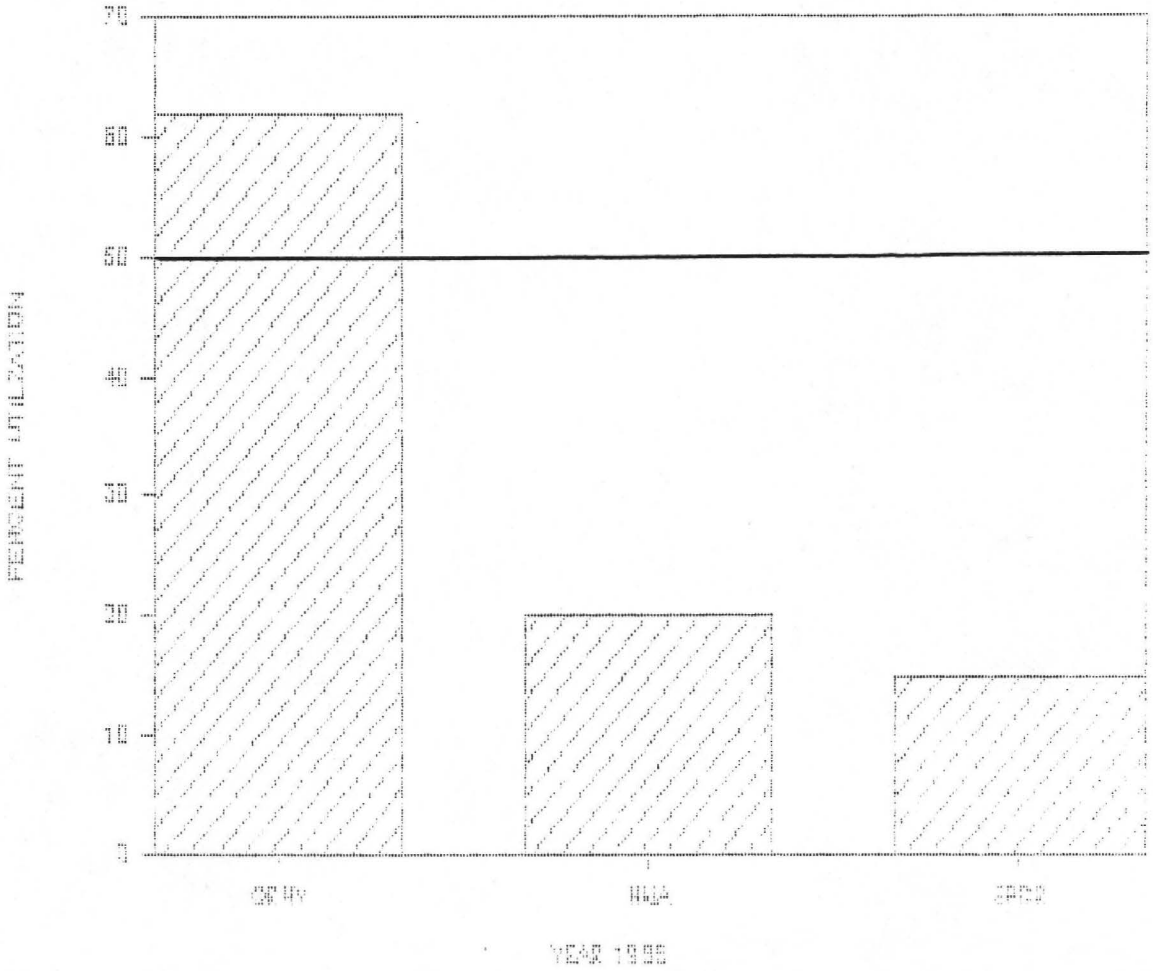

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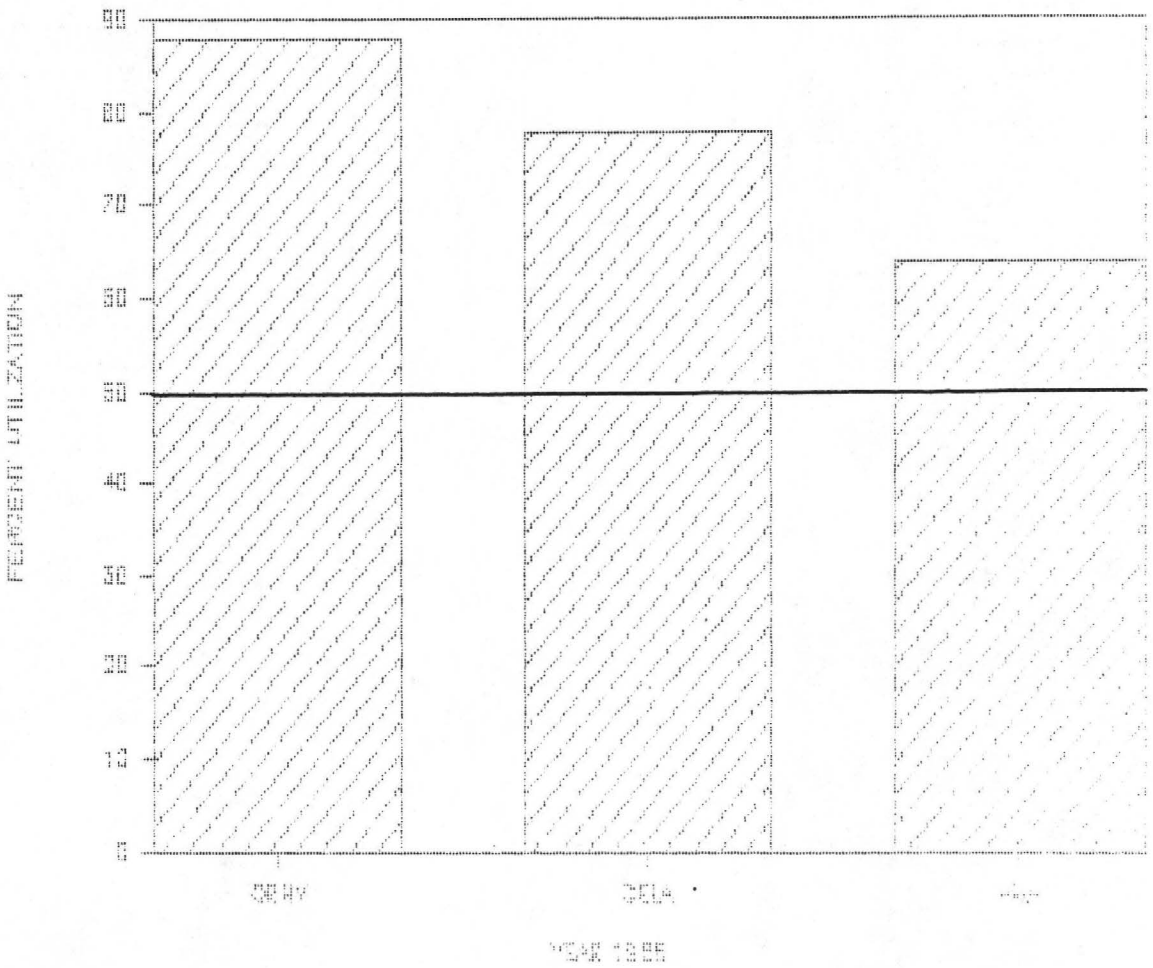

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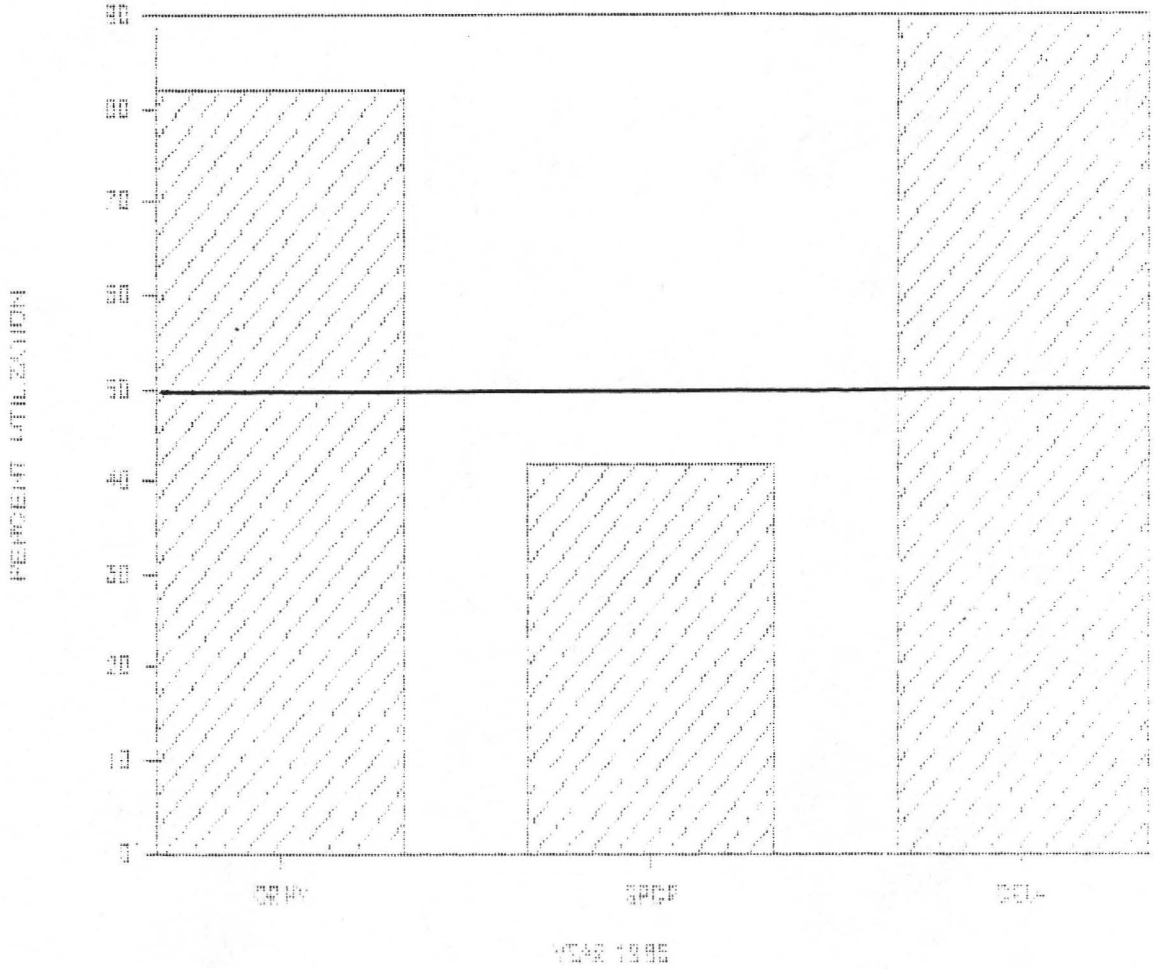

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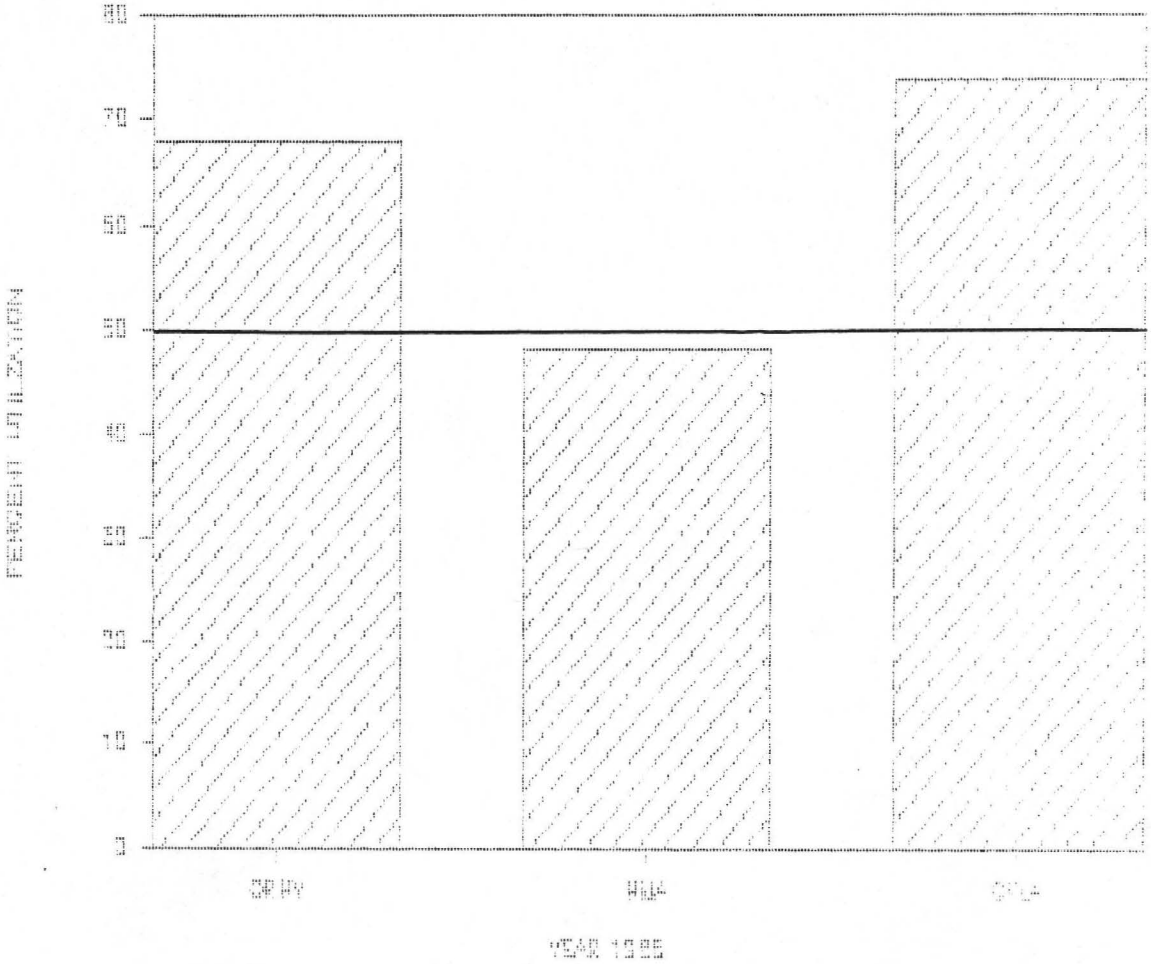

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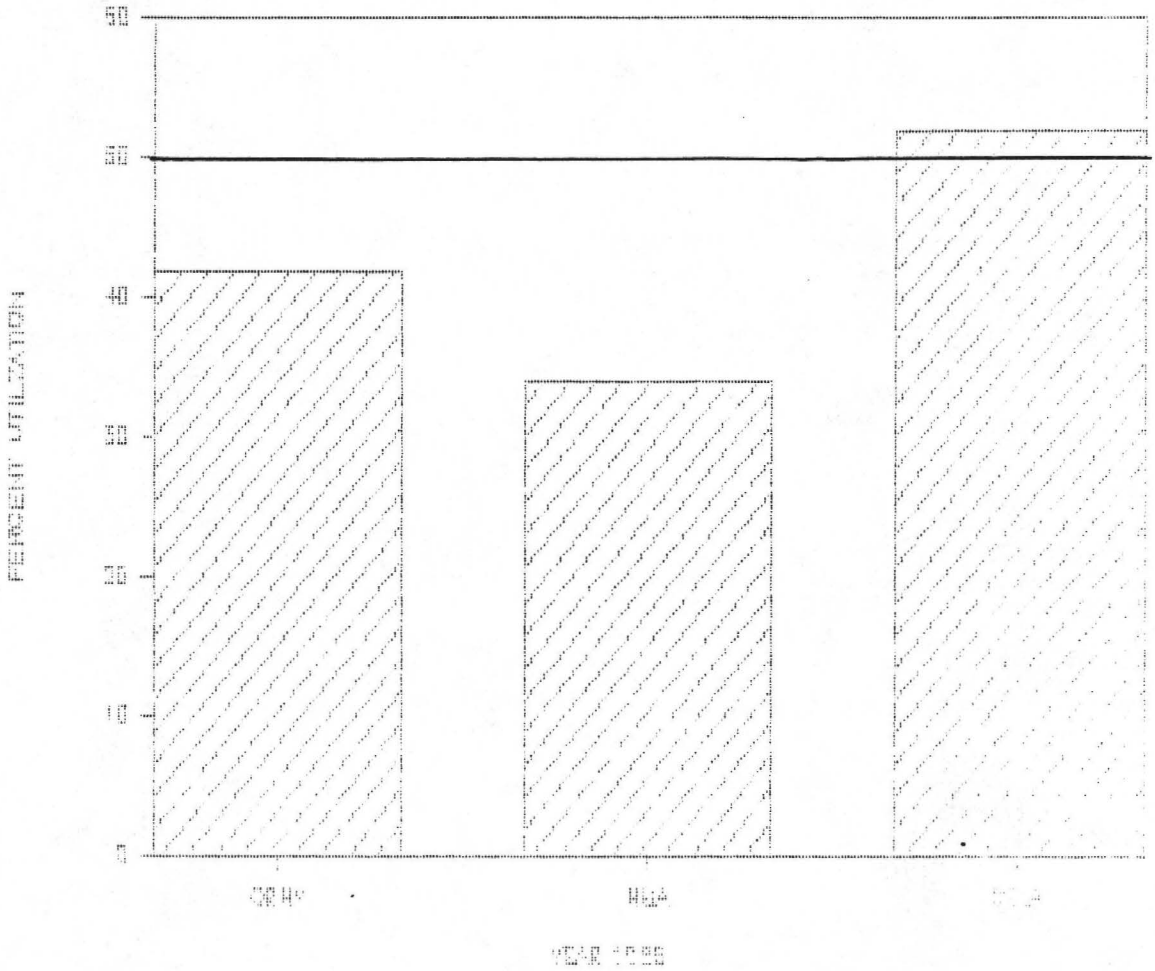

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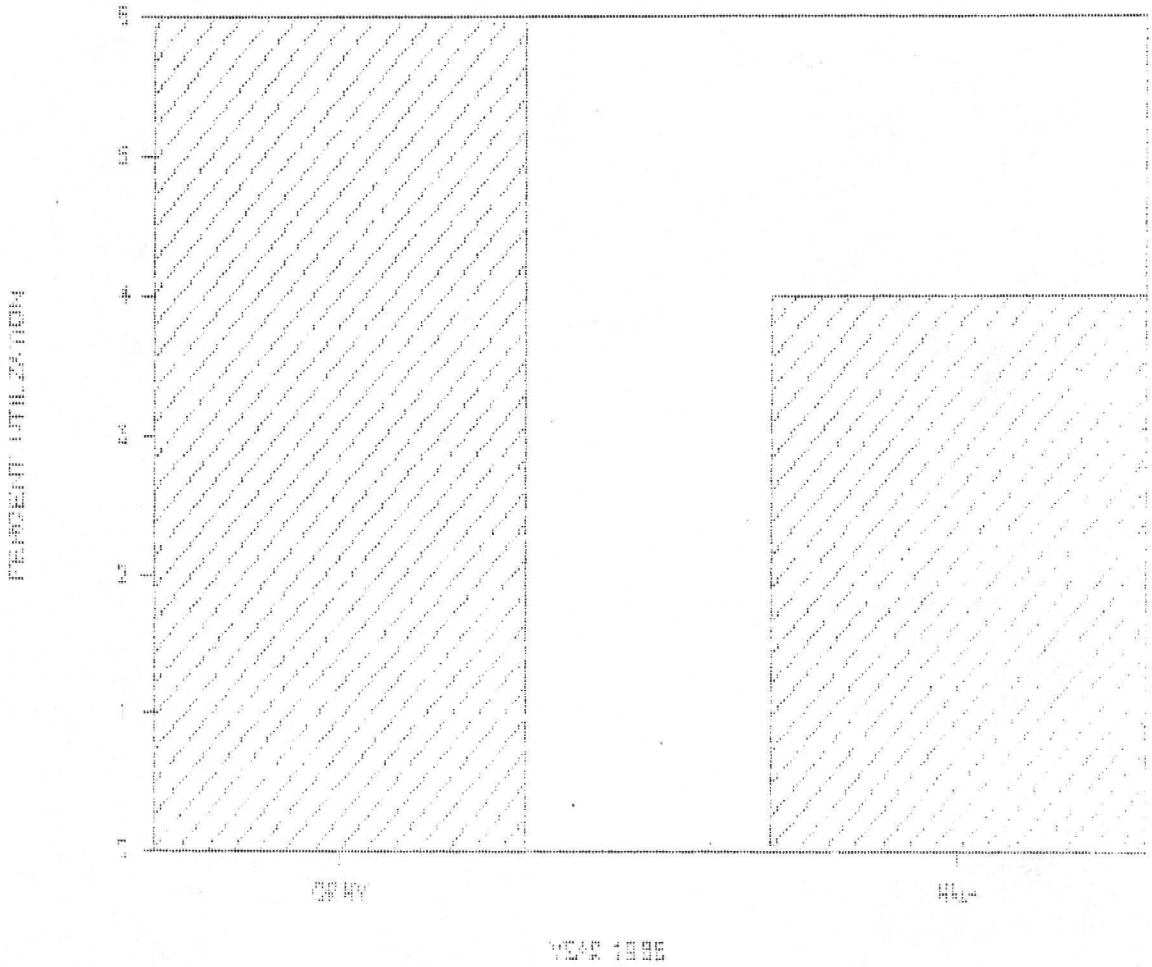

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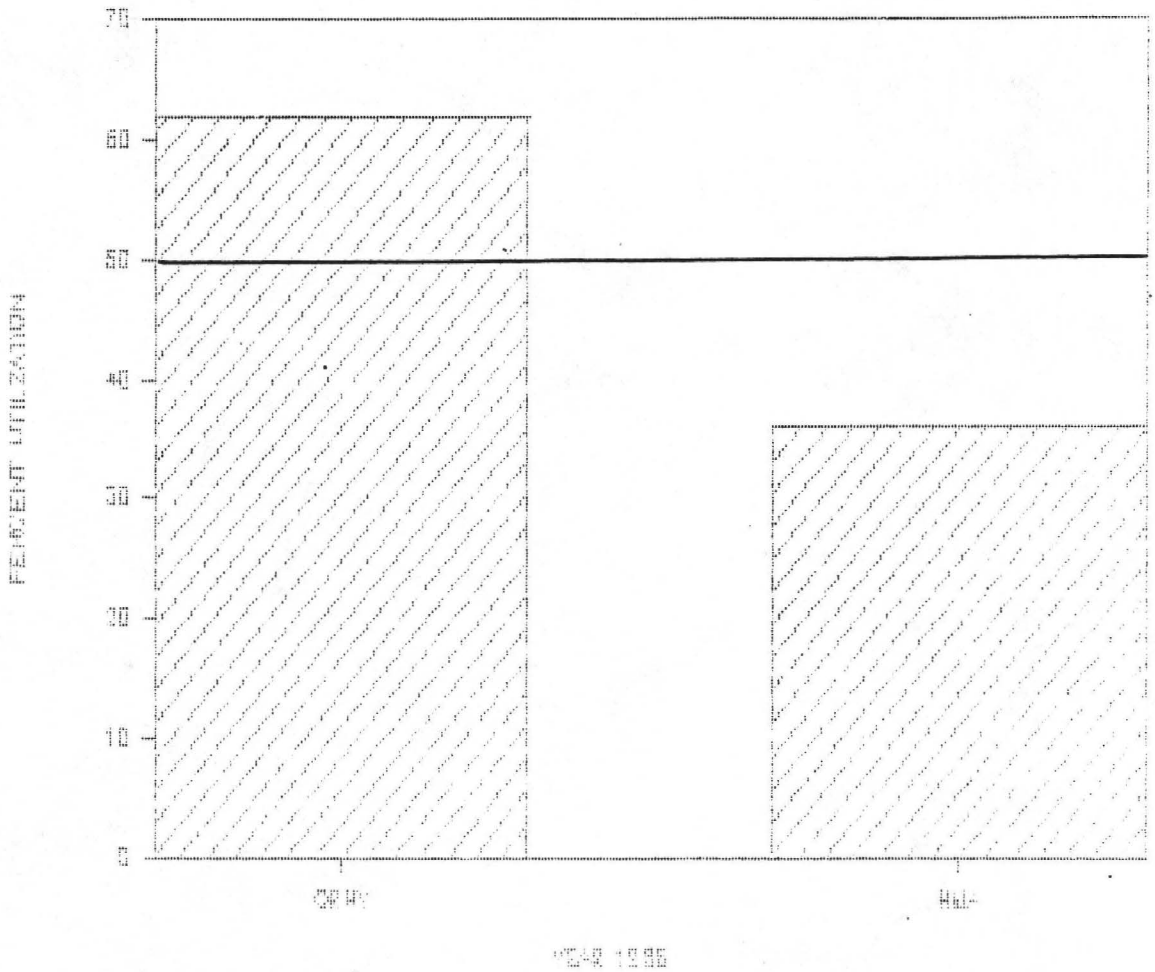

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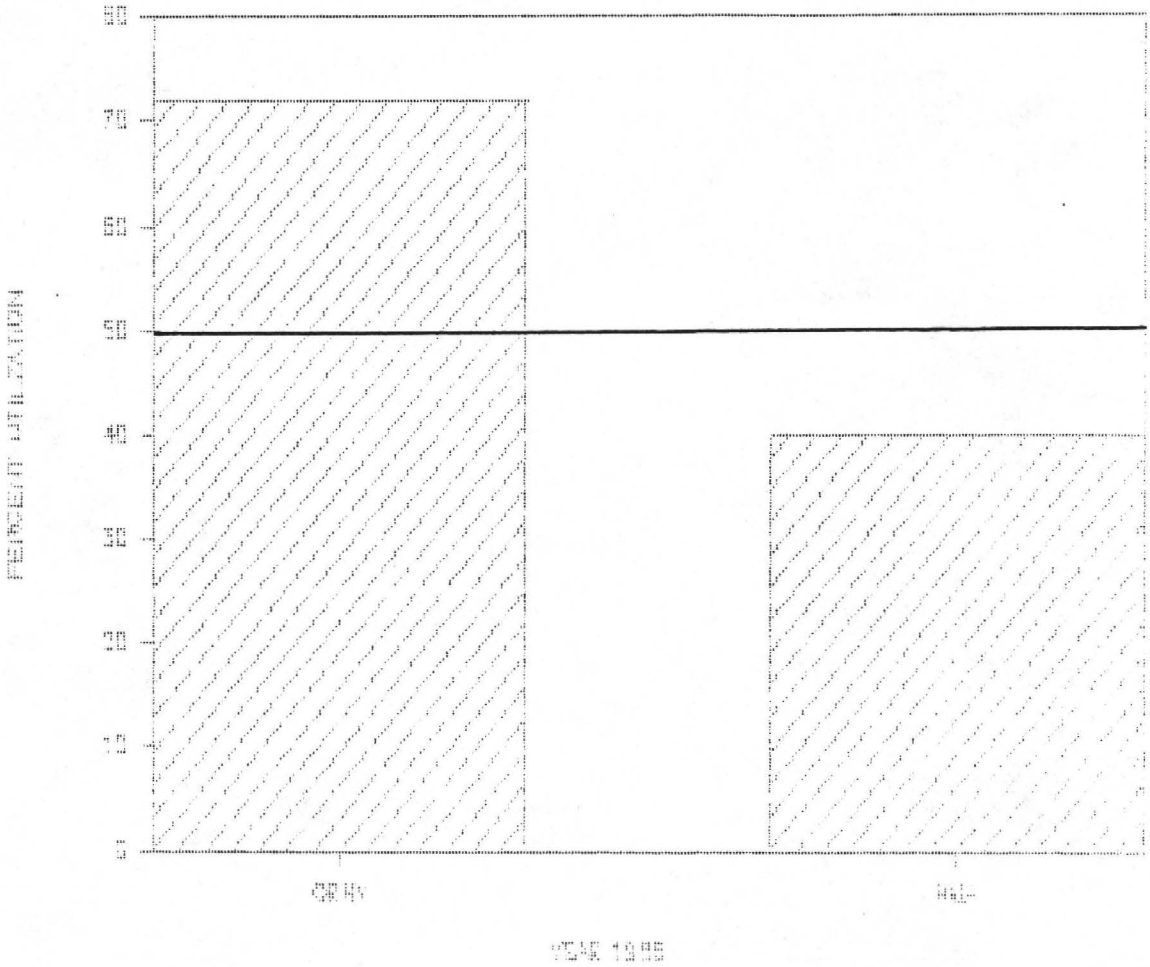

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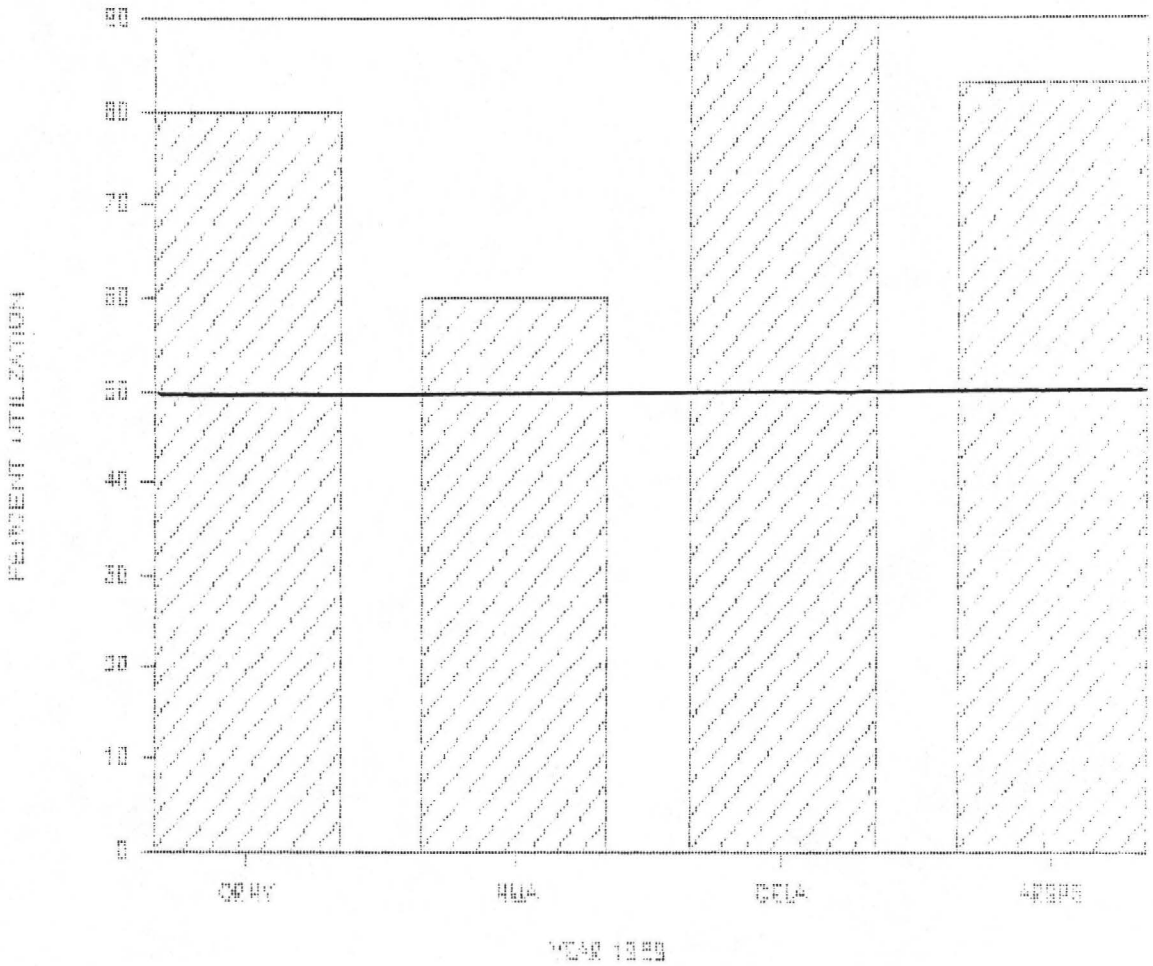

SUPPLEMENTAL ILLUSTRATIONS:

SITES MONITORED WITH

MORE THAN ONE

YEAR OF

DATA

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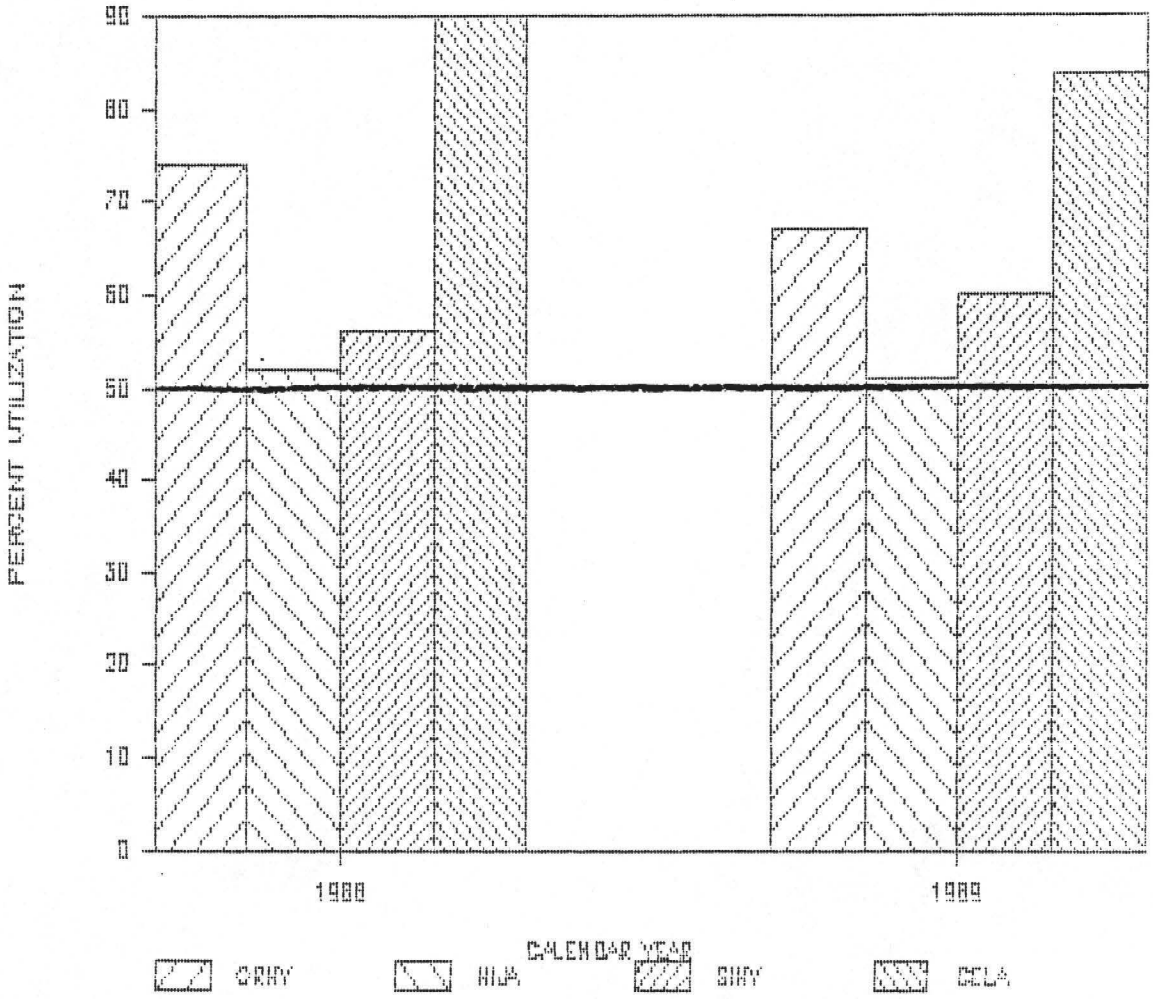

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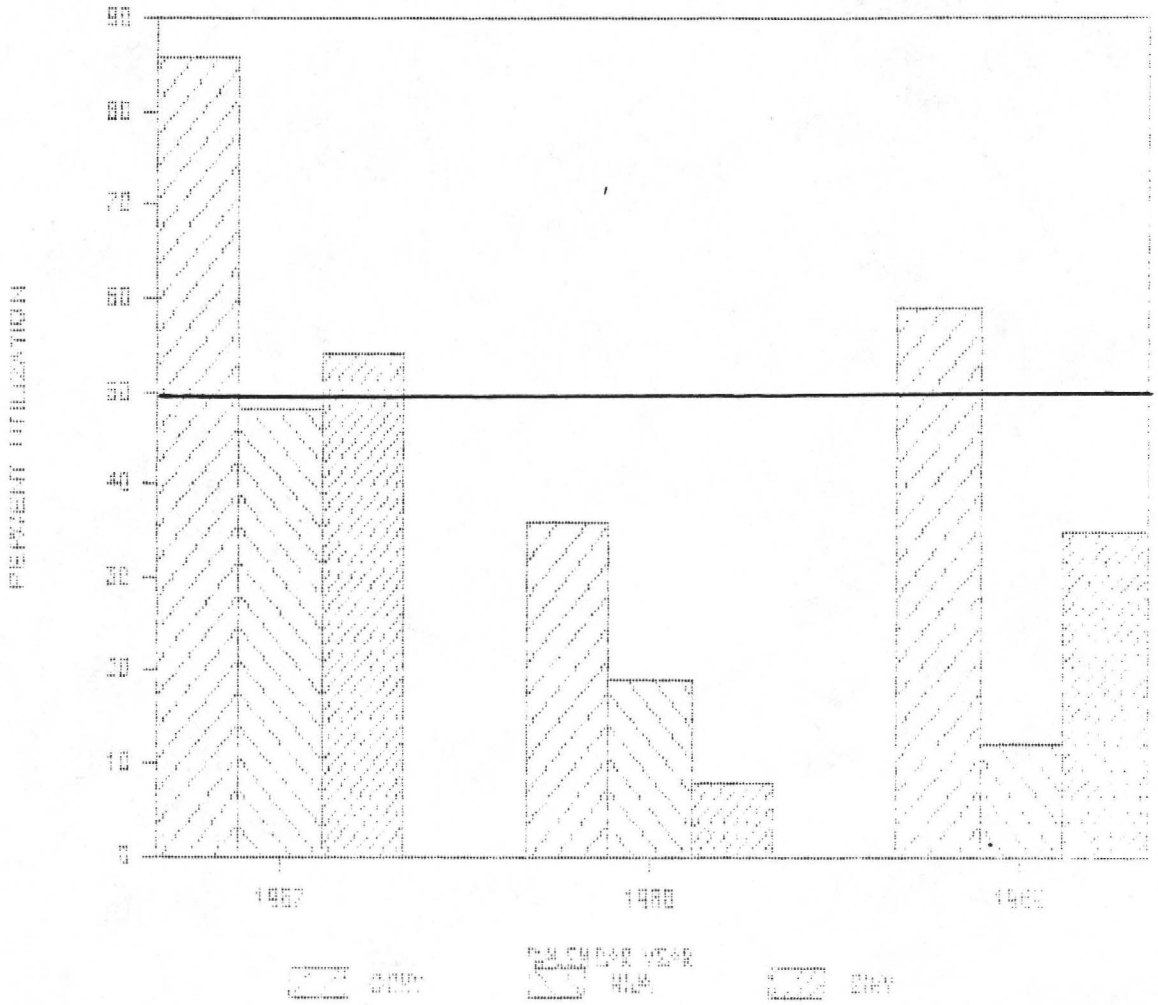

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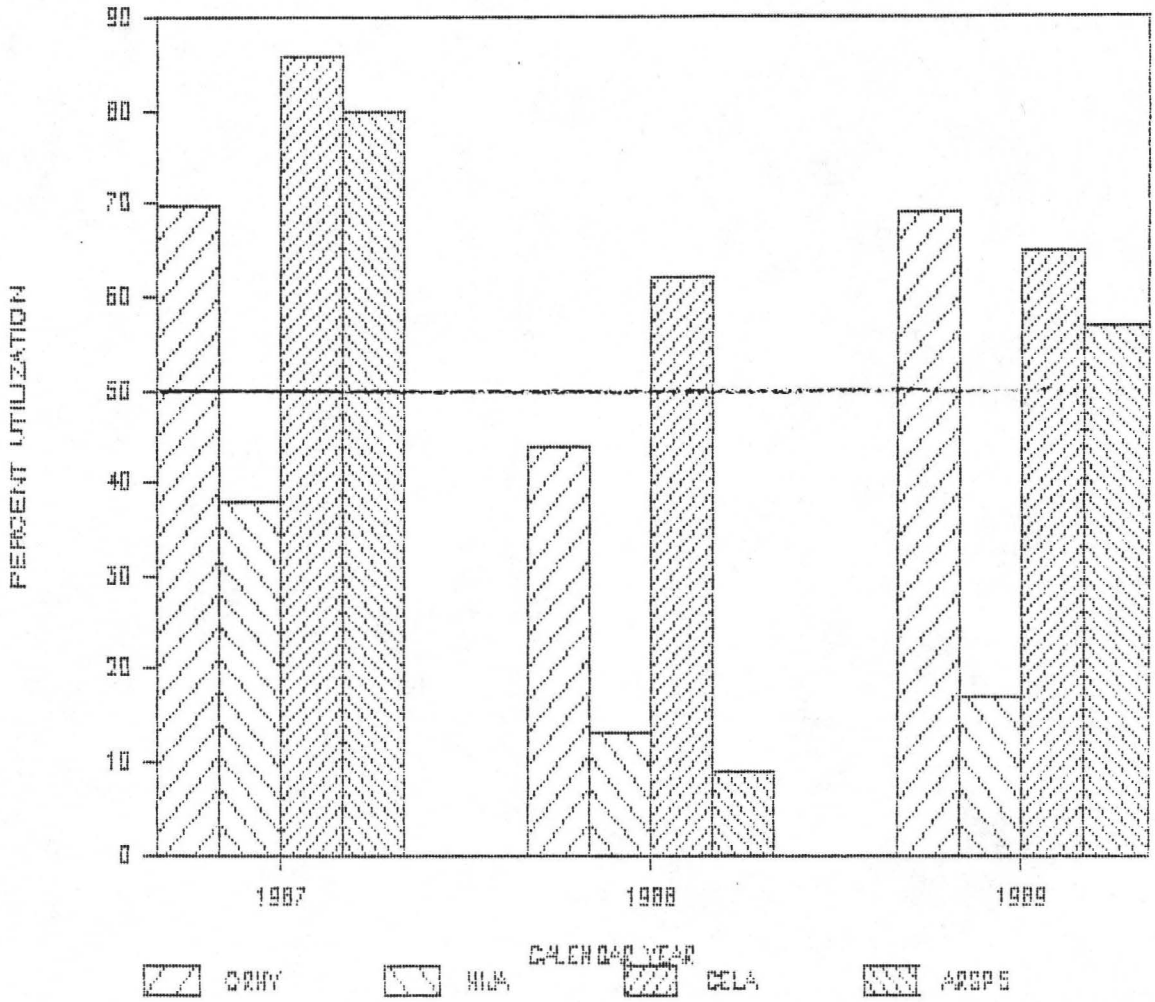

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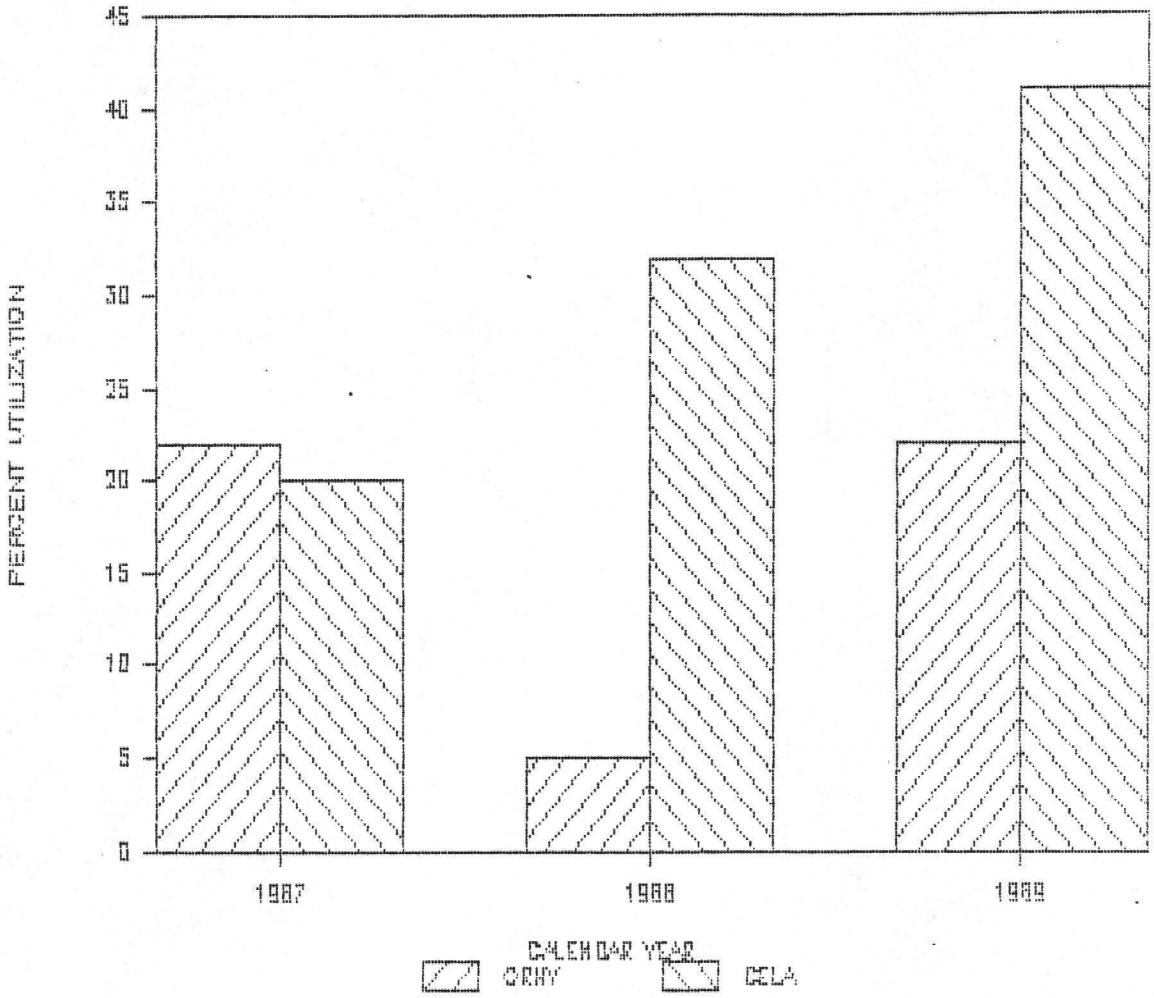

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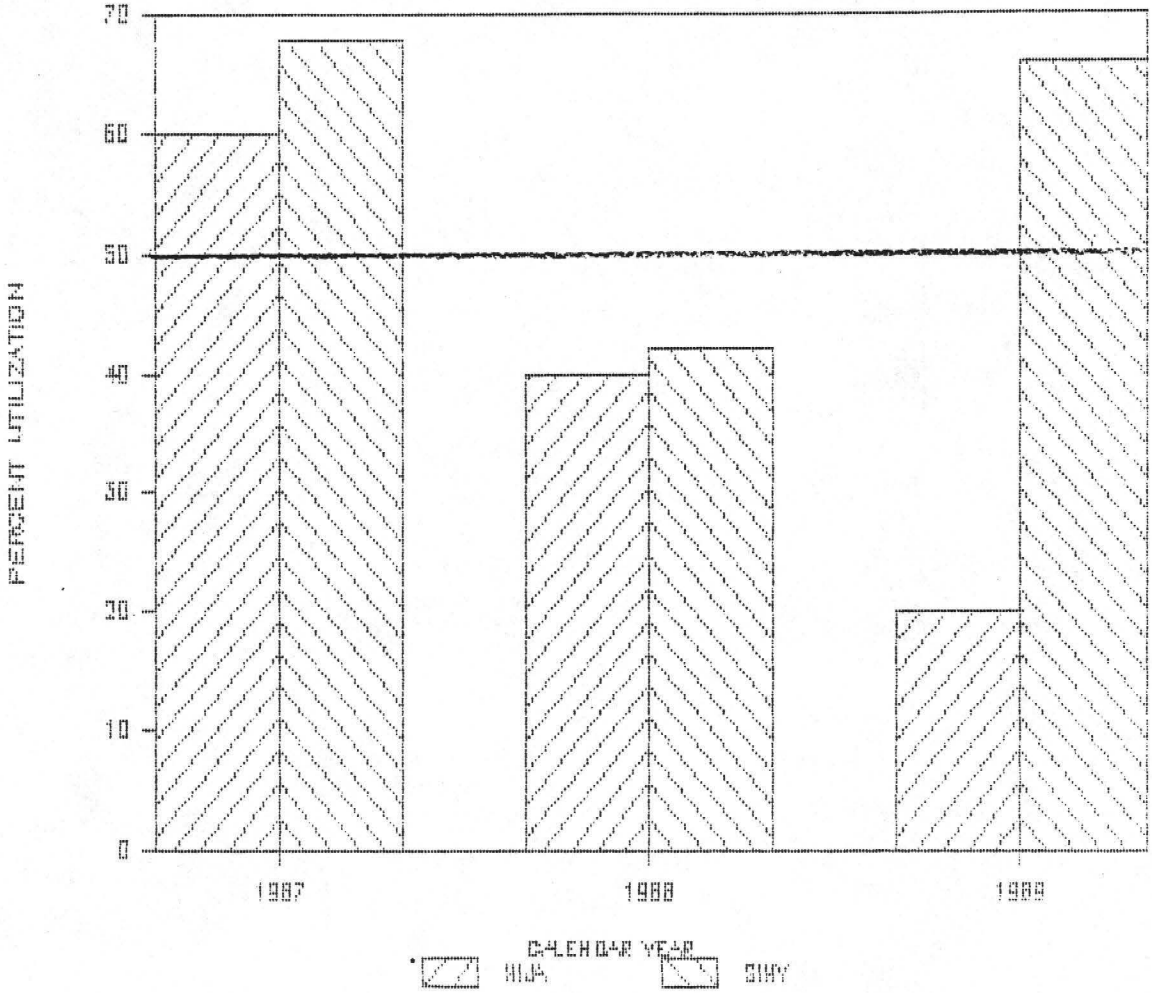

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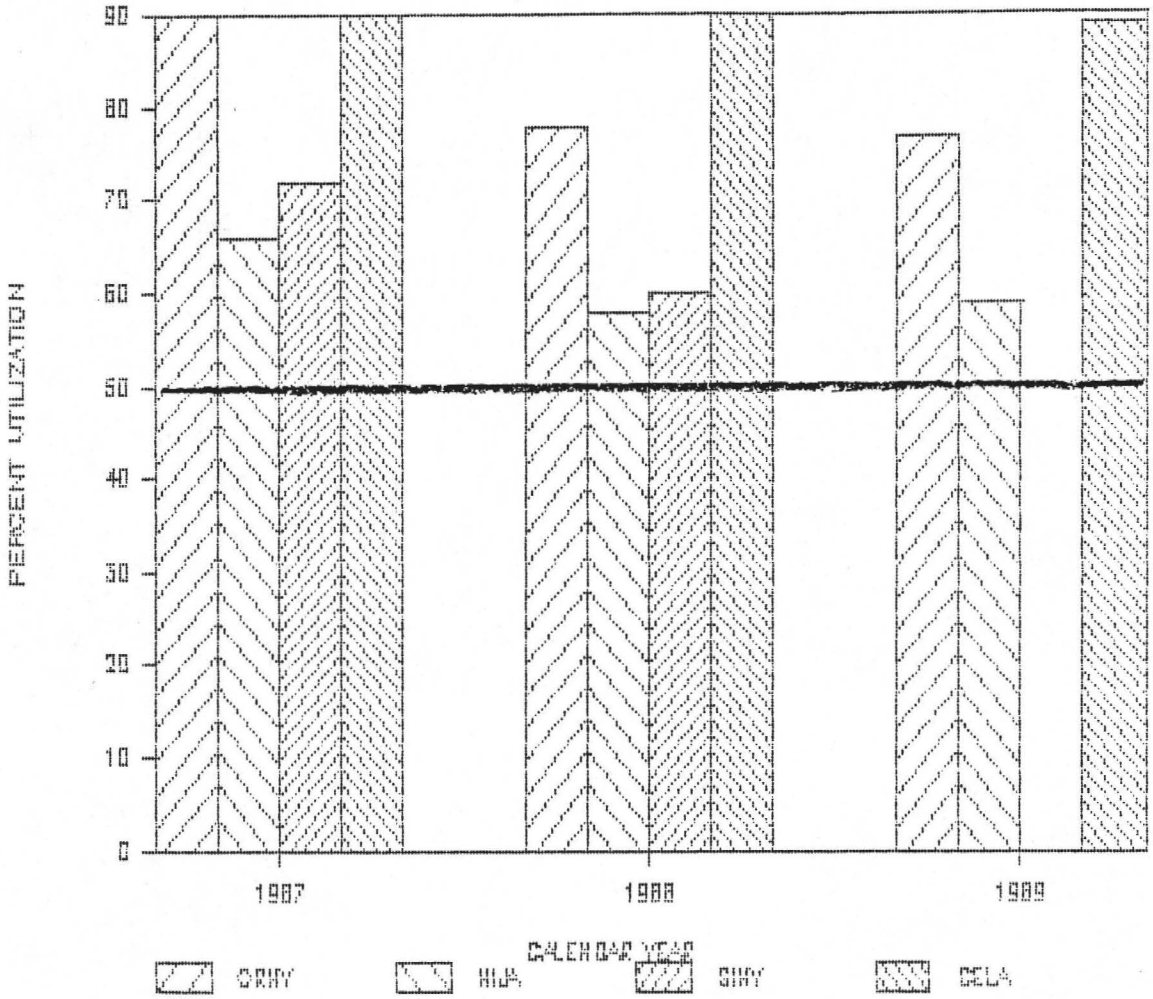

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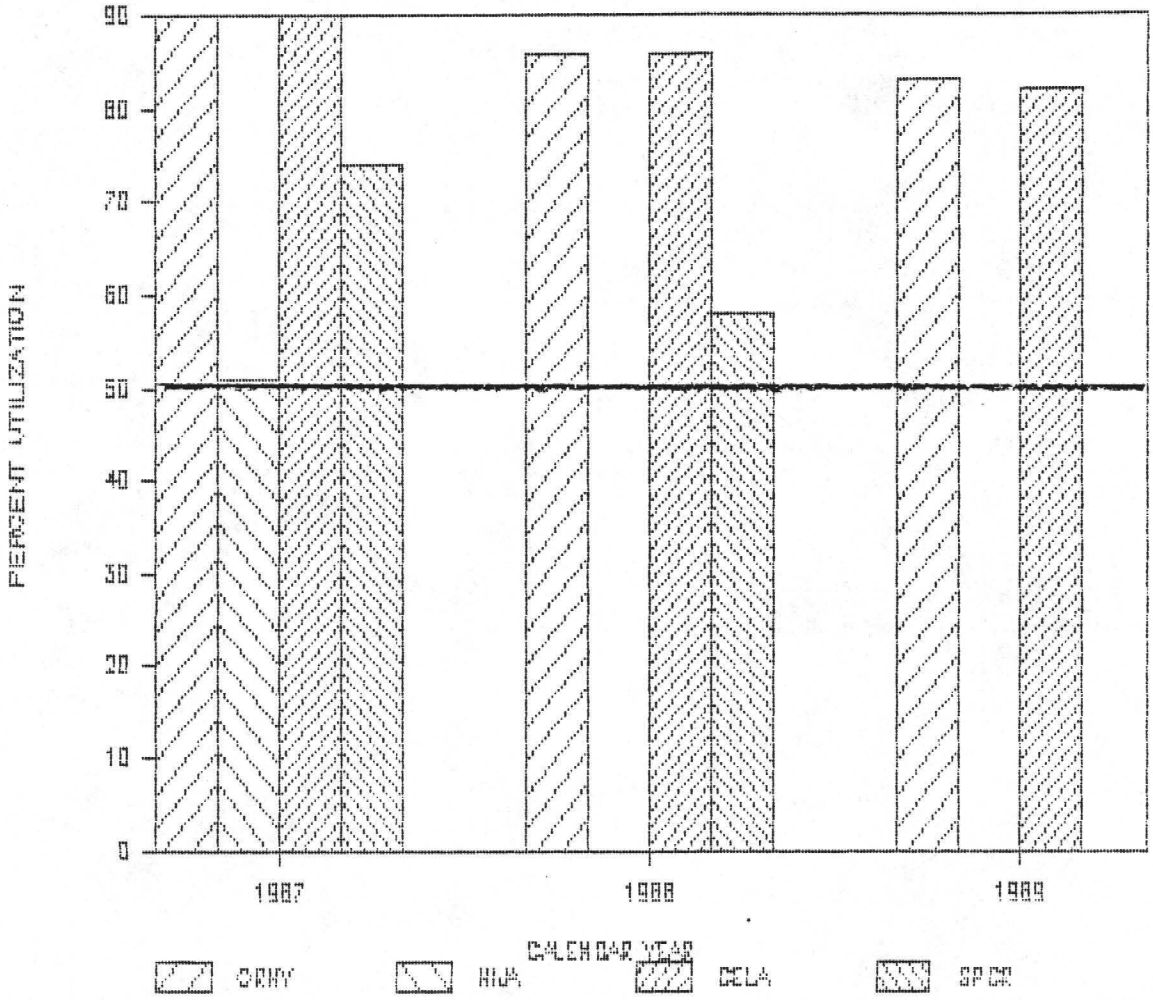

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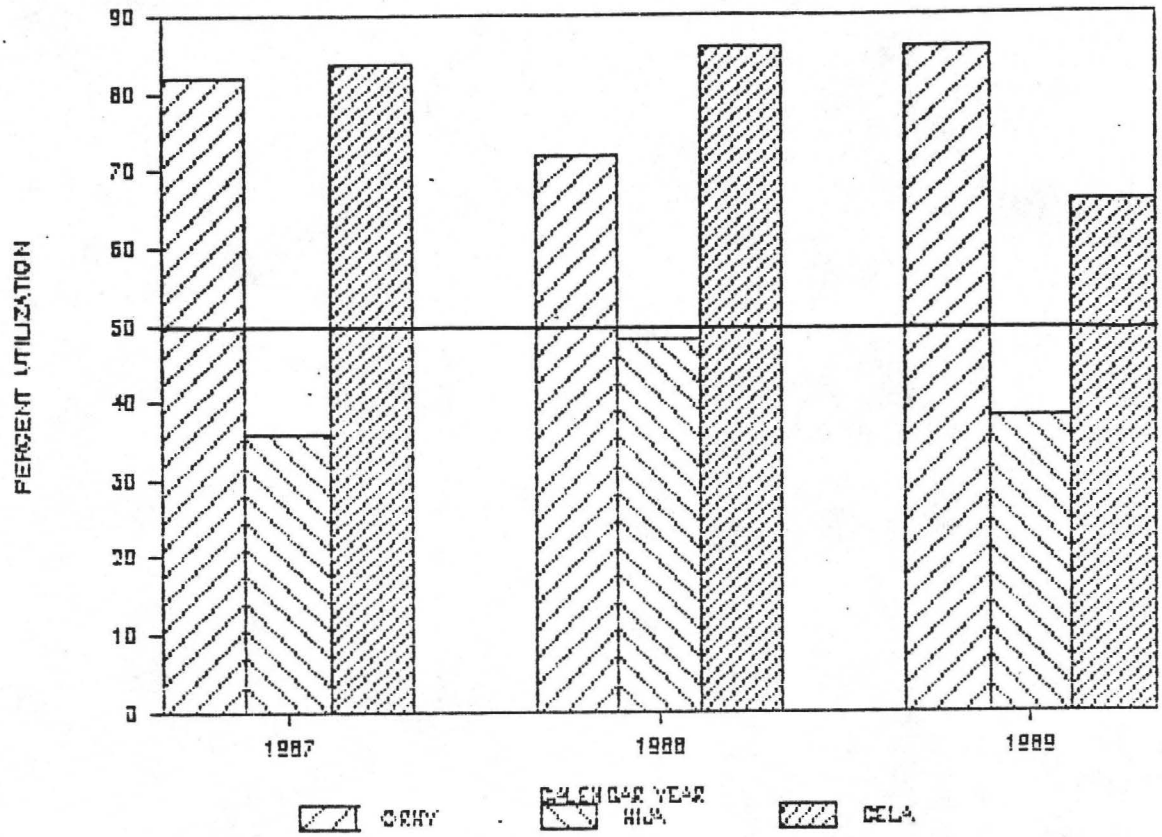

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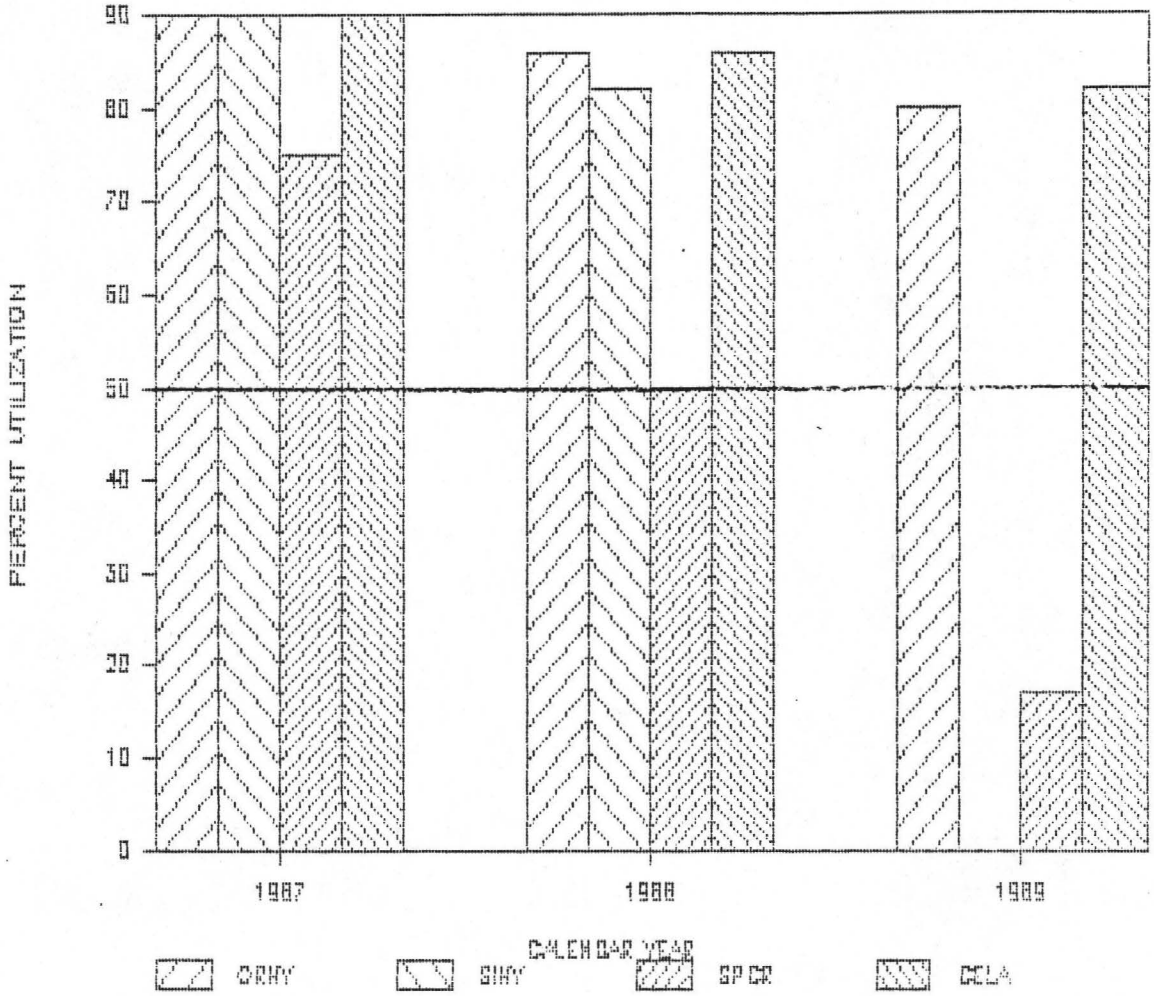

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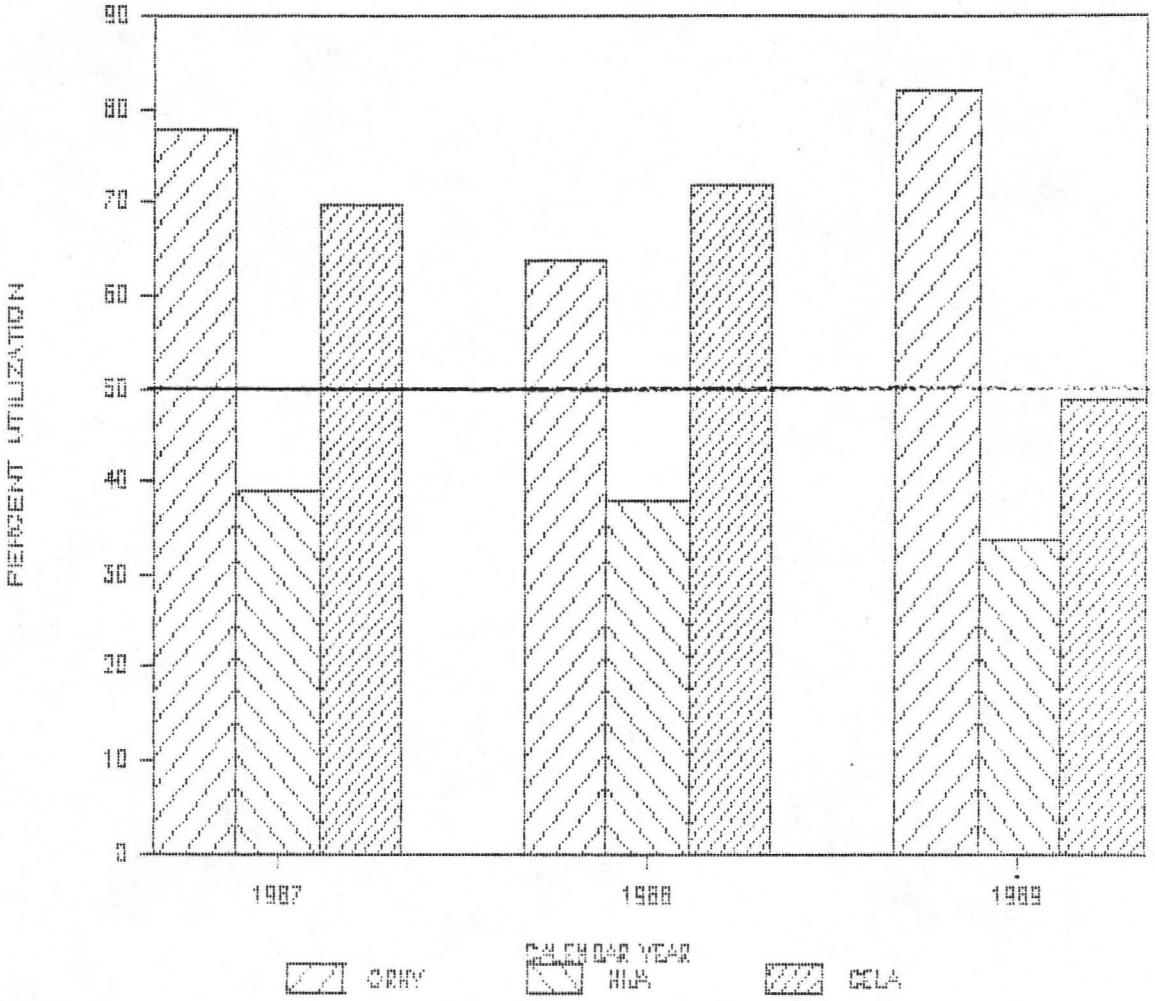

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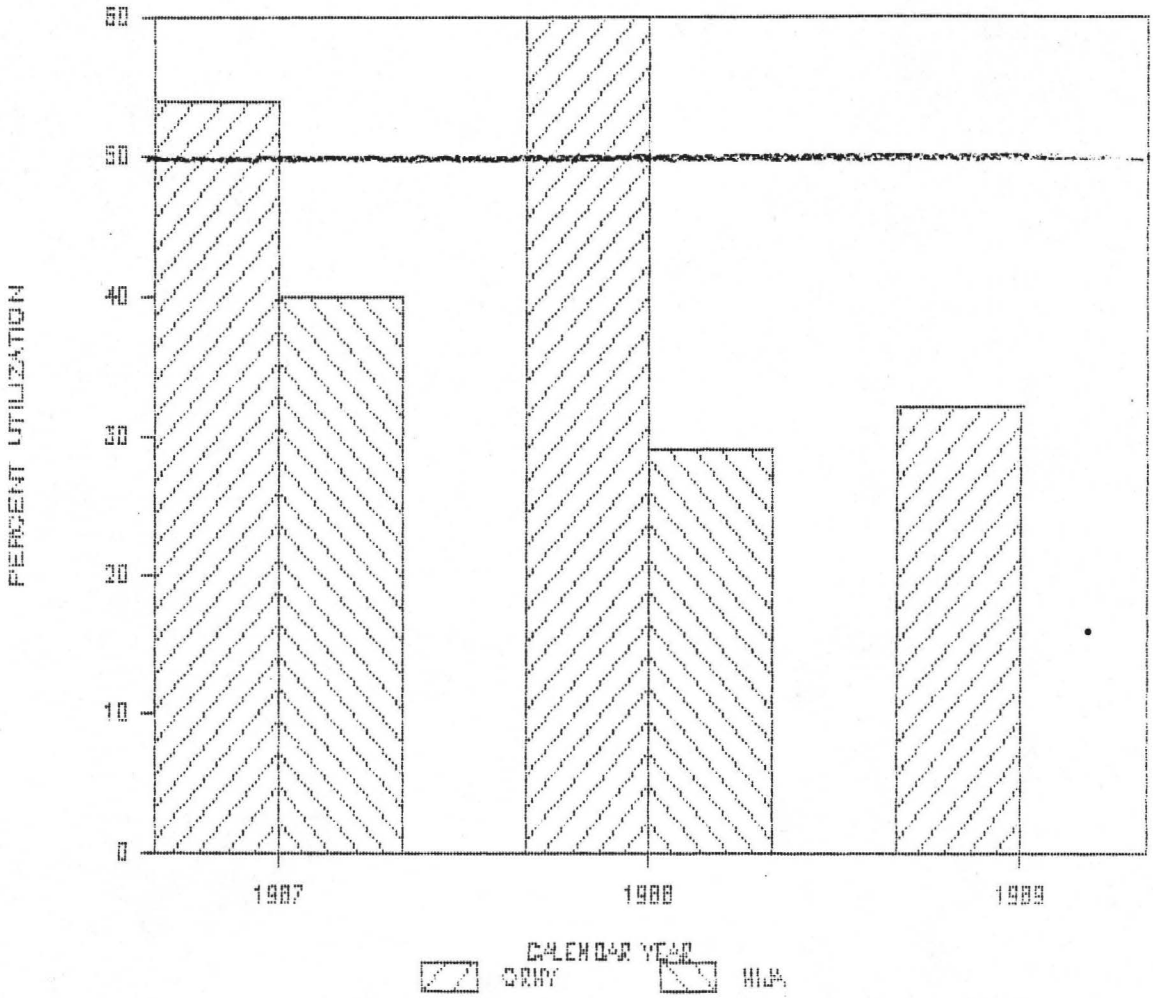

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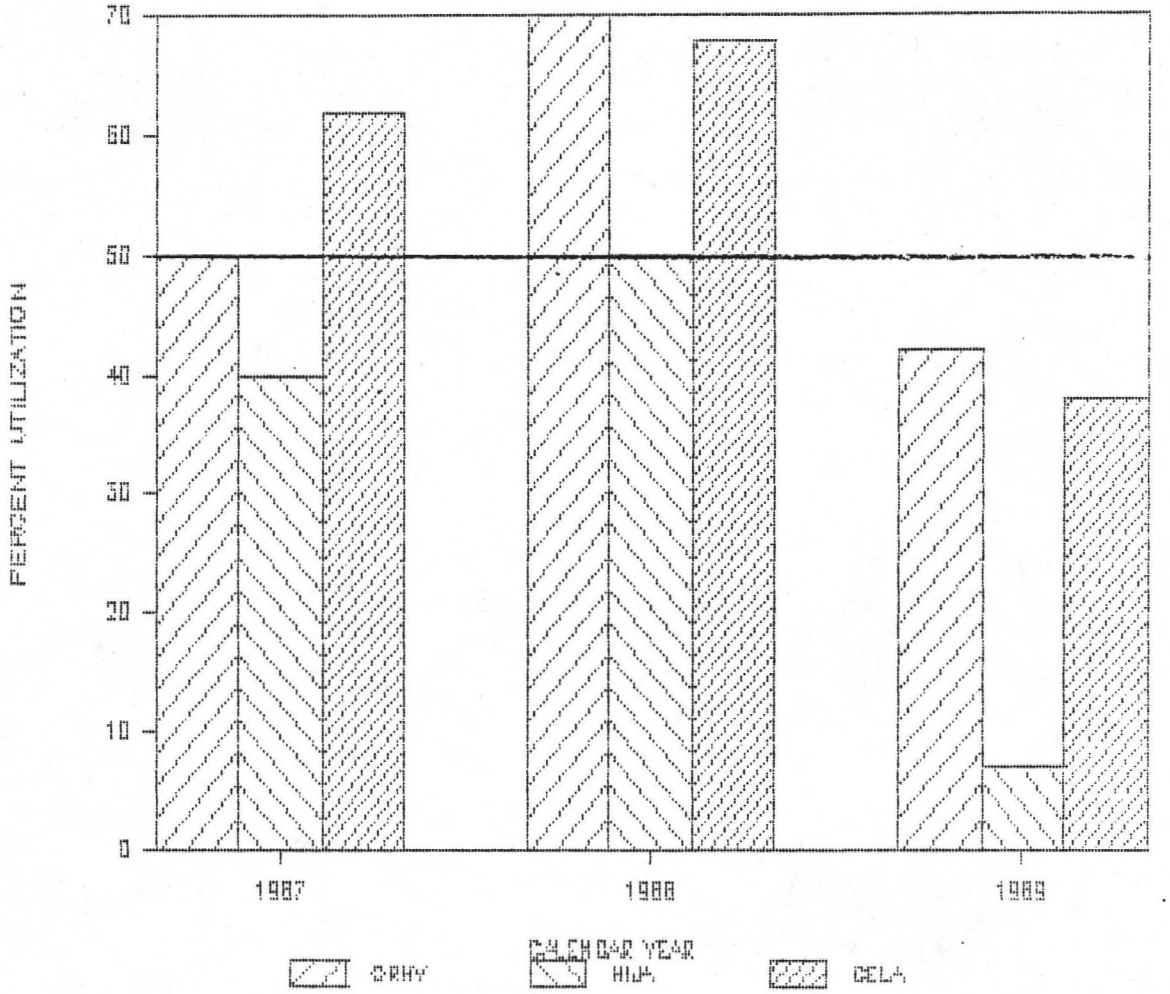

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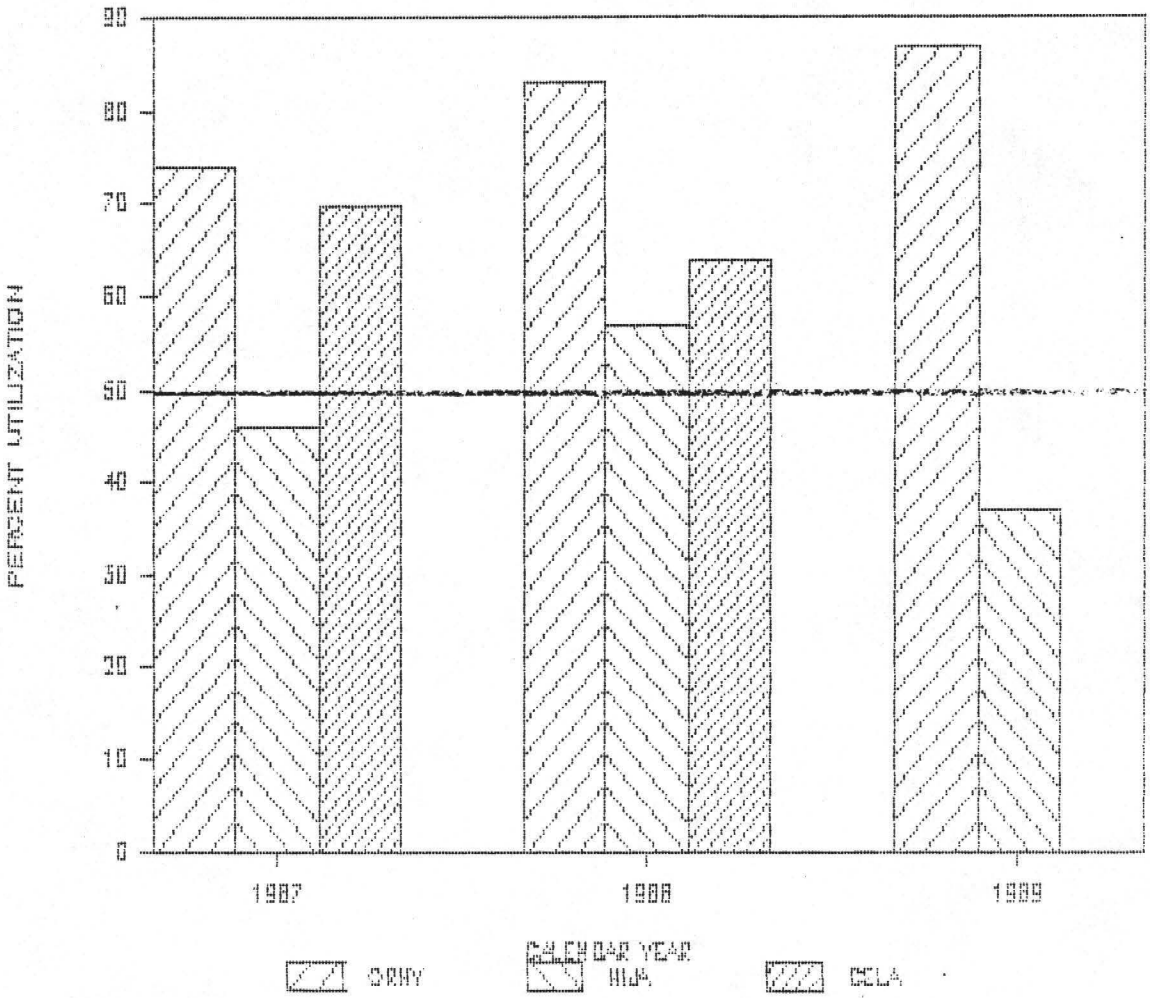

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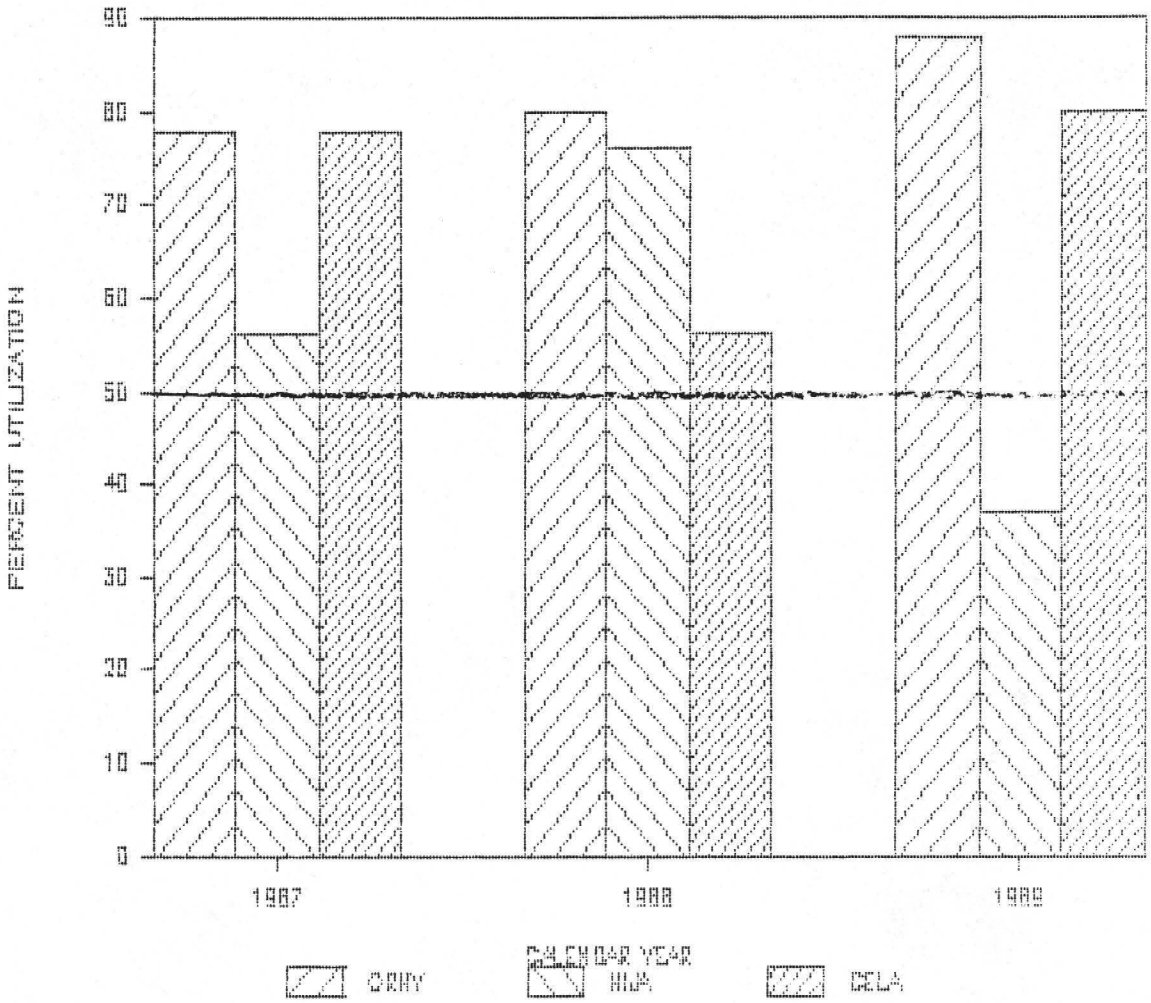

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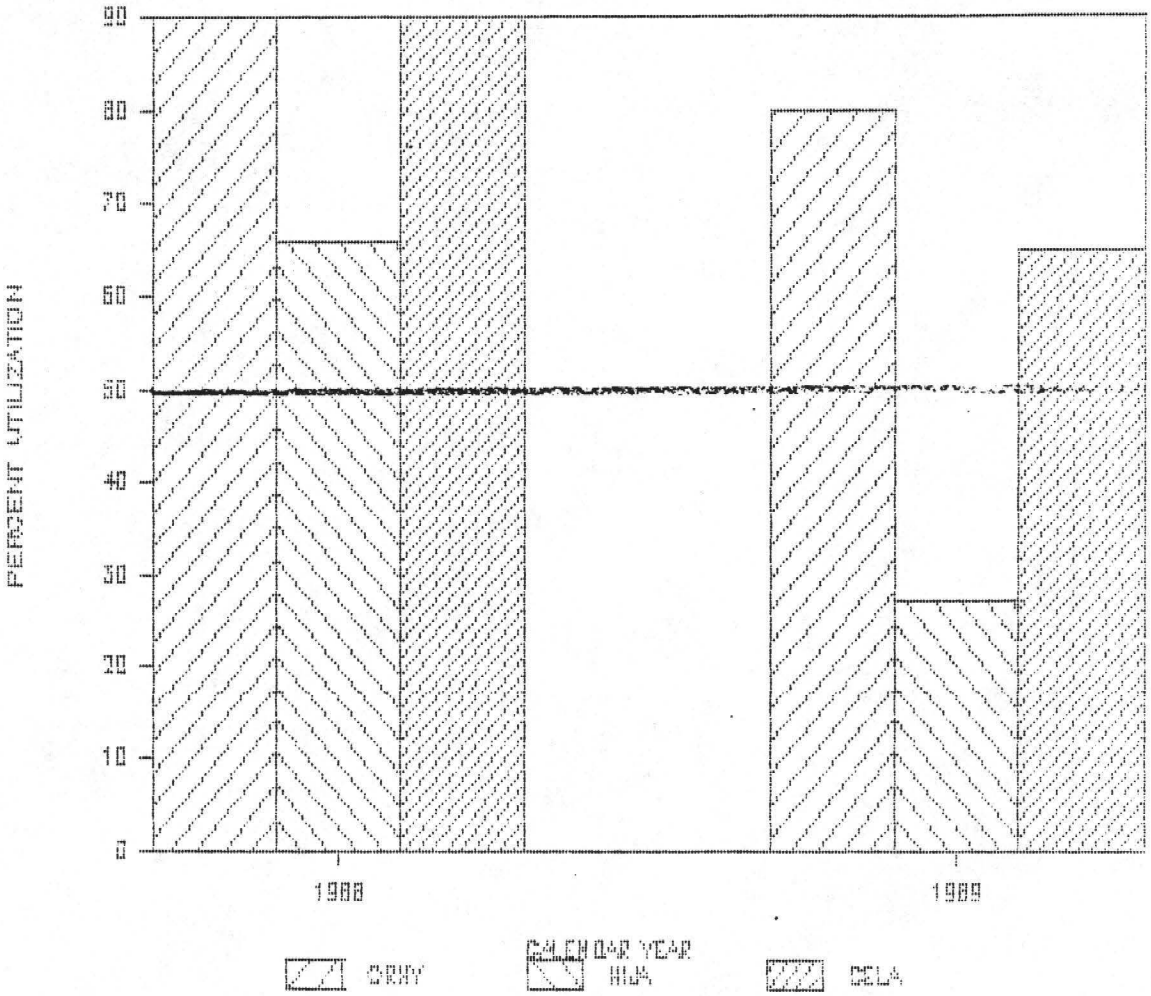

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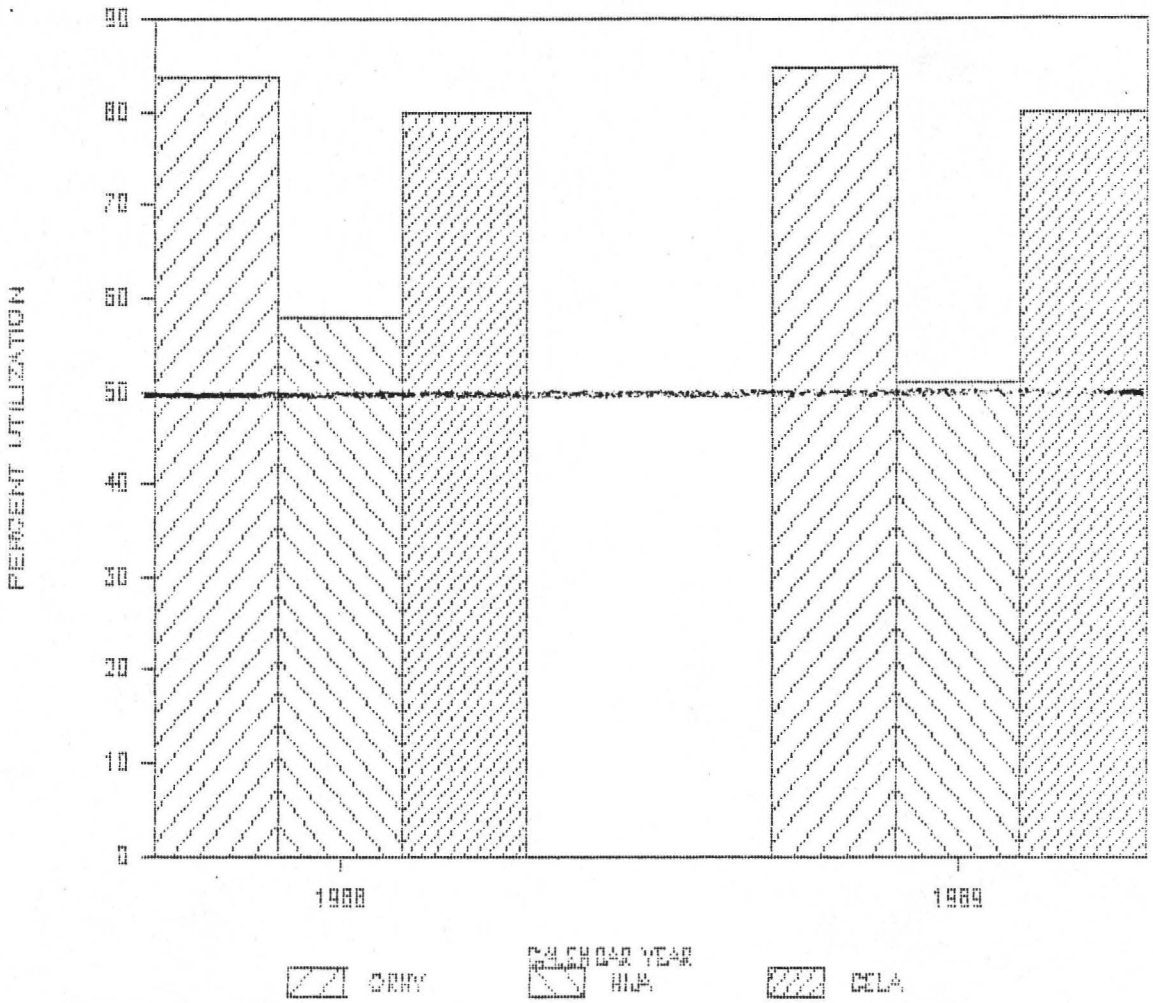

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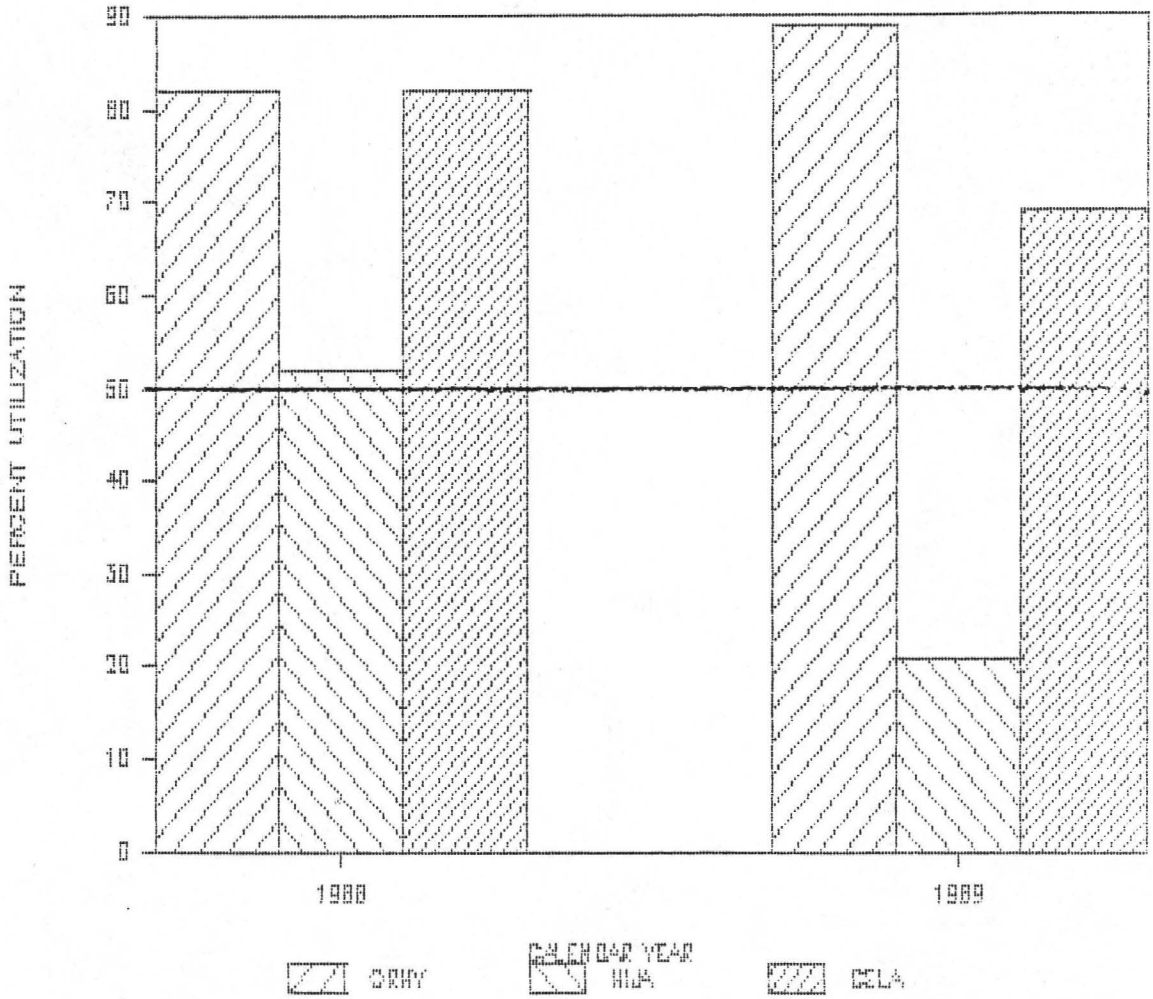
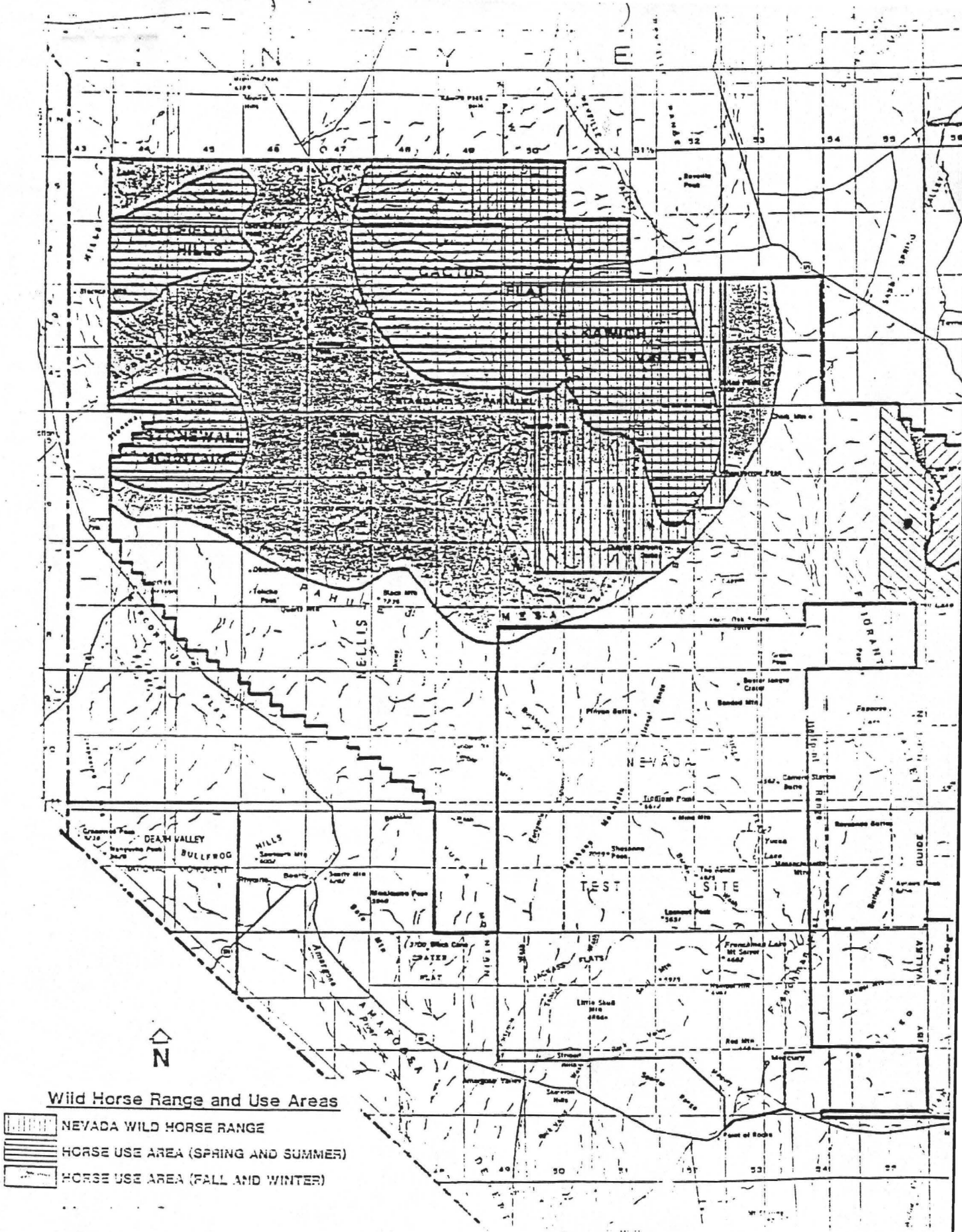



N
HILLS
CACTUS
FLAT
KAWICH
VALLEY
STONEWALL
MOUNTAIN
PAHUTE
MESA
NELLIS
NEVADA
TEST
SITE
DEATH VALLEY
BULLFROG
AMARGOSA
DESERT
N
Wild Horse Range and Use Areas
NEVADA WILD HORSE RANGE
HORSE USE AREA (SPRING AND SUMMER)
HORSE USE AREA (FALL AND WINTER)

12-18-89

SECTION V
NARRATIVE SUMMARY

I. Climatic Data Summary:

A. Precipitation:

Precipitation data for this allotment analysis has been gathered from the Goldfield, Tonapah and Twin Springs-Fallini NOAA weather stations and Pahute 1 station located at Pahute Mesa in the Nellis Air Force Range. The Goldfield NOAA weather station begin operation in 1948 and is approximately fifteen (15) miles west of the Nellis Air Force Range. The Tonapah NOAA weather station began operation in 1954 and is located approximately twenty (20) miles northwest of the Nellis Air Force Range. The Twin Springs-Fallini NOAA station began operation in 1986 and is located approximately thirty (30) miles northeast of the Nellis Air Force Range. Pahute 1 began operation in 1964 and is located within the Nellis Air Force Range.

Precipitation data from the Goldfield and Tonapah NOAA stations and Pahute 1 was analyzed for the period 1982 through 1989. The precipitation data from the Twin Springs-Fallini NOAA station was analyzed for the period 1986 through 1989.

Appendix I shows the monthly and total yearly precipitation as recorded by the Goldfield, Tonapah and Twin Springs-Fallini NOAA stations and Pahute 1 for the period 1982 through 1989.

Table 1 depicts the yearly precipitation totals by station with the station average. The station average precipitation recorded by the Goldfield NOAA weather station was 6.27 inches. The station average at the Tonapah NOAA station was 5.38 inches. At Twin Springs-Fallini the station average was 6.32 inches. Pahute 1 showed 6.3 inches station average.

TABLE 1. Yearly precipitation totals by station with station average.

Station	Year								Station
	82	83	84	85	86	87	88	89	Ave.
Goldfield	7.75	5.64	M	2.18	3.39	9.23	7.38	5M	6.27
Tonapah	6.19	9.64	6.95	5.96	2.53	8.33	5.36	3M	5.38
Twin Springs				1.1M	3.21	7.65	6.63	5.92	6.32
Pahute 1	9.31	6.5	5.03	2.48	5.3M	9.9M	4M	2.59M	6.3

M = partial or missing data. M is appended to average and/or total values computed with 1-9 daily values missing. M appears alone if 10 or more daily values are missing. (NOAA)

DRAFT

Table 2 depicts the average, below average and above average years. Based upon the station averages, precipitation at Goldfield was above average in 1982, 1987, and 1988; below average in 1985 and 1986. At Tonapah precipitation was above average in 1983, 1984 and 1987; below average in 1986 and 1989. At Twin Springs-Fallini 1987 was above average; 1985 and 1986 were below average. Precipitation at Pahute 1 was above average in 1982 and 1987; below average during 1985, 1988 and 1989.

TABLE 2. Below average, average and above average years by station.

Station	Years Below average	Average	Above average
Goldfield	85, 86	83, 89	82, 87, 88
Tonapah	86, 89*	82, 85, 88	83, 84, 87
Twin Springs	85*, 86	88, 89*	87
Pahute 1	85, 88*, 89*	83, 84, 86*	82, 87*

*Based upon current available data (NOAA).

Initial growth of vegetation within the Nevada Wild Horse Range and adjacent withdrawn lands takes place March through May with regrowth occurring August through September if sufficient precipitation is received. Precipitation essential for plant growth throughout the Nellis Air Force Range is received in a bi-modal fashion, spring and then late summer, early fall.

Table 3. depicts the rainfall as recorded by the Goldfield, Tonapah and Twin Springs-Fallini NOAA weather stations and Pahute 1 for the initial growth period of March through May and the regrowth period August through September.

Table 3. Initial growth and regrowth precipitation 1982 through 1989 by recording station.

Goldfield

Year	Initial growth Mar-June	Regrowth Aug-Sept	Growth season Total
82	2.92 in	1.4 in	4.32 in
83	3.72	M	3.72
84	M	M	M
85	0	0.55	0.55
86	0.84	0.74	1.58
87	2.62	0.35	2.97
88	4.61	2.0	6.61
89	2.76	1.84	4.6

M= missing

Tonapah

Year	Initial growth Mar-June	Regrowth Aug-Sept	Growth season Total
82	1.24 in	0.67 in	1.91 in
83	3.11	2.96	6.07
84	0.92	2.46	3.38
85	0.58	0.29	0.87
86	M	0.23	0.23
87	4.97	0.01	4.98
88	2.58	0.4	2.98
89	1.84	0.55	2.39

M= missing

Twin Springs (Fallini)

Year	Initial growth Mar-June	Regrowth Aug-Sept	Growth season Total
86	0.36 in	1.03 in	1.39
87	2.85	0	2.85
88	3.91	1.83	5.74
89	4.09	0.96	5.05

Pahute 1

Year	Initial growth Mar-June	Regrowth Aug-Sept	Growth season Total
82	3.71 in	2.37 in	6.08
83	4.3	0	4.3
84	0.31	0.1	0.41
85	0.49	0.42	0.91
86	1.1	0.92	2.02
87	4.73	0.14	4.87
88	2.72	1.13	3.85
89	1.34	1.19	2.53

Comparison between the recording stations demonstrates the variability and sporadic nature of precipitation received in areas adjacent to the Nellis Air Force Range. This climatic variability undoubtedly results in areas of the Nevada Wild Horse Range and adjacent withdrawn lands receiving significant rainfall while other portions do not.

II. Wild Horse and Burro Data Summary:

A. Horse Condition/ Physiology:

Two veterinarians were invited to evaluate physical conditon of horses roaming the western boundary of the Nevada Wild Horse Range and adjacent areas outside the boundary. The veterinarians toured the area November 21, 1989. A written report of their findings can be found in Appendix II. Eighty percent of the horses observed were underweight. Many were in poor to emaciated condition especially the horses watering in Breen Creek/ Silver Bow.

An emergency gather was initiated during December 1989 to remove horses from Breen Creek/ Silver Bow. Dr. Dan Love DVM performed necropsies on animals that were put down. His report can be found in Appendix II. All animals sampled showed high numbers of parasites and an advanced state of catabolism.

B. Horse Color:

A high percentage of the horses roaming the Nevada Wild Horse Range and adjacent area are black, brown, bay or sorrel. A tally of adult horses gathered during the emergency gather in December 1989 shows 94% were from these four color groups (see Table 5). Only six percent of the adult horses gathered were grey, roan, palomino, pinto or albino. It is estimated that 75% of the horses roaming the Nevada Wild Horse Range and adjacent areas are black, brown, bay or sorrel.

TABLE 5. Color of adult horses captured during the Nellis Emergency Gather December 1989.

Color	#Horses	% of total
Black	78	14
Brown	105	19
Bay	169	31
Sorrel	165	30
Grey	10	2
Roan	1	0.2
Buckskin	12	2
Palomino	6	1
Pinto	1	0.2
Albino	2	0.4
Totals	549	99.8

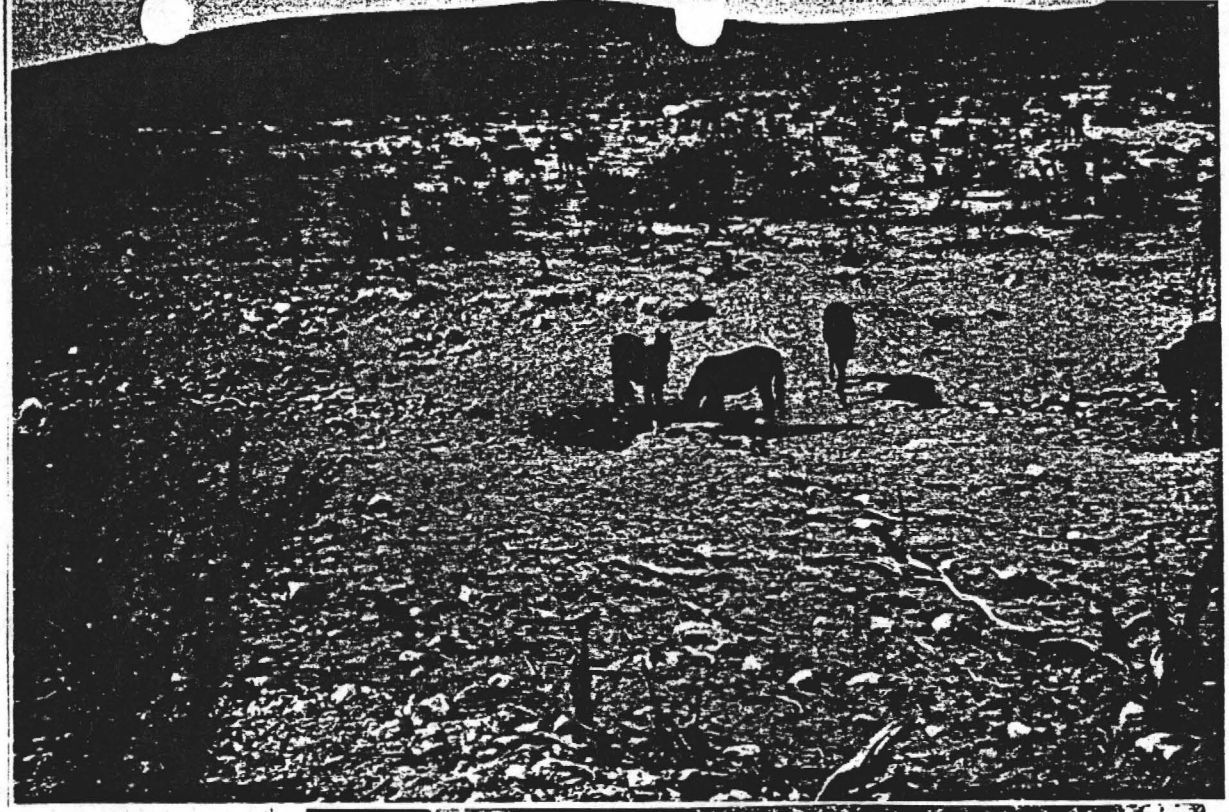
C. Water:

Table 6 is a compilation of the known perennial water sources on the Nevada Wild Horse Range. These sources have been visited within the past year and rate of flow has been measured or estimated. Rate of flow was used to calculate the number of horses that could water at a spring source allocating 10 gal/day/horse (Valentine 1980).

TABLE 6. Known Perennial Water Sources Nevada Wild Horse Range.

Spring source	Rate of flow	# Horses
Cliff Spring	2.8 gal/min	403
Cedar Well	0.25 gal/min	36
Rose Spring	2.5 gal/min	360
Silver Bow	1 gal/min	144
Tunnel Spring	0.125 gal/min	18
Corral Spring	0.125 gal/min	18
Spring	0.125 gal/min	18
Total		997

Calculations based on the available data show that sufficient water exists to water 997 horses. Water is a critical resource. Lack of sufficient drinking water is very stressful to horses as evidenced by the veterinarians' report on horse condition (November 1989) and the physiology from the emergency gather. Lack of water also effects utilization of vegetation. When horses must wait at the water source to obtain sufficient drinking water, severe over utilization and trampling of the vegetation and mechanical damage to the water source result. The damage to the riparian area at Silver Bow/ Breen Creek is a good example (see Fig. 1). In semi-arid environments it is much easier to prevent damage to the water and vegetative resources than to repair damage.



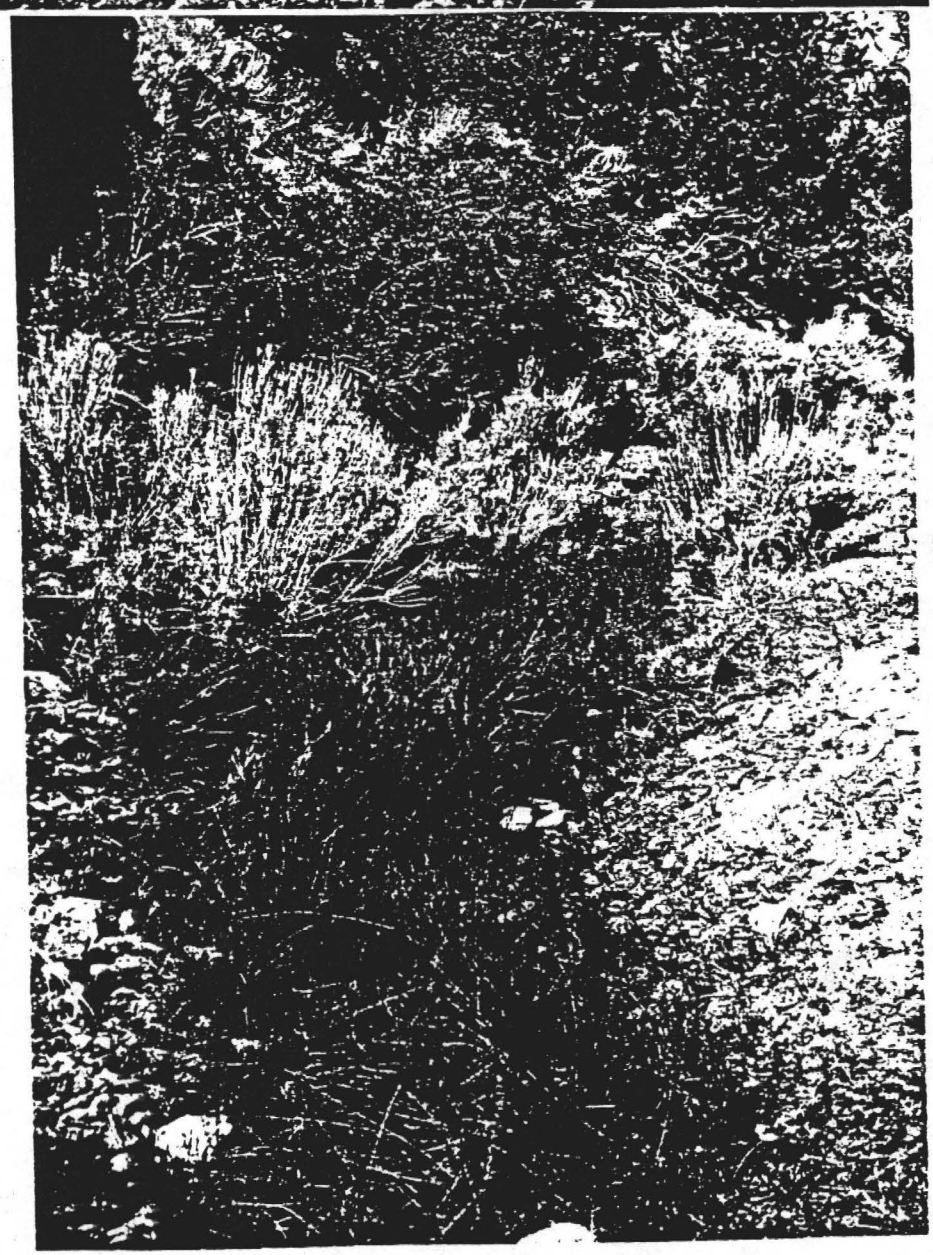
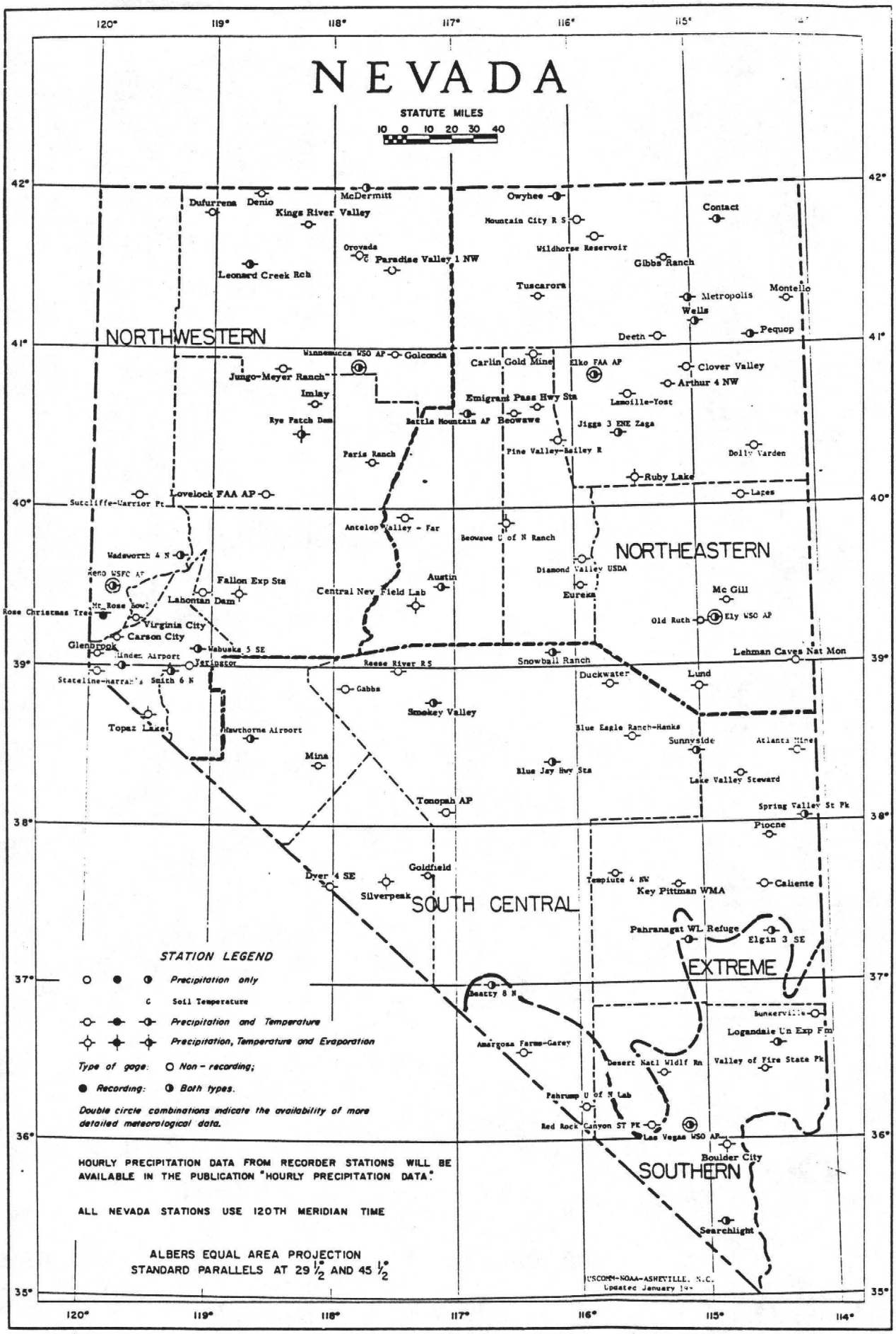


Figure 1. Riparian Areas at Silver Bow/Breen Creek (above) and Cliff Spring II (right). Note Extensive Mechanical Damage to Vegetation, Channel and Water Source Due to High Concentrations of Horses.


NEVADA
STATUTE MILES
10 0 10 20 30 40
120° 119° 118° 117° 116° 115° 114°
42° 41° 40° 39° 38° 37° 36° 35°
NORTHWESTERN
NORTHEASTERN
SOUTH CENTRAL
EXTREME
SOUTHERN
Dufurrena
Denio
McDermitt
Kings River Valley
Owyhee
Mountain City R S
Contact
Orovada
Paradise Valley 1 NW
Leonard Creek Rch
Wildhorse Reservoir
Gibbs Ranch
Tuscarora
Metropolis
Montello
Wells
Deeth
Pequop
Winnemucca WSO AP
Golconda
Carlin Gold Mine
Elko FAA AP
Clover Valley
Arthur 4 NW
Jungo-Meyer Ranch
Imlay
Emigrant Pass Hwy Sta
Lamoille-Yost
Rye Patch Dam
Battle Mountain AP
Beowawe
Jiggs 3 ENE Zaga
Pine Valley-Bailey R
Dolly Varden
Paris Ranch
Ruby Lake
Lages
Sutcliffe-Warrior Pt
Lovelock FAA AP
Antelope Valley - Far
Beowawe U of N Ranch
Wadsworth 4 N
Diamond Valley USDA
Reno WSFO AP
Fallon Exp Sta
Austin
Central Nev Field Lab
Eureka
Mc Gill
Lahontan Dam
Mt Rose Ski Bowl
Mt Rose Christmas Tree
Old Ruth
Ely WSO AP
Virginia City
Carson City
Glenbrook
Wabuska 5 SE
Lehman Caves Nat Mon
Minden Airport
Yerington
Reese River R S
Snowball Ranch
Duckwater
Lund
Stateline-Harrah's Smith 6 N
Gabbs
Smokey Valley
Topaz Lake
Hawthorne Airport
Blue Eagle Ranch-Hanks
Sunnyside
Atlanta Mine
Mina
Blue Jay Hwy Sta
Lake Valley Steward
Tonopah AP
Spring Valley St Pk
Pioche
Dyer 4 SE
Goldfield
Silverpeak
Tempiute 4 NW
Key Pittman WMA
Caliente
Pahranagat WL Refuge
Elgin 3 SE
Beatty 8 N
Bunkerville
Logandale Un Exp Frm
Amargosa Farms-Garey
Desert Natl Wldlf Rn
Valley of Fire State Pk
Pahrump U of N Lab
Red Rock Canyon ST PK
Las Vegas WSO AP
Boulder City
Searchlight
STATION LEGEND
Precipitation only
Soil Temperature
Precipitation and Temperature
Precipitation, Temperature and Evaporation
Type of gage: Non-recording;
Recording: Both types.
Double circle combinations indicate the availability of more detailed meteorological data.
HOURLY PRECIPITATION DATA FROM RECORDER STATIONS WILL BE AVAILABLE IN THE PUBLICATION "HOURLY PRECIPITATION DATA."
ALL NEVADA STATIONS USE 120TH MERIDIAN TIME
ALBERS EQUAL AREA PROJECTION
STANDARD PARALLELS AT 29 1/2° AND 45 1/2°
USCOMM-NOAA-ASHEVILLE, N.C.
Updated January 19--

GOLDFIELD NOAA AVE-START YR 1948, END YR 1988

MONTH	1982	1983	1984	1985	1986	1987	1988	1989	NOAA AVG
JAN	0.29	1.11	M	M	1.10	0.85	0.54	M	0.64
FEB	0.02	0.44	M	M	0.89	0.01M	0.46	0.38M	0.73
MAR	1.61	2.75	M	M	0.39	M	M	M	0.66
APR	0.44	0.92	M	M	0.45	M	3.16	0.00	0.52
MAY	0.15	0.05	M	0.00	0.00	2.57	0.15	1.82	0.54
JUN	0.72	0.00	M	0.00	0.00	0.05	1.30	0.94	0.35
JUL	1.05	M	M	M	0.03	0.16	0.03	0.02	0.49
AUG	1.12	M	M	0.00	0.74	0.32	1.45	1.48	0.48
SEP	0.28	M	M	0.55	0.00	0.03	0.55	0.36	0.61
OCT	0.39	0.04M	M	1.27	0.12	1.08	0.00	0.00	0.52
NOV	0.92	M	M	0.06	0.00	1.76	0.05	T	0.47
DEC	0.76	0.33	M	0.30	0.14	0.37M	0.35	0.00	0.27
TOTAL	7.75	5.64M	M	2.18M	3.86	7.20M	8.04	5.00	6.28

TONOPAH NOAA AVE-START YR 1954, END YEAR 1988

MONTH	1982	1983	1984	1985	1986	1987	1988	1989	NOAA AVG
JAN	0.57	1.09	0.04	0.54	M	0.47	0.57	0.17	0.34
FEB	0.17	0.66	0.02	0.14	M	0.51	0.14	0.38	0.47
MAR	0.78	2.21	0.08	0.43	M	1.33	0.16	0.21	0.46
APR	0.24	0.90	0.06	0.00	M	1.20	2.13	0.08	0.35
MAY	0.00	0.00	0.01	0.11	M	1.97	0.14	1.04	0.58
JUN	0.22	0.00	0.77	0.04	M	0.47	0.15	0.51	0.31
JUL	1.42	0.00	2.33	2.49	0.30	0.02	0.22	0.04	0.65
AUG	0.31	2.65	1.76	0.00	0.20	0.01	1.15	0.26	0.57
SEP	0.36	0.31	0.70	0.29	0.03	0.00	0.34	0.29	0.47
OCT	0.92	0.25	0.31	0.91	0.08	0.75	0.06	M	0.42
NOV	1.07	1.17	0.17	0.68	0.34	0.91	0.24	0.02	0.50
DEC	0.13	0.40	0.70	0.33	0.80	0.69	0.37	0.00	0.27
TOTAL	6.19	9.64	6.95	5.96	1.75	8.33	5.67	3.00	5.38

TWIN SPRINGS-FALLINI NOAA AVE-START YR 1986, END YR 1988

MONTH	1985	1986	1987	1988	1989	NOAA AVG
JAN		0.80	0.20	0.82	0.12	0.61
FEB		0.00	0.20	0.27	0.74	0.16
MAR		0.21	0.97	1.16	0.10	0.78
APR		0.15	0.54	1.69	0.00	0.79
MAY		0.00	1.34	0.51	2.97	0.62
JUN		0.00	0.00	0.55	1.02	0.18
JUL		0.45	0.42	0.00	0.01	0.29
AUG		1.03	0.00	1.51	0.96	0.85
SEP		0.00	0.00	0.32	0.00	0.11
OCT	1.00	0.45	2.00	0.10	0.00	0.85
NOV	0.10M	0.10	1.98	0.36	0.00	0.81
DEC	0.00	0.20	M	0.34	0.00	0.27
TOTAL	1.10M	3.39	7.65M	7.63	5.92	6.32

M=Insufficient or partial data. M is appended to average and/or total values computed with 1-9 daily values missing. M appears alone if 10 or more daily values are missing.

PAHUTE 1 - PRECIPITATION

MONTH	1982	1983	1984	1985	1986	1987	1988	1989
January	0.28	1.12	0.05	0.0	0.99	M	M	M
February	0.1	1.08	0.03	0.0	0.62	M	M	M
March	1.57	2.98	0.02	0.41	0.65	1.54	M	0.34
April	0.17	1.0	0.28	0.0	0.39	0.36	1.63	0.0
May	0.56	0.32	0.0	0.08	0.06	2.38	0.58	1.0
June	1.41	0.0	0.01	0.0	0.0	0.45	0.51	M
July	1.25	0.0	3.29	0.55	0.66	1.27	M	0.0
August	0.39	0.0	0.0	0.0	0.85	0.06	0.91	1.06
Septmber	1.98	0.0	0.1	0.42	0.07	0.08	0.22	0.13
October	0.65	0.0	0.18	0.23	0.57	1.63	0.0	0.06
November	0.84	0.0	0.59	0.58	0.44	2.13	0.15	0.0
December	0.11	0.0	0.48	0.21	M	M	M	0.0
TOTAL	9.31	6.5	5.03	2.48	5.3M	9.9M	4M	2.59M

Station Average = 6.3 inches

M = Insufficient or partial data. M is appended to average and/or total values computed with 1-9 daily values missing. M appears alone if 10 or more daily values are missing. (NOAA)

November 22,1989

Curtis Tucker
Bureau of Land Management
Caliente, Nevada 89008

Curtis Tucker:

On November 21, 1989 I traveled to the Nellis Range Complex at Cactus Flat to examine the condition of the wild horse population there. During the six hour drive on the range we may have seen as many as 800 horses. I would estimate at least 80% of these were underweight (ribs easily showing).

I was shocked to see the struggle that these horses had to endure to get a drink of fresh water at Rose Spring. At 11:30 AM there were perhaps 50 horses surrounding the spring. Horses had obviously been watering all morning and there was only a couple of gallons of fresh water left in the tank. There were 2-3 horses trying to get to that while stallions and mares were chasing other horses off. The overflow pond had ample water in it but there were 6-8 horses wading in it and the water was very muddy. These horses were getting their fill of water somehow and would run off if approached on foot.

We then traveled to Tunnel Spring where there was very little water available. The pipeline had apparently broke and the water trough would no longer fill. There was a small pool of water 3 feet across and 4 inches deep. This water is apparently being used by several small bands of horses and antelope and perhaps deer judging from the tracks. There were extensive trails to this meager water supply from all directions. We did see a large band of antelope leaving the spring but there were no horses present.

Our next stop Breen Creek, I was told, was the only other water source available for these horses on this Cactus Flat part of the range. There were approximately 100 head of horses watering there when we arrived. The only water present was what water happened to seep into a hoof print in the mud. These horses were not getting their fill of water. They would not run off when approached on foot. These were the most emaciated horses that I have ever seen. Mares with nursing foals at their side. The foals were in fair shape but the mares had severe wastage of the back, rump and leg muscles. There were weaned yearlings and two year olds barely able to stand up and hardly aware of our presence. I found 5 skeletons around this mudhole; four were yearlings and one was a 7 year old horse. We spent at least 30 minutes walking around the mudhole and there were at least 50 horses still waiting in the mud for a drink. As we left there were probably 20 to 30 horses trailing in to Breen Creek for a drink of water that did not exist.

The feed supply in my view was non existent for at least 4-5 miles from the mudhole. Sagebrush along Breen Creek that should have been 4-5 feet high was stripped of all leaves, branches and bark. The Shadscale plant and the Brigham Tea plant were extensively grazed down and the grass where present was nothing but crown and roots. The entire area was riddled with deeply cut trails that the horses use daily.

In my opinion there were several horses at Breen Creek that should have had euthanasia on the spot. Judging from the trails and the horses we saw coming and going there may be 400 to 600 horses at Breen Creek that are in a high risk group of starving and freezing to death this winter. In my judgement these horses are starved and stressed down to a point where they have very little body reserves left. A snowfall of 6-8 inches would easily cover all available vegetation. Add on this a week of sub zero temperatures and the majority of these horses could easily freeze to death. With no feed intake and no available body fat to call on these horses will not be able to keep warm.

In my mind there is no hope of any feed growth in the area till the middle of April and that growth is dependent on precipitation which has been in very short supply. That is asking those emaciated horses to hang on for 5 months before there will be any improvement in feed conditions.

I feel that these horses watering at Breen Creek are facing the probability of death this winter. Dry pregnant mares may abort or die in the foaling process. Weanlings and yearlings won't have the nutrition necessary to reach their full genetic potential. They will be short legged and stunted for the rest of their life. The entire herd will be more susceptible to disease and epidemics. The weak ones will die off and be gone but the entire population will suffer and be weakened because of lack of water and feed for the overpopulated herd.

I wish you alot of luck with your management task.

If I can be of any assistance please call me.

sincerely,

Dan Love D.V.M.

Dan Love D.V.M.

GERALD K. HU , D.V.M.
Equine Medicine & Surgery

November 29, 1989

Gentlemen:

On November 21, 1989, at the request of BLM officials, I visited the Nellis Bombing Range for the purpose of evaluating the condition of the wild horses in that area. My findings are as follows:

1. Breen Creek Area: Approximately 100 horses were observed in the immediate area of the "watering holes". All horses, other than the four or five foals, were in very poor to emaciated condition. Approximately ten horses were so severely emaciated that death would appear to be imminent and many of the others bordered on the same condition. I would expect a very high percentage of this 100 head to die within the next thirty days. The foals were in fair to poor condition and would be expected to further lose condition as soon as they are weaned. The individuals observed traveling to and from Breen Creek also appeared in very poor to emaciated condition; however, close observation was not possible. I observed no grass forage in the Breen Creek area. Sagebrush in the immediate area around the water hole was eated down to the stumps. The water supply was limited to several "seep" holes which provided only a few swallows at a time for the few individuals strong enough to crowd to the front.

2. Rose Springs: Horses in the Rose Springs area were in uniformly poor to very poor condition, with the exception of the foals. There was no grass forage in the area. I would expect the condition of the horses in this area to continue to deteriorate until the same situation exists as at Breen Creek if measures are not taken to decrease the population.

Summary:

It is obvious that there are far too many horses present on the range for the feed and water available. I would expect a high percentage of the population to die from starvation and/or water deprivation within the next three months. The most severely affected individuals are in the Breen Creek area where conditions are appalling and appear to have existed for some time.

2315 North Decatur Blvd. • Las Vegas, Nevada 89108 • (702) 647-6234

Recommendations:

Feed and water need to be supplied to the horses in the Breen Creek area immediately in order to prevent massive death loss. Further steps to drastically reduce horse numbers on the areas of the range I observed should be undertaken as soon as possible. The lack of forage and water is absolutely critical and any delay in remedying the situation will have disastrous results.

Sincerely,

G.K. Huff D.V.M.

Gerald K. Huff, D.V.M.

GKH:hd

P.S. These findings were submitted in oral form to Mrs. Julie Durfee on 11/21/89, Mr. Curtis Tucker on 11/22/89, Mr. Tim Murphy on 11/24/89, Mr. Dan Rathburn on 11/27/89, Mr. Bob Stewart on 11/28/89.

Schering-Plough Animal Health

Technical Services
21700 West Center Road
Elkhorn, Nebraska 68022
Telephone: (402) 331-3900
(800) 524-0826

January 9, 1990

Dr. Dan Love
Box 93
Caliente, NV 89008

Re: Diagnostic Service
Selenium & Copper Analysis
1-8-90

Client	Breed	Animal ID	Se PPM	Interpretation	Cu PPM	Interpretation
? L.M.	Horse	8	0.12	N	1.3	N
		9	0.12	N	1.0	N
		10	0.08	Clotted	1.8	N
		11	0.12	N	1.1	N

SELENIUM Interpretation of Results (for Cattle and Sheep)
0.01-0.04 = Deficient (D); 0.05-0.10 = Marginal (M); ≥0.11 = Normal (N)

SELENIUM Interpretation of Results (for Horses)
0.01-0.06 = Deficient (D); 0.07-0.09 = Marginal (M); ≥0.10 = Normal (N)

SELENIUM Interpretation of Results (for Pigs)
0.01-0.04 = Deficient (D); 0.05-0.11 = Marginal (M); ≥0.12 = Normal (N)

COPPER Interpretation of Results (for Cattle/Sheep/Horses/Pigs)
0.1-0.4 = Deficient (D); 0.5-0.6 = Marginal (M); ≥0.7 = Normal (N)

Siao-Kun (Jerry) Welch, DVM, Ph.D.
Supervisor, Technical Services

cc: A. Skibitsky, Sales Rep.
Case #2696

Date 12-13-1989

Client Name BLM #3

Address

7 year old, Stud, Sorrel, Lame

Charges

Right front foot has a contracted deep digital flexor tendon. Hoof badly mis-shaped. Toe worn down with a long heal.

Left (front) carpus has degenerative arthritis present with limited flexion. & Lameness.

Left front fetlock has a valgus deformation.

Horse is in poor flesh. Very little fat present.

Large numbers of parasites present

Approximately 50 bot Larva in pylorus & duodenum.

Many large Strongyles in dorsal & ventral colons.

Dan Love DVM

DAN LOVE, D.V.M.
P.O. BOX 98
CALIENTE, NEV. 89008
(702) 726-4430

Date 12/13/1989

Client Name BLM #4.

Address

4 month old, female, brown; draining tract over right shoulder.

	Charges
Fractured spine of the scapula with open tract to the skin. Osteomyelitis present.	
Filley is very malnourished. No milk in stomach.	
Very little renal or cardiac fat present.	
Pinworms present in descending colon.	

Dan Love DVM

DAN LOVE, D.V.M.
P.O. BOX 93
CALIENTE, NEV. 89008
(702) 726-4150

Date 12/13/1989

Client Name BLM # 5

Address

2 month, femal, sorrel w/flax mane & tail;
Unable to rise by itself.

Charges

Emaciated with a pot belly.
Orphaned- no milk in stomach
No body fat. Serous Atrophy of
Renal & cardiac fat.
Alot of parasited.
Large strongyles in dorsal & ventral
colons - numerous.
Pinworms in descending colon.

Dan Love DVM

DAN LOVE, D.V.M.
P.O. BOX 93
CALIENTE, NEV. 89008
(702) 723-4430

Date 12/13/1989

Client Name BLM #6

Address

4 month old, female, Bay; Captured on range by itself. Very lame on front legs. Walks very Stilt like with shoulders abducted & elbows adducted.

Charges

Emaciated with a pot belly.
Orphaned - no milk in stomach
Very little body fat.
Alot of strongyles present in dorsal & ventral colons.

Malformation of elbow joints particullarly left elbow. Erosion of cartilage on lateral trochlear & ridge of humerus & opposing surface of Radius & ulna.

Dan Love DVM

DAN LOVE, D.V.M.
P.O. BOX 98
CALIENTE, NEV. 89008
(702) 726-[illegible]

Date 12/13/1989

Client Name #7 BLM

Address

4 month, female, Brown; Weak unable to rise

Charges

Emaciated - pot belly
Orphaned - no milk in stomach
Serous Atrophy of cardiac fat very little other fat present
All sizes of Strongyle worms in dorsal & ventral colon

Dan Love DVM

DAN LOVE, D.V.M.
P.O. BOX 93
CALIENTE, NEV. 89008
(702) 723-4430

Date 12/13/1989

Client Name BLM #8

Address

6 month, female, sorrel; Alert but unable to sit up. Laying on side.

Charges

Emaciated - in very poor nutritional state

Serous atrophy of fat (cardiac)
Very little other body fat.
No evidence of any injuries.

Dan Love DVM

DAN LOVE, D.V.M.
P.O. BOX 93
CALIENTE, NEV. 89008
(702) 726-3407

Date 12/15/89

Client Name BLM #9

Address 5 yr Black Stallion

Charges

Severely emaciated.
Penis extended - not able to retract.
In loading into the trailer the horse went down & was unable to get back up.
Necropsy -
Very little fat on horse. No perirenal fat. Heart fat is gelatenous & turning brown.
Severe parisitism. Bots in pylorus & duodenum. Counted 50 in one mass. Could decrease passage of feed
Blood Chemistry shows
(1) Anemia & low iron; perhaps due to severe parasitism.
(2) Low blood protein (Albumin) & trace of ketones in urine ... probably due to the horse's emaciated state & metabolic catabolism... starvation.
(3) Urine specific gravity of 1.070 shows the horse was severely limited on its water consumption.

Dan Love DVM

DAN LOVE, D.V.M.
P.O. BOX [illegible]
[illegible]
[illegible]

APL VETERINARY LABORATORIES
4230 S. BURNHAM AVE., SUITE
LAS VEGAS, NEVADA 89
(702) 733-7866
TOLL FREE (800) 433-2750
JAMES K. KLAASSEN, DVM, PH.D.
DIRECTOR

AT BLM, EQUINE 9 — REFERRED BY APLV — 1510

DAN A LOVE, DVM
PO BOX 93
CALIENTE, NV 89008

AGE/SEX 6Y M
COLLECTED 12/15/1989 15:01
RECEIVED 12/18/1989 15:03
ACCESSION NO. C1262741
MED. RECORD NO. C000173364

TEST	RESULTS	FLG	REFERENCE RANGE	UNITS	LOW	NORMAL	HIGH
PATIENT IDENTITY NOT INDICATED ON SPECIMEN[S]							
NO COLLECTION TIME INDICATED.							
PROFILE 531							
GLUCOSE	93		41-108	MG/DL		X	
BUN	24		10-26	MG/DL		X	
CREATININE	1.5		0.5-2.5	MG/DL		X	
SODIUM	143		131-147	MEQ/L		X	
POTASSIUM	6.4	H	3.3-5.3	MEQ/L			X
CHLORIDE	102		93-109	MEQ/L		X	
CO2	25		20-28	MEQ/L		X	
ANION GAP	22	H	0-15	MEQ/L			X
OSMOLALITY, CALCULATED	292		275-300	MOS/KG		X	
SODIUM/POTASSIUM RATIO	22	L	27-35		X		
PHOSPHORUS	4.6		2.0-6.0	MG/DL		X	
CALCIUM	12.4		10.0-13.2	MG/DL		X	
TOTAL PROTEIN	5.7	L	5.9-7.5	G/DL	X		
ALBUMIN	2.0	L	2.7-4.6	G/DL	X		
GLOBULIN	3.7		2.8-4.0	MG/DL		X	
ALBUMIN/GLOBULIN RATIO	0.54	L	0.86-1.97		X		
TOTAL BILIRUBIN	0.7		0.5-2.5	MG/DL		X	
DIRECT BILIRUBIN	0.1		0.0-0.4	MG/DL		X	
INDIRECT BILIRUBIN	0.6		0.2-2.2	MG/DL		X	
ALKALINE PHOSPHATASE	84		60-210	IU/L		X	
AST (SGOT)	143	L	175-265	IU/L	X		
CPK	611	H	75-280	IU/L			X
GGTP	16		7-19	IU/L		X	
AMYLASE	58		7-95	UNITS		X	
LIPASE	0.1		0.0-3.0	UNITS		X	
CHOLESTEROL	40	L	78-120	MG/DL	X		
TRIGLYCERIDE	31		25-120	MG/DL		X	
MAGNESIUM	1.7		1.2-2.5	MG/DL		X	
IRON	50	L	90-300	UG/DL	X		
HEMOGRAM							
WBC	5.56		5.00-11.50	K/CMM		X	
RBC	5.45	L	7.50-11.50	M/CMM	X		
HEMOGLOBIN	9.7	L	12.0-17.0	G/DL	X		
HEMATOCRIT	28.0	L	35.0-52.0	%	X		
MCV	51.2	H	38.0-48.0	FL			X
MCH	17.8		14.0-19.0	PG		X	
MCHC	34.6		33.0-39.0	%		X	
DIFFERENTIAL							
PLATELET ESTIMATE	MOD DEC	*					
SEGMENTED NEUTROPHILS	12	L	29.0-60.0	%	X		
LYMPHOCYTES	[illegible]		[illegible]	%			X

APE VETERINARY LABORATORIES
4230 S. BURNHAM AVE., SU[illegible]
LAS VEGAS, NEVADA [illegible]
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TOLL FREE (800) 433-2750
JAMES K. KLAASSEN, DVM PH.D.
DIRECTOR

ENT BLM, EQUINE 9 — REFERRED BY APLV — 1510

DAN A LOVE, DVM
PO BOX 93
CALIENTE, NV 89008

AGE/SEX 6Y M — ACCESSION NO. C1262741
COLLECTED 12/15/1989 15:01 — MED. RECORD NO. C000173364
RECEIVED 12/18/1989 15:03

TEST	RESULTS	FLG	REFERENCE RANGE	UNITS	LOW	NORMAL	HIGH
URINALYSIS							
COLOR	BROWN						
APPEARANCE	CLOUDY						
SPECIFIC GRAVITY	1.070						
PH, URINE	7.5		7.0-9.0			X	
PROTEIN	NEGATIVE						
GLUCOSE	NEGATIVE						
KETONES	SMALL	*					
BLOOD	NEGATIVE						
LEUKOCYTE ESTERASE	NEGATIVE						
BILIRUBIN	2+	*					
WBCS	NONE			/HPF			
RBCS	NONE			/HPF			
CALCIUM OXALATE	FEW						
CALCIUM CARBONATE OBSERVED.							
FIBRINOGEN	312		100-400				X

Dehydrated. - Moderate anemia
hypoalbuminemia. Parasitism?

JKKlaassen

Date 12/18/89

Client Name BLM

Address #10 Emaciated - lame Right front leg -

Charges

2 yr. filley Bay
Swollen Right front fetlock - edema
Ventral adominal edema -
Serous atrophy of fat - perirenal & cardiac
Bots present in duodenum
Various worms present in intestines

Blood chemistry shows;

① Anemia & low blood iron probably due to severe parasitism.

② Low blood protein (Albumin) probably due to emaciated body condition. Also shown by serous atrophy of fat.

Dan Love DVM

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CALIENTE, NEV. 89008
(702) 726-[illegible]

APL VETERINARY LABORATORIES
4230 S. BURNHAM AVE., SUITE
LAS VEGAS, NEVADA 8
(702) 733-7
TOLL FREE (800) 433-2750
DIRECTOR

1510

IENT BLM #10, EQUINE

REFERRED BY APLV
DAN A LOVE, DVM
PO BOX 93
CALIENTE, NV 89008

AGE/SEX 2Y F
ACCESSION NO. 01265907
COLLECTED 12/18/1989 13:33
MED. RECORD NO. 0000175443
RECEIVED 12/20/1989 13:34

TEST	RESULTS	FLG	REFERENCE RANGE	UNITS	LOW	NORMAL	HIGH
PROFILE 531							
GLUCOSE	131	H	41-108	MG/DL			X
BUN	5	L	10-26	MG/DL	X		
CREATININE	0.8		0.5-2.5	MG/DL		X	
SODIUM	129	L	131-147	MEQ/L	X		
POTASSIUM	4.7		3.3-5.3	MEQ/L			X
CHLORIDE	97		93-109	MEQ/L		X	
CO2	26		20-28	MEQ/L			X
ANION GAP	11		3-15	MEQ/L			X
OSMOLALITY, CALCULATED	283	L	275-300	MOS/KG	X		
SODIUM/POTASSIUM RATIO	27		27-35			X	
PHOSPHORUS	2.7		2.3-5.0	MG/DL		X	
CALCIUM	8.9	L	10.0-13.2	MG/DL	X		
TOTAL PROTEIN	6.0		5.9-7.5	G/DL		X	
ALBUMIN	2.3	L	2.7-4.5	G/DL	X		
GLOBULIN	4.0		2.3-4.0	MG/DL			X
ALBUMIN/GLOBULIN RATIO	0.58	L	0.86-1.97		X		
TOTAL BILIRUBIN	0.5		0.3-2.5	MG/DL		X	
DIRECT BILIRUBIN	0.1		0.0-0.4	MG/DL		X	
INDIRECT BILIRUBIN	0.5		0.2-2.2	MG/DL		X	
ALKALINE PHOSPHATASE	36		62-210	IU/L		X	
AST (SGOT)	201		175-265	IU/L		X	
CPK	123		75-280	IU/L		X	
GGTP	14		7-42	IU/L			X
AMYLASE	33		7-95	UNITS		X	
LIPASE	0.1		0.0-3.0	UNITS		X	
CHOLESTEROL	51	L	73-120	MG/DL	X		
TRIGLYCERIDE	15	L	25-120	MG/DL	X		
MAGNESIUM	1.3		1.2-2.5	MG/DL		X	
IRON	24	L	90-300	UG/DL	X		
ABNORMAL RESULTS] CONFIRMED BY REPEAT ANALYSIS.							
HEMOGRAM							
WBC	10.98		5.00-11.50	K/CMM			X
RBC	5.19	L	7.50-11.50	M/CMM	X		
HEMOGLOBIN	9.1	L	12.0-17.0	G/DL	X		
HEMATOCRIT	23.7	L	32.0-45.0	%	X		
MCV	45.5		38.0-48.0	FL			X
MCH	17.5		14.0-18.0	PG			X
MCHC	38.3	H	33.0-38.0	%			X
RESULT CONFIRMED BY REPEAT ANALYSIS							
DIFFERENTIAL							
PLATELET ESTIMATE	NORMAL						
SEGMENTED NEUTROPHILS	77	H	30.0-63.0	%			X
LYMPHOCYTES	17	L	30.0-65.0	%	X		
MONOCYTES	4		0.0-5.0	%		X	
EOSINOPHILS	NORMAL						
MICRO EST PLATELETS	ADEQUATE						

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1510

CLIENT BLM #10, EQUINE

REFERRED BY APLV
DAN A LOVE, DVM
PO BOX 93
CALIENTE, NV 89008

AGE/SEX 2Y F
COLLECTED 12/18/1989 13:33
RECEIVED 12/20/1989 13:34

ACCESSION NO. 01265907
MED. RECORD NO. 0000175443

TEST	RESULTS	FLG	REFERENCE RANGE	UNITS	LOW	NORMAL	X	HIGH
FIBRINOGEN	417	H	100-400					

Date 12/18/1989

Client Name BLM #91

Address

6 year old, Mare, Black; unable to stand

Charges

Milk present in udder.
In very poor body condition.
Gelatinous edema through rear legs.
Parasites present.

Chemistry findings:

① Low blood iron perhaps due to parasitism & blood loss.

② Low blood protein (Albumin) probably due to poor body condition.

Dan Love DVM

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...llege of Veterinary Medicine
Washington State University
P.O. Box 2037 College Station
Pullman, WA 99163-0901
Phone: (509) 335-9696

Return address for use with window envelope.
Please use black ink and type or print clearly.

Veterinarian:	
Clinic:	DAN LOVE, D.V.M.
Street:	P.O. BOX 93
City:	CALIENTE, NEV. 89008 State: (702) 728-4430 Zip:
Date Mailed:	Phone: ( )

Owner:	BLM - Horse #11
Street:	
City: Caliente	State: Nev. Zip: 89008
County:	Phone: ( )

WADDL #: 89-14055
Date Received: 12-26
Clinic #: 22230
Diagnostician: TG
Date Completed: 12-28
Invoice #:
4
1725-5

Please fill out as completely as possible:

Specimens submitted: Heart, kidney, adrenal, liver, muscle

Tests Requested:
- ☐ Necropsy
- ☒ Histopathology
- ☐ Virology
- ☐ Serology
- ☐ Bacteriology (Culture/Sensitivity)
- ☐ Toxicology
- ☐ Parasitology
- ☐ Other:

Species	Breed	Age	Sex	Location of lesion	No. in group
Equine	Wild Horse	6 yr	F		
No. dead	**No. sick**	**No. on premises**		**Duration of problem**	**Vaccinations**

Additional History: *Signs, stress factors, treatments, post mortem findings, pertinent feed or feed additives, clinical lab results. (Attach additional sheets as necessary.)*

Mare missing a foal. Weak unable to stand on rear legs. Emaciated.

(2 sections) Liver has scar tissue on capsule - fibrin tags -

Adrenal gland -

Renal tissue

Myocardium near coronary artery - fat appears gelatinous. Fat on rest of body is scant, dark yellow to brown.

Cross section of rectus femoris muscle in rear leg.

Conditions Suspected:

Clinician's Signature: Dan Love DVM

WADDL 06.3-31

HISTOPATHOLOGY REPORT: 12-28-89 WADDL #89-14055

Skeletal muscle: One microscopic focus involving two myofibers was found. The two were necrotic and infiltrated by plasma cells and macrophages.

Kidney, heart, adrenal gland: NSL.

Pancreas: Most acinar cells were depleted of zymogen granules.

Liver: Small cytoplasmic lipid vacuoles were present in many hepatocytes. A few tiny aggregates of plasma cells and lymphocytes were scattered in the parenchyma.

Adipose tissue associated with organs: The lipid vacuoles were reduced in size and replaced by proteinaceous fluid.

The lack of lesions caused by infectious lesions would suggest a metabolic/nutritional problem.

HISTOLOGIC DIAGNOSIS:

1. Open

Dr. A. M. Gallina/jc
Diagnostician
0000

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1510

PATIENT BLM, EQUINE #11
AGE/SEX 6Y F
COLLECTED 12/20/1989 13:48
RECEIVED 12/20/1989 13:49
ACCESSION NO. 01265960
MED. RECORD NO. 0000175495

REFERRED BY APLV
DAN A LOVE, DVM
PO BOX 93
CALIENTE, NV 89008

TEST	RESULTS	FLG	REFERENCE RANGE	UNITS	LOW	NORMAL	HIGH
PROFILE 531							
GLUCOSE	123	H	41-108	MG/DL			X
BUN	23		10-26	MG/DL		X	
CREATININE	1.6		0.5-2.5	MG/DL		X	
SODIUM	123	L	131-147	MEQ/L	X		
POTASSIUM	4.4		3.3-5.3	MEQ/L		X	
CHLORIDE	84	L	98-109	MEQ/L	X		
CO2	29	H	20-28	MEQ/L			X
ANION GAP	14		8-16	MEQ/L			X
OSMOLALITY, CALCULATED	252	L	275-300	MOS/KG	X		
SODIUM/POTASSIUM RATIO	28		27-35			X	
PHOSPHORUS	3.5		2.0-5.0	MG/DL		X	
CALCIUM	10.1		10.0-13.2	MG/DL		X	
TOTAL PROTEIN	6.8		5.9-7.5	G/DL		X	
ALBUMIN	2.5	L	2.7-4.6	G/DL	X		
GLOBULIN	4.3	H	2.8-4.0	MG/DL			X
ALBUMIN/GLOBULIN RATIO	0.58	L	0.86-1.97		X		
TOTAL BILIRUBIN	1.3		0.5-2.5	MG/DL		X	
DIRECT BILIRUBIN	0.1		0.0-0.4	MG/DL		X	
INDIRECT BILIRUBIN	1.2		0.2-2.2	MG/DL		X	
ALKALINE PHOSPHATASE	76		30-210	IU/L		X	
AST (SGOT)	408	H	175-265	IU/L			X
CPK	2472	H	75-280	IU/L			X
GGTP	15		7-19	IU/L		X	
AMYLASE	216	H	7-95	UNITS			X
LIPASE	0.1		0.0-3.0	UNITS		X	
CHOLESTEROL	61	L	73-120	MG/DL	X		
TRIGLYCERIDE	17	L	25-120	MG/DL	X		
MAGNESIUM	1.2		1.2-2.5	MG/DL		X	
IRON	59	L	90-300	UG/DL	X		
SPECIMEN APPEARS HEMOLYZED							
ABNORMAL RESULT[S] CONFIRMED BY REPEAT ANALYSIS.							
HEMOGRAM							
WBC	6.10		5.00-11.50	K/CMM		X	
RBC	7.80		7.50-11.50	M/CMM		X	
HEMOGLOBIN	14.8		12.0-17.0	G/DL		X	
HEMATOCRIT	39.6		35.0-52.0	%		X	
MCV	50.8	H	38.0-48.0	FL			X
MCH	18.9		14.0-19.0	PG			X
MCHC	37.2		33.0-39.0	%		X	
SPECIMEN INCORRECTLY SUBMITTED IN HEPARINIZED TUBE							
RESULTS MAY BE INACCURATE							
DIFFERENTIAL							
PLATELET ESTIMATE	MOD DEC	*					
SEGMENTED NEUTROPHILS	57		29.0-60.0	%			X
LYMPHOCYTES	43		30.0-67.0	%			
RBC PRESENT IN ROULEAUX FORMATION.							

PRINTED DATE/TIME: 12/21/1989 08:47 ( ) PAGE 1 OF