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Twin Peaks Allotment #00701

1992-1993 Evaluation Summary

Bureau of Land Management
Susanville District
Eagle Lake Resource Area

February 28, 1994

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TWIN PEAKS ALLOTMENT #00701
EVALUATION SUMMARY

Susanville District Bureau of Land Management, Eagle Lake Resource Area
January 18, 1994

I. INTRODUCTION AND PURPOSE

The Record of Decision (ROD) for the Cal-Neva Management Framework Plan (MFP) was issued in August 1982. This decision established management levels for livestock and wild horses and burros. The ROD and a subsequent grazing decision issued in June, 1983, established the Twin Peaks Allotment and provided guidance for the allotment management plan which was approved in March, 1985. After the Twin Peaks Allotment Management Plan (AMP) was issued, it become apparent to BLM that the management actions in the AMP did not specify livestock management actions in sufficient detail to allow for wildlife habitat objectives stated in the MFP to be met. In March, 1992, the AMP was modified by decision which implemented a Grazing Agreement between the permittees and the BLM to provide additional short-term specific livestock management practices for the Twin Peaks Allotment.

Also, on March 6, 1992, a Decision Record supported by an environmental assessment entitled: "Concerning Grazing in the Twin Peaks Allotment" was completed. This Decision Record states: "The following are the short-term management objectives under which grazing use on the Twin Peaks Allotment will be monitored and evaluated:

1) Utilization of key streambank riparian plant species shall not exceed 40% on Buffalo, Parsnip and Smoke Creek.

2) Utilization of key plant species in wetland riparian habitats shall not exceed 40%.

3) Utilization of key mountain browse and grass species in the upland habitats shall not exceed 60%.

The purpose of this document is to evaluate the livestock and wild horse and burro grazing that has occurred on Twin Peaks Allotment since the March, 1992, Decision Record was issued and to measure effectiveness in meeting short term specific management objectives identified in the Decision Record. Included will be recommended management actions to make specific short term changes in current management where these short term objectives were not met.

II. ALLOTMENT EVALUATION BACKGROUND

A. Evaluation Period: 1992 to 1993.

B. Selective Management Category and Priority: Improve (I), High.

III. INITIAL STOCKING LEVELS

A. Livestock Use

1. Land Use Plan Objective (AUM's)

a.	Total Preference -	20,500
b.	Suspended -	7,468
c.	Active -	13,063

2. Season of Use - March 1 through December 31.

3. Livestock Kind/Class - Cow/calf, Sheep (ewe/lamb).

4. There are two livestock permittees in the allotment. Specific grazing preference by permittee is as follows:

ESPIL SHEEP COMPANY:

Number	Kind	Period of Use	% PL*	Active AUMs
954	Cattle	03/01 to 12/31	100	9,540
4000	Sheep	04/01 to 05/30	100	1,600
2000	Sheep	06/01 to 06/30	100	400
2000	Sheep	09/16 to 09/30	100	200
4000	Sheep	10/01 to 10/15	100	400

LAVER RANCHES:

Number	Kind	Period of Use	% PL*	Active AUMs
108	Cattle	05/01 to 10/31	100	648
10	Cattle	05/01 to 10/31	EOU**	100

* %Public Land
** Exchange of Use

B. Wild Horse and Burro Use

The Twin Peaks Herd Management Plan (HMAP) (1989) guides management for wild horses and burros in the allotment. The animals will be managed at a level to maintain a thriving natural ecological balance and to prevent deterioration of the range. In 1988, the Buffalo Hills Technical Review Team recommended that the HMAP be divided into five individual subherds (Home Ranges). Twin Peaks allotment encompasses three of the five Home Ranges within the HMAP. The division of home ranges is based on geographic areas, or allotment and pastures fences that may be limiting the exchange of horses between herds.

The Appropriate Management Levels (AML) are 5,136 AUM's for wild horses and burros within the allotment. The Twin Peaks North Home Range AML were determined via a formal monitoring information analysis. The remaining Home Ranges were planned

population levels determined via the LUP process. Refer to Table 1 for current AML's for the Home Ranges.

Table 1
Current Appropriate Management Levels for Home Ranges within the Twin Peaks Allotments

	CURRENT APPROPRIATE MANAGEMENT LEVELS				
HOMES RANGES	HORSE POP.	BURRO POP.	TOTAL	%*	ACRES
TWIN PEAKS NORTH	150-180	22-42	177-122	49%	220,048
SKEDADDLE	75-108	10-15	85-123	29%	75,451
DRY VALLEY RIM	50-72	15-22	65-94	22%	112,051
TOTALS			327-439	100	408,550
*Percentages of Home Range AML within the Twin Peaks Allotment.					

Refer to Map 1 (attached), for wild horse HMA boundaries.

IV. ALLOTMENT PROFILE

A. Description

The Twin Peaks Allotment is located approximately 30 miles east of Susanville, California. The allotment lies in both California and Nevada. The allotment was established by Notice of Final Decision dated June 24, 1983 and was formally part of the Cal-Neva Common Summer Range and Winter Range Allotments. The major geographic boundaries of the allotment are the Smoke Creek Desert to the east, Honey Lake Valley to the south, Buckhorn Road and Surprise Resource Area to the north, and Observation and Deep Cut Allotments to the west.

The allotment topography is generally broken with numerous drainages, steep side slopes and narrow ridges. Undulating plateaus and small basins also occur. Soils are typically of volcanic origin. Rock outcrops, talus flows and volcanic rims combine with the stony soils to make the terrain extremely rough. The dominant mountains are Skedaddle Mountain (7,600 feet) in the southern end of the allotment and Rowland Mountain (7,200 feet) in the northern end. Elevation is generally ranges from 4,500 to 6,000 feet. Smoke Creek, Buffalo Creek, and their tributaries are the main perennial waters in the allotment. Numerous springs and seeps also are present throughout most of the allotment. Other water sources include pit reservoirs, detention reservoirs and wells.

B. Acreage

1. Allotment Totals

Acreage	Land Status
365,000	Public land (113,920-CA: 251,080-NV)
6,440	Private land - John Espil Sheep Company
480	Private land - Laver Ranches
13,600	Other Private
385,522	TOTAL

The allotment is authorized for grazing based on 100 percent public land except for 480 acres under an exchange of use agreement for unfenced private land. There are many isolated parcels of unfenced private land in the allotment that are not under BLM administration.

C. AMP Livestock Management Practices

1. Basic Cattle Operation

The grazing system employed for cattle is a two-pasture deferred-rotation. The system allows the entire allotment to be grazed every year with the late pasture being deferred until the approximate phenology stage of seed dissemination for key grass species. Espil's and Laver's cattle graze in common.

Espil's full permitted livestock numbers are not turned out on March 1. They are staggered out in bunches ranging from 40 to 200 or more, and usually reach full numbers in June. To remove all cattle by December 31, gathering starts in November. The cattle are gathered in bunches, and herded back to the home ranch.

Laver Ranches normally delays their cattle turnout, sometimes as late as July. This delay is due in part to Laver's desire to graze in the south pasture near their private lands.

2. North Pasture Cattle Management Practices

a. Prior to April 1, all cattle, Espil's and Laver's, are to be turned out in the area east of Buffalo Creek and northeast of Burro Mountain.

b. After April 1, cattle can be turned out in any location of the north pasture except the Parsnip Management Area.

c. After July 1, cattle can be moved to the south pasture.

d. In even numbered years, up to 225 Espil cattle will be authorized to graze in the north pasture from April 15 to December 31 provided the total number of cattle does not exceed the numbers provided for in the

basic operation and flexibility sections of the AMP.

e. In even-number years, any cattle using Rowland Mountain subunit will be placed east of Rowland Mountain, including Hole-In-The-Ground with minimal use of the Norton Place. Cattle movement and drift to the west largely will be restricted by rimrocks on the east side of Rowland Mountain.

f. In odd-numbered years, any cattle using Rowland Mountain subunit will be placed on the west side of Rowland Mountain, thus avoiding east Rowland Mountain and the Hole-In-The-Ground area with some use of the Norton Place.

g. Up to 200 cattle will be authorized to use Lower Smoke Creek area from March 1 to April 30, annually, subject to the terms and conditions of the permit.

3. South Pasture Cattle Grazing Operation

a. Prior to April 1, all cattle, both Espil's and Laver's are to be turned out in the area east of Dry Valley Rim and south of Burro Mountain.

b. Prior to June 1 and after April 1, Laver's recommended turnout areas are either East Fork of Skedaddle Creek and/or Spencer Basin.

c. Prior to June 1, no cattle can be turned out in the Bull Flat/Skedaddle Basin Management Area.

d. After July 1, cattle can be moved to the north pasture.

4. Sheep Grazing Operation

Sheep use is primarily for spring lambing and secondarily for fall trailing. Sheep can use the entire allotment except for the following special conditions:

a. When cattle turnout in the south pasture and a lamb band stays through the full season (7/1 to 9/15), one band can not use the management areas (Parsnip, Bull Flat/Skedaddle) before June 1.

b. The 500 head dry band will be able to use Skedaddle Mountains every other year between June 15 and August 1. Alternate areas of use are Dry Valley Rim, Five Springs Mountain, and the north pasture of Twin Peaks Allotment.

c. Sheep are to be herded away from aspen stands.

V. SUMMARY OF STUDIES AND DATA ANALYZED

A. Actual Use

1. Livestock

Use was taken from actual use reports, and compliance records. Use is presented by pasture for the years 1992 to 1993 in Table 2.

2. Wild Horses

Actual use was estimated from census data conducted on the allotment during the past several years and also is shown on Table 2. Generally, the horses and burros are in good physical condition with few deformities or physical defects. Herd numbers are increasing at approximately 17 percent per year, depending on the severity of weather occurring in any one year. Only animals counted during census flights on the Home Ranges were considered to be using the allotment. Although some horse interchange is known to occur between the Buffalo Hills HMA and the Twin Peaks North Home Range, the extent of this interchange is unknown.

Table 2
Actual Use Summary for 1992 and 1993.

UNIT	ESTIMATED LIVESTOCK AUMS	ESTIMATED WILD HORSE & BURRO AUMS	TOTAL ESTIMATED USE (AUMS)
1993 NORTH PASTURE	1,427-SHEEP 4,817-CATTLE	4,226	10,470
1993 SOUTH PASTURE	1,567-SHEEP 1,792-CATTLE	3,256	6,615
1992 NORTH PASTURE	1,846-SHEEP 1,252-CATTLE	6,528	9,626
1992 SOUTH PASTURE	1,008-SHEEP 4,212-CATTLE	2,702	7,922

B. Precipitation

Precipitation data were collected from three locations: Susanville Airport, Bull Flat, and near Heller Ranch. Precipitation data from the Susanville Airport, the only location with long term data (see Appendix 1), was used to adjust the utilization levels for the allotment evaluation years. This was done in accordance with the method

described by Sneva and Britton (1983), and recognizes the correlation between effective precipitation received and plant growth.

The first step was to calculate the crop year index, which is the effective precipitation for plant growth occurring between September and June of each year. The crop year index was then divided by average precipitation to determine the precipitation index for each year. The yield index was then determined from the precipitation index. The yield index was then multiplied by observed utilization. The result of this is a utilization level adjusted for precipitation to show what expected utilization might have been on vegetation during an average precipitation and therefore, average growth year, which in Appendix 2 is described as the "stocking factor."

C. Utilization

1. Key Area

Utilization was collected on key areas located on the uplands and on riparian areas using the Key Forage Plant Method. In some instances on riparian areas, the stubble height method was used in addition to or in place of the Key Forage Plant Method. Upland browse use information was also collected on bitterbrush using the Cole Browse Method.

2. Use Pattern Mapping

In conjunction with key area utilization data, the majority of the allotment was use pattern mapped using as many five classes of use: no use (0%), light use (01-40%), moderate use (41-60%), heavy use (61-100%), and low production areas. Use pattern mapping was conducted for the years 1992 and 1993, for the majority of the allotment. This use pattern map information data is available at the Eagle Lake Resource Area Office.

VI. CONCLUSIONS

A. Objective Attainment Determination and Rationale

1) *Utilization of key streambank riparian plant species shall not exceed 40% on Buffalo, Parsnip and Smoke Creek.*

Objective not attained in 1992 or 1993. Utilization information indicates that streambank riparian vegetation was over grazed in 1992 and 1993.

2) *Utilization of key plant species in wetland riparian habitats shall not exceed 40%.*

Objective not attained in 1992 and 1993. This determination was based on use pattern mapping and utilization information collected at riparian areas

(springs, seeps and streams). The utilization level was exceeded at 90% of the riparian areas in 1992 and 1993. Based on actual use data, livestock contributed approximately 46% of this use in the north pasture and 59% in the south pasture. Wild horses and Burros contributed approximately 54% of this use in the north pasture and 41% of use in the south pasture.

It is estimated that by area, less than five percent of the allotment is occupied by riparian vegetation.

3) *Utilization of key mountain browse and grass species in the upland habitats shall not exceed 60%.*

Objective not attained in 1992. Utilization objectives for the key species (bitterbrush) were exceeded on nearly all transects. Spring grass and forb production was extremely low in 1992 due to drought, causing overuse of browse. For 1993, utilization objectives for bitterbrush were not exceeded on transects measured. It is noted, however, that utilization on key grass species on upland habitats were exceeded only on approximately 2 percent of the allotment, by area, in both years.

VII. IDENTIFIED ISSUES, RECOMMENDATIONS AND RATIONALE

This section lists identified issues, and recommendations for managing the allotment. Some solutions are specific to subunits or pastures.

A. Identified Issues

1. Utilization information indicates that there is uneven distribution of grazing resulting in heavy to severe use on most riparian areas within the allotment. Livestock contributed from 46 to 59% of the overuse. Periodic census inventories of wild horses show that existing populations are contributing 41 to 54% of the overuse in the allotment.

2. Compliance records suggest that this large allotment, which has few structures such as fencing, and few natural barriers, provides little area-specific livestock control. This allotment's existing infrastructure is a causative factor that contributes to overuse of most its riparian areas. Existing livestock and wild horse and burro management has failed to prevent overuse of most riparian areas during the evaluation period.

3. Two years of use pattern mapping indicates slight to light use by livestock and wild horses in large portions of the allotment.

B. Short Term Recommendations

1. Planning Compartments

For purposes of current and future communication and planning, divide the allotment into 13 Planning Compartment (PC's) based on resources present and other factors. These Planning Compartments are shown on Map 2 and are named as follows: Smoke Creek, Rowland Mountain, Painter Flat, Stone Corral, Black Mountain, Chimney, Buffalo, Buffalo Hills, Salt Marsh, Dry Valley, Dry Valley Rim, Skedaddle, and Five Springs.

2. Adjust Season of Use for Cattle.

To accomplish the utilization objective on riparian areas, adjust the season of use from 03/01 - 12/31 to 04/15 - 6/30 and 10/01 - 02/28 for cattle. Refer to the summary below for cattle use by season of use and area of use.

Summary: Recommended Cattle Season of Use by Planning Compartments

Spring Use (4/15 - 6/30) areas: Dry Valley Rim, Skedaddle Mountain, Lower Smoke Creek, Rowland, Stone Corral

Fall Use (10/1 - 12/31) areas: Buffalo Hills, Buffalo, Painter, Stone Corral, Five Springs, Chimney, Skedaddle Mountains.

Winter Use (01/01 - 2/28) areas: Salt Marsh, Dry Valley, Five Springs.

There is a strong tendency for cattle to concentrate in riparian areas during the hot, and often dry, summer months, resulting in overuse of riparian vegetation and light use on the uplands. The seasons of use recommended would help alleviate the disparity in utilization levels observed between upland and riparian areas. Cattle would not be as concentrated in the riparian areas when air temperatures are cooler in the fall, and cattle use would be more evenly distributed in the spring when the forage moisture content in the riparian areas is similar to the uplands (Kinch 1989). Further, the majority of cattle use would then occur when soils are sufficiently firm to withstand trampling impacts. The spring season of use followed by rest would also allow sufficient time to provide for vigor and regeneration in all riparian plants.

In the fall, livestock distribution improves when heavy frosts have "browned of" all vegetation. Riparian vegetation is no longer more desirable or palatable (Clary et al. 1989). The fall and winter season of use would result in the majority of the grazing occurring during plant dormancy, particularly for grasses.

3. Adjust Livestock Use to reflect a Revised Desired Stocking Level

To meet the utilization objectives, authorize livestock stocking levels to those levels identified in Tables 3 and 4, as determined by the desired stocking rate for livestock and wild horses and burros for the evaluation period. The desired stocking rates were determined by using the desired stocking rate formula for the combined use of all users multiplied by the crop yield index and the utilization level measured on key areas or obtained from use pattern maps. The recommendation is to authorize

livestock use to levels of use and in planning compartments identified in Table 4.

Actual Use (AUMs) = Desired Use (AUMs)
KMA % Utilization = Desired % Utilization

Table 3
Recommended 1994 Adjusted Stocking for Livestock, Wild Horses and Burros

SUMMARY OF CALCULATED STOCKING RATES IN THE TWIN PEAKS ALLOTMENT				
	AUMS	AUMS	AUMS	AUMS
USER	Cattle	Sheep	Horses/Burros	Totals
DEMAND	10,580	2,850	5,136	18,566
DESIRED STOCKING RATE	7,613	2,004	3,740	13,357
REDUCTION	2,967	846	1,396	5,209

Demand for livestock is active preference, and for wild horses and burros demand is current Appropriate Management Level (AML).

Information and calculations use to determine the desired stocking rates are summarized in Appendix 2, and are based on actual use, utilization data, and precipitation data collected for the Twin Peaks Allotment during 1992 and 1993.

The desired stocking rate results in a 28% reduction from demand, per user.

Table 4 - Livestock Recommendations

A. Espil Sheep Company

Adjust grazing preference and livestock use as follows:

Preference

From:	Active	Suspended		Total
	12,760	6,739		19,499
To:	Active	Suspended	Nonuse	Total
	9,160	6,739	3,600	19,499

Livestock Use For 1994

Planning Comp.	No.	Kind	Period of Use	%PL	AUMs Active
Skedaddle Dry Valley Rim	954	Cattle	04/15 to 06/30	100	2415
Painter Flat Black Mountain	954	Cattle	10/01 to 12/31	100	2886
Buffalo, Buffalo Hills, Salt Marsh, Dry Valley.	954	Cattle	01/01 to 02/28	100	1850
North Pasture	2000	Sheep	04/01 to 05/31	100	802
South Pasture	2000	Sheep	04/01 to 05/31	100	802
North Pasture	4000	Sheep	10/01 to 10/15	100	395

Smoke Creek, Stone Corral, Chimney, and Rowland Mountain Planning compartments shall be rested from cattle grazing in 1994.

B. Laver Ranches

Adjust grazing preference and livestock use as follows:

Preference

	Active	Suspended	Nonuse	Total
From:	670	362		1,032
To:	457	362	213	1,032

Livestock Use For 1994

Planning Comp.	No.	Kind	Period of Use	%PL	AUMs Active
Skedaddle Five Springs	91	Cattle	10/01 to 02/28	100	452

C. Summary of Stocking Rate Adjustments for Cattle by Permittee, effective in March 1, 1994.

Permittee	Active Preference	Adjusted Preference	Nonuse
John Espil Sheep Co.	9,910	7,156	2,754
Laver Ranches	670	457	213
Totals	10,580	7,613	2,967

----------End of Table 4----------

4. Adjust Numbers of Wild Horses

Based on monitoring information the recommendation is to reduce the current population of wild horses and burros for the Home Ranges within the Twin Peak Allotment as identified in Table 5. Those figures represent the maximum numbers of wild horses and burros for each Home Range. The lower AML is necessary to alleviate overuse in riparian areas and would provide for a viable herds, and would also provide for a thriving ecological balance in the Home Ranges ensuing healthy vegetation and habitat for wild horses and burros, livestock and wildlife. These conclusions are based on our observations of utilization, actual use, and climate.

5. Change Class of Livestock

To accomplish the short term management objectives listed in the Decision Record and to improve livestock distribution it is recommended that the permittees change a portion of their cow/calf herd to steers (Swanson, Sherman 1986). Steers tend to graze a greater distance from water which would, therefore, improve distribution.

C. Additional Monitoring Data Required

1. Collect use pattern data at the end of each use period per pasture with emphasis on those PC's with significant wildlife and wild horses.

2. Determine ecological status of upland key areas, key springs/wet meadows. Collect additional utilization data at key springs/wet meadows.

3. Determine the amount of mule deer and livestock dietary overlap.

Literature Cited:

Sneva, Forest, and C.M. Britton, 1983. Adjusting and Forecasting Herbage Yields in the Intermountain Big Sagebrush Region of the Steppe Province. Agricultural Experiment Station Oregon State University, Station Bulletin 659. P. 61.

Kinch, Gene, 1989. Grazing Management in Riparian Areas. USDI-BLM Technical Reference 1737-4.

Clary, Warren, P and Bert F. Webster, 1989. Managing Grazing of Riparian Areas in the Intermountain Region. Intermountain Research Station, General Technical Report INT-263.

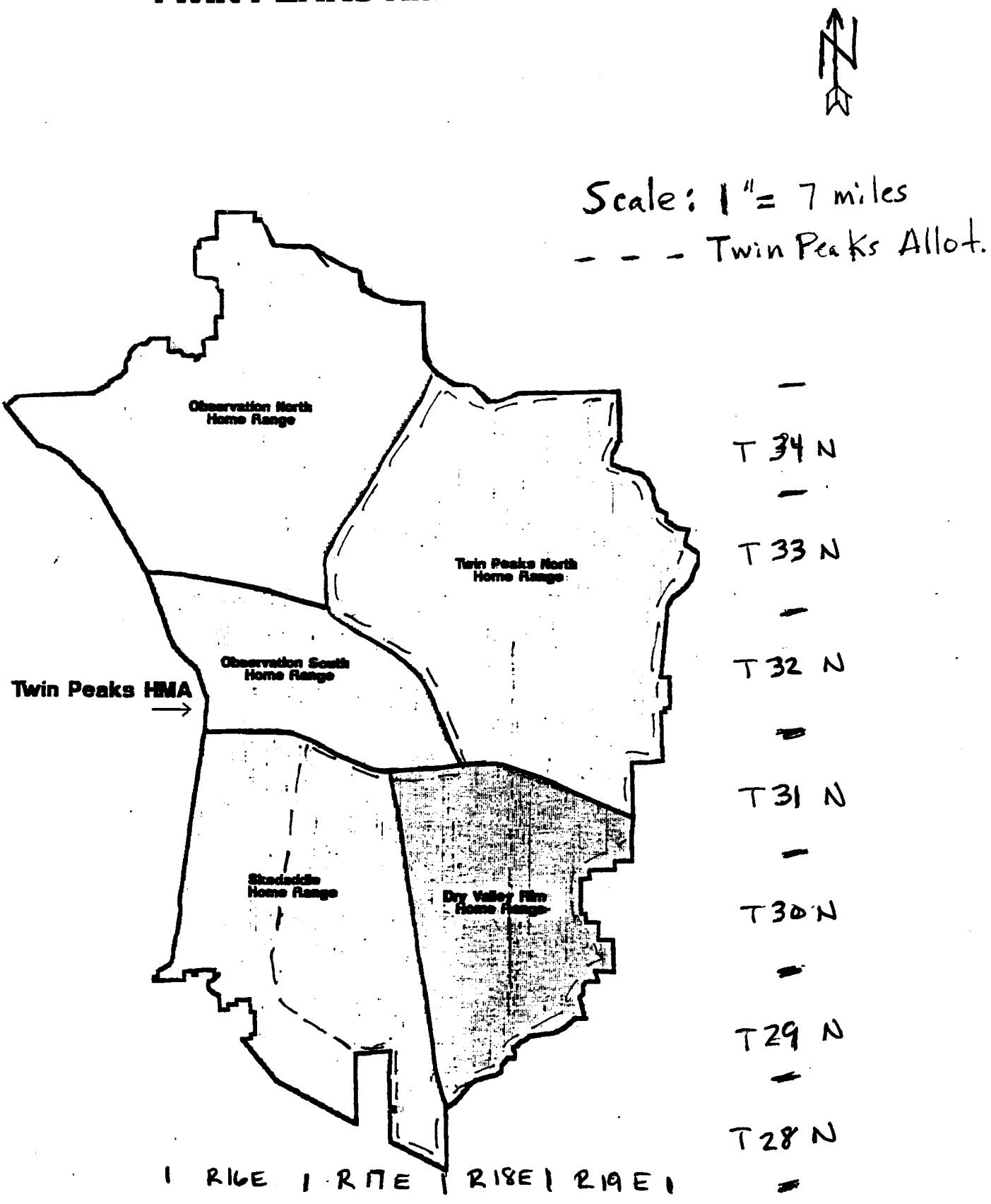
Swanson, Sherman, 1986. Options for Riparian Grazing Management. University of Nevada Cooperative Extension Fact Sheet 86-77.

Table 5
Calculated Stocking Rates Using The Yield Index For Wild Horses and Burros For The Home Ranges within the Twin Peaks Allotment

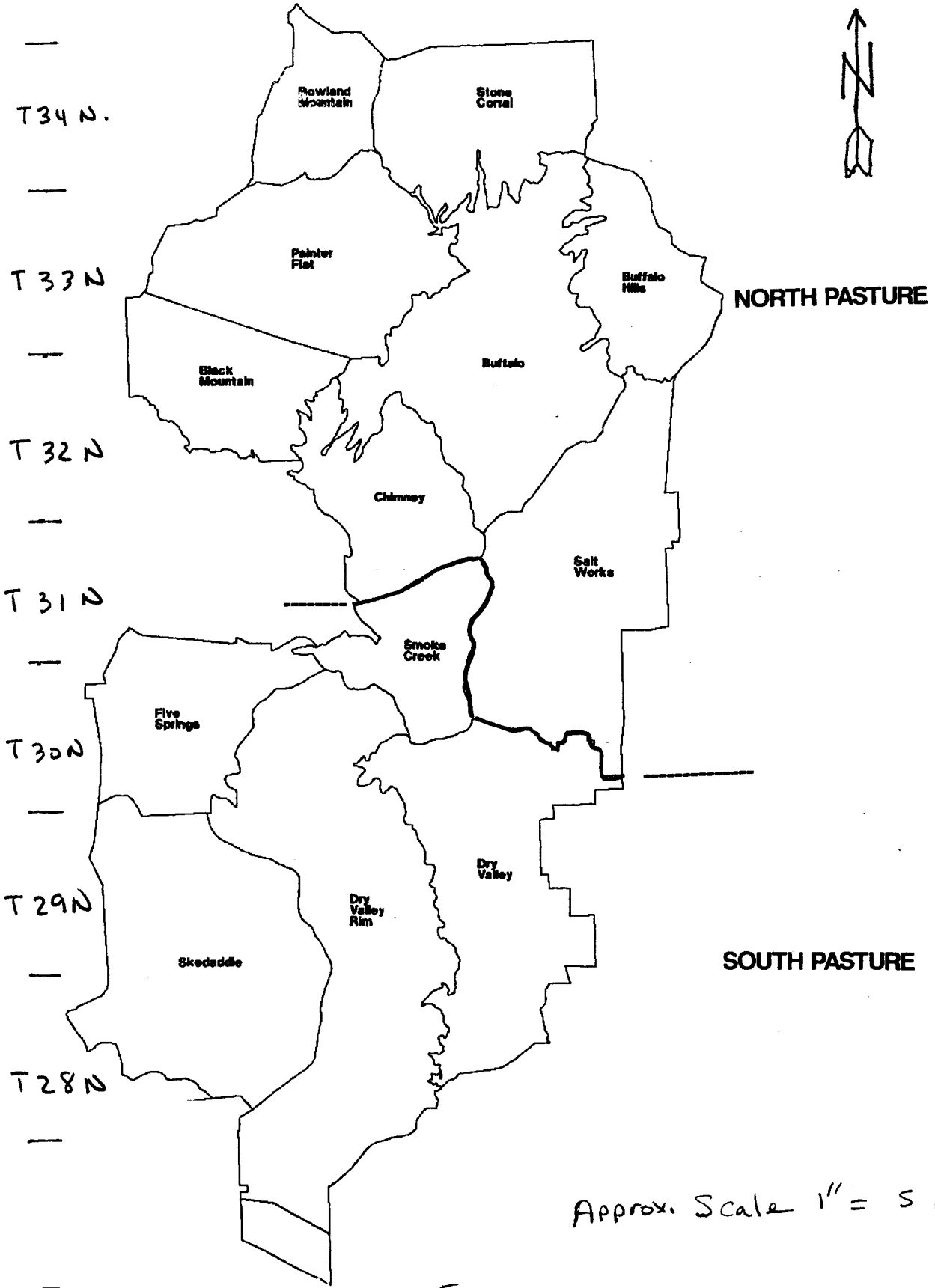
	Existing AML				Desired Stocking Levels Re-establishes AML				Reduction From Existing AML	
Homes Ranges	Horses	Burros	AUMS	%*	Horses	Burros	TOTALS		Horses & Burros	
	AUMS	AUMS	Totals		AUMS	AUMS	AUMS	Animal #	AUMS	Animal #
Twin Peaks North	2,028	504	2,532	49	1,466	366	1,936	153	122	31
Skedaddle	1,296	180	1,476	29	955	130	1,085	90	79	11
Dry Valley Rim	864	264	1,128	22	634	189	823	72	53	16
Totals			5,136	100			3,740	312	255	58

*Percentages of Home Range AML within the Twin Peaks Allotment.

TWIN PEAKS HMA HOME RANGES



TWIN PEAKS ALLOTMENT PLANNING COMPARTMENTS



YEAR	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	TOTAL	SEPT-JUNE PRECIP CROP YEAR	PRECIP INDEX	YIELD INDEX
NORM	2.78	1.99	1.26	0.73	0.77	0.77	0.23	0.15	0.32	1.15	1.70	2.64	14.49	(See *)		
1982	1.62	1.10	2.25	1.78	0.20	0.91	0.03	0.22	2.41	3.05	2.71	1.46	17.74			
1983	3.11	4.19	2.98	1.37	0.24	0.43	0.00	0.82	0.74	1.15	5.37	4.01	24.41	21.95	157%	
DEV.	0.23	2.26	1.60	0.73	(0.51)	(0.24)	(0.30)	0.60	0.38	0.01	3.94	1.42	10.12			
1984	0.11	0.76	0.69	0.38	0.00	0.19	0.09	0.16	0.28	1.39	2.96	0.58	7.59	13.40	96%	
DEV.	(2.77)	(1.17)	(0.69)	M	(0.75)	(0.48)	(0.21)	(0.06)	(0.08)	0.25	1.53	(2.01)	(6.44)			
1985	0.73	1.03	1.38	0.01	0.05	0.00	0.03	0.00	0.60	0.07	2.71	1.14	7.75	8.41	60%	
DEV.	(2.15)	(0.90)	0.00	(0.63)	(0.70)	(0.67)	(0.27)	(0.22)	0.24	(1.07)	1.28	(1.45)	(6.54)			
1986	2.41	7.51	1.97	1.29	0.49	0.37	0.65	0.03	1.55	0.24	0.07	0.18	16.76	18.56	133%	
DEV.	(0.47)	5.58	0.59	0.65	(0.26)	(0.30)	0.35	(0.19)	0.00	(0.90)	(1.36)	0.00	3.69			
1987	1.84	0.87	0.79	0.21	2.32	0.39	0.35	0.00	0.00	0.20	0.15	2.81	9.93	8.46	61%	
DEV.	(1.04)	(1.06)	(0.59)	(0.43)	1.57	(0.28)	0.05	(0.22)	(0.36)	0.24	(1.28)	0.22	(3.18)			
1988	2.58	0.36	0.24	0.44	0.29	0.41	0.46	0.03	0.00	0.01	4.37	0.89	10.08	7.48	54%	
DEV.	(0.20)	(1.63)	(1.02)	(0.29)	(0.48)	(0.36)	0.23	(0.12)	(0.32)	(1.14)	2.67	(1.75)	(4.41)			
1989	0.48	1.46	3.13	0.17	2.04	1.21	0.00	0.44	1.60	1.58	1.26	0.00	13.37	13.76	99%	
DEV.	(2.30)	(0.53)	1.87	(0.56)	1.27	0.44	(0.23)	0.29	1.28	0.43	(0.44)	(2.64)	(1.12)			
1990	1.17	2.88	0.24	0.12	1.30	0.13	2.72	0.29	0.36	0.16	0.73	0.37	10.47	10.28	74%	
DEV.	(1.61)	(1.99)	(1.26)	(0.73)	(0.77)	(0.77)	(0.23)	(0.15)	(0.32)	(1.15)	(1.70)	(2.64)	(14.49)			
1991	0.00	0.70	3.49	2.27	0.68	0.40	1.23	0.42	0.30	0.69	1.00	0.62	11.80	9.16	66%	
DEV.	(1.62)	(1.10)	(2.25)	(1.78)	(0.20)	(0.91)	(0.03)	(0.22)	(2.41)	(3.05)	(2.71)	(1.46)	(17.74)			
1992	0.70	1.70	0.59	0.25	0.35	0.58	0.00	0.52	0.00	0.00	0.02	5.41	12.57	6.78	49%	
DEV.	0.47	(0.56)	(1.01)	(0.48)	0.86	0.82	0.30	(0.08)	(0.38)	1.72	(3.94)	(1.42)	(10.12)			
1993	5.70	1.58	0.00	0.00	0.35	0.42	0.00	0.00	0.12	1.90	0.93	0.30	15.62	13.48	97%	
DEV.	3.47	2.87	1.28	0.25	1.10	1.06	0.21	0.58	0.08	1.48	(1.38)	8.01	19.01			

*Crop-year precipitation is received from Sept. of the previous year thru June of the present year.
The crop year is designated by the calendar year in which it terminates.

CALCULATED STOCKING RATES USING YIELD INDEX

Appendix 2

NORTH PASTURE

Year	AUMS Cattle	AUMS Sheep	AUMS Horses	AUMS Totals	Measured Util.(%)*	Yield Index	Stocking Factor(%)	Desired Util.(%)	Desired Level	Stocking (AUMS)
1992	1252	1846	6528	9626	80	0.49	39.2	40		9822
1993	4817	1427	4226	10470	80	0.97	77.6	40		5397
AVERAGE	3035	1637	5377	10048	80					7610

SOUTH PASTURE

Year	AUMS Cattle	AUMS Sheep	AUMS Horses	AUMS Totals	Measured Util.(%)*	Yield Index	Stocking Factor(%)	Desired Util.(%)	Desired Level	Stocking (AUMS)
1992	4212	1008	2702	7922	80	0.49	39.2	40		8084
1993	1792	1567	3256	6615	80	0.97	77.6	40		3410
AVERAGE	3002	1288	2979	7269	80					5747

CROP YIELD INDEX BASED ON SUSANVILLE WEATHER STATION

*From use pattern data information. The 80 percent utilization is the mid-point for heavy use. The Eagle lake Resource Area uses the Key Forage Species Method to determine utilization by four classes, no use (0%), light use (1-40%), moderate (41-60%), and heavy use (61-100%). Heavy use has occurred in most riparian areas, spring sources in the Twin Peaks Allotment.

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I. INTRODUCTION

A. Background

On March 6, 1992, a Final Decision by the Bureau of Land Management Susanville District Manager was issued to provide immediate refinement to the grazing practices authorized within the Twin Peaks Allotment Management Plan (AMP). The decision implemented the "Agreement Concerning the Twin Peaks Allotment Management Plan" of 3/6/92 with the intention of clarifying, refining, and amending "the AMP to make it more responsive to our immediate concerns about the management of livestock and its effects on wildlife habitat within the Twin Peaks Allotment". The modifications to authorized grazing use were implemented by the decision in full force and effect and in accordance with the agreement to provide temporary protection to vegetative and wildlife resources pending completion of an Integrated Management Plan. The decision modified the terms and conditions of the grazing permits for the Twin Peaks allotment.

B. Purpose

The purpose of this document is to evaluate the effectiveness of existing management in meeting the intent of the Notice of Final Decision and its attached Agreement Concerning the Twin Peaks Allotment Management Plan, dated March 6, 1992, and other related goals, objectives, decisions, or policies of the Bureau of Land Management, the Cal-Neva Management Framework Plan, and other documents.

II. ALLOTMENT PROFILE

A. Allotment Name and Number

Twin Peaks Allotment, # 00701

B. Location

The Twin Peaks allotment (Map 1) is located approximately 25 miles west and southwest of Gerlach, Nevada and 30 miles east of Susanville, California in the BLM Susanville District, Eagle Lake Resource Area, Cal-Neva Planning Unit. The allotment lies in both California and Nevada.

C. Acreage and Land Ownership

See Map 2.

Acreage	Land Ownership
380,140	Public Land, TOTAL
6,440	Private Land, Espil Sheep Company
480	Private Land, Laver Ranches
13,600	Private Land, Other
28,795	Private Land, TOTAL
408,935	TOTAL

D. Permittee(s)

John Espil Sheep Company, Incorporated
Laver Ranches

E. Evaluation Period

From 1992 through 1993. Information from other years is used as support information.

F. Selective Management Category and Priority

Twin Peaks is in the intensive ("I") management category and is a high priority in the Eagle Lake Resource Area.

G. Applicable Reference Documents

Related information, existing management goals, objectives, and actions adopted by the BLM that pertain to the existing management in the Twin Peaks allotment are:

1. "Notice of Final Decision" dated March 6, 1992 (Grazing Decision).

2. "Decision Record for Livestock Grazing on the Twin Peaks Allotment" dated March 6, 1992 (Decision Record).

3. Environmental Assessment Number CA-026-92-07: "Concerning Grazing in the Twin Peaks Allotment" dated March 6, 1992 (EA).

4. "Twin Peaks Allotment Management Plan" dated March 17, 1984 (AMP).

5. "Notice of Final Decision' Dated June 24, 1983.

6. "Land Use Plan Summary, Rangeland Program Summary, and Grazing EIS Record of Decision for the Cal-Neva Planning Unit" dated August 9, 1982.

7. "Cal-Neva Management Framework Plan" dated August 3, 1982 (MFP).

8. "Upper Smoke Creek Aquatic Habitat Management Plan" dated December 14, 1983 (AHMP).

9. "Twin Peaks Herd Management Area Plan" dated June 30, 1989 (TPHMAP).

10. "Decision Record, FONSI, EA number CA-026-93-09 Concerning FY 1993 Removal and Initial Structuring of the Twin Peaks North Home Range Wild Horse and Burro Herd for the Twin Peaks Herd Management Area, Decision, and Gathering Plan" dated December 16, 1992.

H. Interested or Affected Parties

See Appendix A.

III. SUMMARY OF RELATED GOALS, OBJECTIVES, AND DECISIONS

For clarity and organizational purposes of this document, the applicable Goals, Objectives, and Decisions have been assigned identification numbers. These identification numbers are enclosed in brackets and are italicized.

A. Grazing Decision and Agreement of 3/6/92

The following information is an excerption from the Notice of Final Decision, dated March 6, 1992 (92GD).

Temporarily modify grazing permits and authorized grazing use to

provide immediate protection to vegetation and wildlife resources within the Twin Peaks allotment and place the decision in full force and effect.

A. Identification of Subunits

The AMP established North and South Pastures and prescribed management for them. The AMP further specifically identified Skedaddle/Bull Flat and Parsnip Management Areas within these pastures and established livestock entry dates for them. The AMP further specifically identified turnout areas for each pasture for each permittee.

[92GD#1] The AMPRC further divided the allotment into 13 subunits based on resources present and other factors. For the purposes of current and future communication concerning the management of this allotment, these subunits are identified by pasture below (see attached map):

North Pasture Subunits	South Pasture Subunits
Rowland Mountain	Lower Smoke Creek
Stony Clay Basins	Dry Valley Winter Range
Buffalo Creek	Bull Flat*
Painters Flat	Dry Valley Rim
Mixie Flat**	Skedaddle Mountain*
Big Springs Burn/Black Mtn.	
Buffalo Hills	*contains portions of
Critical Deer Winter Range	the AMP-identified Bull Flat/Skedaddle management
**contains AMP-identified Parsnip Drainage management area.	area.

[92GD#2] 1. North Pasture

In even numbered years, up to 225 Espil cattle will be authorized to graze in the north pasture from April 15 to December 31 provided that the total number of Espil cattle grazing the allotment does not exceed the numbers provided for in the basic operation and flexibility sections of the AMP.

Rationale - Experience with the grazing system has indicated that the south pasture does not have sufficiently reliable water to provide for an entire season's cattle use in this pasture. Consequently, cattle must be driven north after July 1 as provided for in the AMP each year that turnout is in the south pasture. This refinement is intended to provide more water for a longer period of time in the south pasture, so that the north pasture livestock use is minimized as much as possible every other year.

[92GD#3] Rowland Mountain Sub-Unit

In even-numbered years, any cattle using Rowland Mountain subunit will be placed east of Rowland Mountain, including the Hole-in-the-Ground with minimal use of the Norton Place. Cattle movement and drift to the west largely will be restricted by rimrocks on the east side of Rowland Mountain.

In odd-numbered years, any cattle using Rowland Mountain subunit will be placed on the west side of Rowland Mountain, thus avoiding east Rowland mountain and the Hole-in-the-Ground area with some use

of the Norton Place.

[92GD#4] 3. Lower Smoke Creek Sub-Unit

Up to 200 cattle will be authorized to use this area from March 1 to April 30, annually, subject to the terms and conditions contained within this addendum. Since the grazing capacity for this area with this system of grazing is unknown, it may be necessary to move the livestock before April 30. The BLM, the permittees and any affected interests who wish to participate will check the Lower Smoke creek subunit periodically and make a movement determination. The final decision will be with BLM.

D. Terms and Conditions Refinements

[92GD#5] 1. Cattle will be removed from the west side of Rowland mountain on or before July 15, or when utilization on key perennial grasses reaches 60 percent. Sheep use will be restricted after July 15 to a total of 10 days trailing through the sub-unit.

Considerations - Rowland mountain Sub-unit has few physical barriers that would contain livestock. Removal of livestock is dependent upon herding by riders. It is recognized that continuous removal of 100 percent of the livestock may not be achievable. The permittees will make diligent effort to remove and keep the livestock from this sub-unit after July 15, and be promptly responsive to notification from BLM that livestock are in the area and need to be removed.

Cattle removal on or before July 15 will minimize cattle utilization on annual leader growth of bitterbrush.

[92GD#6] 2. Except for trailing along the Smoke Creek Road, no use shall be made in the Smoke Creek Sub-unit after April 30. Maximum allowable use levels on the Lower Smoke Creek riparian area is 40 percent of total current year's production.

Considerations - Smoke Creek Sub-unit has few physical barriers to livestock. Control of livestock is dependent upon herding by riders. It is recognized that continuous removal of 100 percent of the livestock may not be achievable. The permittees will make diligent effort to remove and keep the livestock from this sub-unit after April 30, and be promptly responsive to notification from BLM that livestock are in the area and need to be removed.

[92GD#7] 3. After April 30, should estimated utilization of riparian-associated plants in the publicly owned portions of the North Fork of Buffalo Creek drainage and Parsnip Creek drainage be determined to be approaching or have reached 40 percent utilization, as determined by the BLM in consultation with the permittee and any affected interest who wishes to participate in measurement, the permittees will be notified by the BLM and the livestock will be driven from these drainage by the permittees. The permittees will make diligent efforts to keep livestock out of these drainages for the remainder of the year.

[92GD#8] 4. If forage utilization levels of current year's growth of key species on key livestock use areas are approaching or have reached 60 percent, livestock will be moved to less utilized areas.

[92GD#9] Existing key areas will be evaluated and new key areas will be determined by using use pattern maps as a guide. The permittees and other affected interests can participate in the evaluation and

location of these key areas. The final determination will be with the BLM.

[92GD#10] 5. Sheep camps and bedding grounds shall not be located on known active sage grouse strutting grounds. Sage grouse strutting grounds locations will be disclosed to the permittee through consultation with BLM.

[92GD#11] 6. Sheep will not be driven into or bedded or shaded in aspen stands.

Considerations - Aspen stands are attractive to wildlife and livestock as resting, cover and foraging areas. It is recognized that livestock will use the aspen stands. The intent of this stipulation is for the permittees to make diligent efforts to herd sheep away from these stands to conserve the values theses stands have for wildlife. BLM will immediately pursue means to fence aspen stands.

2. Monitoring Refinement

[92GD#12] The AMPRC identified additional monitoring needs and key plant species for the allotment by sub-unit. This is contained in the synopsis of the AMPRC findings dated May 24, 1990 which was provided to all AMPRC, the BLM will undertake monitoring of utilization of perennial grasses, key wildlife shrubs, woody riparian species and aspen at the time of livestock removal, again at the end of the growing season (timing will differ by site and types of vegetation measured), and again at the normal time of out-migration of the East Lassen Deer Herd fin the early spring. This monitoring may include establishment of exclosures designed to differentiate livestock utilization from other animals. Also, monitoring may include other studies and methods depending upon the information desired. Determination of sites to locate studies will be done in consultation with the permittees and any affected interest who wishes to participate.

BLM will monitor and record grazing utilization on key areas by the Key Forage plant method, as supplemented by clipping and weighing and/or stubble height measurements while livestock are still within a sub-unit or pasture. This will be done in order to alert BLM to use levels occurring and to promote adherence to objective use levels.

[92GD#13] In addition, it is agreed that the permittees in coordination with BLM will make diligent efforts to record their estimated numbers of livestock and dates of use on a sub-unit(s) basis. The permittees also are encouraged to record and submit this information as the season progresses following the end of substantial use within a sub-unit and to supplement it with maps showing numbers of cattle observed using each sub-unit. The "end of substantial use" for cattle means when all but stragglers and strays have been pushed on to use a new area; for sheep it means when the sheep have been moved out of the sub-unit or allotment.

[92GD#14] 3. Use of Short-term Monitoring Data for Livestock Adjustments

It is recognized that objective use levels may be exceeded by the combination livestock, wild horse, deer and other grazers. For annual adjustments in livestock use, sub-unit or pasture basis, the formula listed below may be employed by the BLM and considered with other monitoring information. Use of this formula is predicated

upon reasonable estimates of AUM removal by livestock by sub-unit(s).

The Desired Stocking Rate Formula is used with precipitation data to determine stocking rate adjustments:

$$\frac{\text{Actual AUMs Grazed}}{\text{Determined Utilization\%}} = \frac{\text{Desired AUM Stocking}}{\text{Objective Utilization}}$$

[92GD#15] This addendum may be updated or modified periodically to accomplish specific multiple-use management objectives. All changes made will be through consultation and coordination with the range users and the Bureau or Land Management.

IV. SUMMARY OF INVENTORY AND MONITORING DATA FOR EXISTING RESOURCES, VALUES, AND USES

A. Allotment Subdivisions: Pastures/Use Areas/Subunits/Planning Compartments

The Twin Peaks allotment has been divided into the North Pasture and the South Pasture in the past. In the late 1980's, the Twin Peaks Allotment Management Plan Review Committee (TPAMPRC) delineated subunits for the Twin Peaks allotment (Map 3). There were thirteen (13) subunits, defined by vegetative communities, ecological site characteristics, topography, roads, fences, and other features. These subunits were formally recognized in 1992 (See GD#1). Recently, efforts to refine the subunits into livestock control areas has occurred and are often referred to as "planning compartments" (PCs). These allotment subdivisions (Map 4) are:

Rowland
Stone Corral
Painter
Buffalo
Buffalo Hills
Chimney
Lower Smoke Creek
Salt Marsh
Five Springs
Skedaddle
Rim
Dry Valley

B. Elevation

Elevation in the Twin Peaks allotment ranges from approximately 3800-7600 feet. About 68% of the area is below 5600 feet and about 30% is between 5600-6600 feet in elevation (Map 5). Elevation for each allotment subdivision is listed in Table 1.

C. Slope and Aspect

Slope (Map 6) and aspect of the Twin Peaks allotment is widely varied. About 29 % of the area is of greater than 50 percent slope. Slope for each allotment subdivision is listed in Table 2. Approximately 41% of the allotment has no aspect (flat), 17% easterly, 10% northerly, 15% westerly, and 17% southerly.

D. Precipitation and Temperature

Mean annual precipitation within the Twin Peaks area ranges from less than 4 inches in the extreme southern portion, to 12-16 inches in the higher

elevations. The lower elevations receive less than 8 inches mean annual precipitation. Sixty percent of the moisture falls as snow between November and March with only a few scattered thundershowers occurring between late June and the first rains of October. Table 3 reports the average monthly and annual precipitation for Gerlach, Nevada; Susanville Airport, California; and their combined average. Table 5 reports average annual precipitation in relation to each allotment subdivision. The crop year yield index for Susanville was 49% of normal for 1992, and 97% of normal for 1993.

Temperature generally ranges as high as 100°F in the summer to -36°F in the winter. The frost-free period ranges from 80 to 100 days with the first killing frost by September and the last in April or May. Table 4 reports the average monthly maximum, minimum, and daily temperatures for Gerlach, Nevada and Susanville Airport, California. Evaporative demand ranges from 50 to 60 inches per year.

E. Soil

Soil information is based on the Central Washoe County and the Lassen County Soil Survey. The entire area has been mapped as a third-order soil survey by the U. S. Soil Conservation Service.

Soils in the area are primarily derived from mixed basic rocks which occur on three physiographic groups. Soils of the lowlands, foothills, and upland basins are somewhat excessively drained to poorly drained with a surface layer of gravelly and stony-loam to clay. They are formed form alluvium and occur as alluvial fans, terraces, flood plains, and foothills as well as upland basins.

Soils of the upland plateaus, terraces and lower mountain slopes are well drained with a surface layer consisting of loam, sandy-loam or clay, all derived from alluviums associated with volcanic plateaus, terraces and mountain slopes.

Soils and land types on moderately sloping to very steep uplands are well drained with a loamy surface. They are formed in alluvium derived from exposed bedrock and nearly barren sloping areas of colluvium.

The vertisol (montmorillonitic) soils are of particular concern in Twin Peaks allotment. The soil structure of these soils are easily destroyed if they experience mechanical impacts while they are wet. Where these soils are deep they can be highly productive. However, perennial plants are dependent on undisturbed soil structure for root functioning and microbial activity. In areas where there is moderate to severe erosion or where there is a lack of surface cover the problem of maintaining a productive soil medium is compounded.

F. Surface Waters

Irregularity in quantity and duration of precipitation limits the number of perennial streams (Map 7) in the area as well as the number of years flow duration is extended through the autumn. Miles of perennial and intermittent streams in the area, by allotment subdivision, are presented in Table 6. Streams primarily respond to snow melt, although minor runoff peaks are known to occur in late fall as a result of thunderstorms. Great fluctuations in water supply are common to the region. Summer stream flow depends on the source of supply (i.e., spring discharge, snow melt, and reservoir release). All streams flow into closed basins, and most of the

surface water infiltrates or is removed from the system by evapotranspiration. Springs and wet meadow sites are widely scattered, with occurrence in virtually every section of Twin Peaks. These small riparian areas are usually ephemeral but do supply seasonal drinking water and support distinct vegetative communities.

Several stockwater reservoirs and small earthen dams are scattered throughout the area, however, the only large reservoir in Twin Peaks is the Smoke Creek reservoir. Smoke Creek reservoir is used for irrigation, with water levels fluctuating greatly through the seasons. Impounded runoff from Smoke Creek reservoir is used for irrigation of native pasture, and furnishes water for livestock and wildlife. Small impoundments generally dry up during the summer months. Those that impound water only after occasional periods of heavy runoff are often dry for periods of months or years before being refilled. BLM has obtained a five cfs Minimum Flow Water Right permit through the BLM administered corridor along lower Smoke Creek.

G. Vegetation

1. Key Plant Species Identification

The Twin Peaks AMP lists the key plant species as follows:

- squirreltail (Sihy)
- bluebunch wheatgrass (Agsp)
- Giant wild rye (Elci)

The key plant species in the Twin Peaks Allotment were also determined by the Twin Peaks Allotment Management Plan Review Committee (TPAMPRC) and formally recognized in 1992 (see GD#13) as follows:

GRASSES
- Squirreltail
- Bluebunch wheatgrass
- Needlegrass
- Great Basin wild-rye
- Mat muhly
- Nevada bluegrass
- Indian ricegrass
- Sandberg's bluegrass
- Creeping rye

SEDGES
- Carex sp.

FORBS
- Cusick Sunflower
- Wooly Sunflower
- Phlox
- Balsamroot
- Hawksbeard
- Buckwheat

SHRUBS
- Bitterbrush
- Silver sage
- Black sage
- Low sage
- Winterfat
- Bud sage
- Big sage
- Squaw apple
- Mountain mahogany

Willow
Rose
Cottonwood
Aspen
Spiny hopsage
Fourwing saltbush

See Table 7 for listing of key plant species in relation to allotment subdivisions.

2. Vegetation/Land Cover Types

The vegetation/land cover types and their abbreviations found in the Twin Peaks allotment are:

VEGETATION/LAND COVER TYPES AND ABBREVIATIONS	
Vegetation/Land Cover Type	Abbreviation
Aspen Forest	Aspen
Willow Scrub	Willow
Mountain Mahogany 40-59% /Big Sagebrush	MM 40-59% /BS
Mountain Mahogany 40-59% /Mixed Shrub	MM 40-59% /Mix Sh
Mountain Mahogany 40-59% /Rock	MM 40-59% /Rock
Mountain Mahogany 60-100%	MM 60-100%
Great Basin Juniper Woodland 10-24% /Mixed Shrub/Perennial Grass	GBJW 10-24% /Mix Sh/PG
Great Basin Juniper Woodland 10-24% /Low Sage	GBJW 10-24% /LS
Great Basin Juniper Woodland 25-39% /Mountain Mahogany	GBJW 25-39% /MM
Mixed Mountain Shrub 25-39% /Bare Ground	Mix Mtn Sh 25-39% /BG
Mixed Mountain Shrub 40-59% /Perennial Grass	Mix Mtn Sh 40-59% /PG
Big Sagebrush Scrub 10-24% /Bitterbrush/Perennial Grass	BSSc 10-24% /BB/PG
Big Sagebrush Scrub 10-39% /Bare Ground	BSSc 10-39% /BG
Big Sagebrush Scrub 10-24% /Rock	BSSc 10-24% /Rock
Big Sagebrush Scrub 10-39% /Perennial Grass	BSSc 10-39% /PG
Mixed Great Basin Shrub 10-24% /Perennial Grass/Bare Ground	Mix GBSh 10-24% /PG/BG
Mixed Great Basin Shrub 10-39% /Rock	Mix GBSh 10-39% /Rock
Low Sagebrush Scrub 10-24% / Perennial Grass	LSSc 10-24% /PG
Low Sagebrush Scrub 10-24% / Rock	LSSc 10-24% /Rock
Silver Sagebrush Scrub 10-39% /Mixed Shrub	SSSc 10-39% /Mix Sh
Rabbitbrush Scrub 0-24% /Bare Ground	RabSC 10-24% /Rock
Greasewood Scrub 10-24% /Mixed Shrub	Grease Sc 10-24% /Mix Sh
Greasewood Scrub 10-24% /Budsage/Saltgrass	Grease Sc 10-24% /Bud/Salt
Shadscale Shrub 10-24% /Rock	Shad Sh 10-24% / Rock
Mixed Desert Shrub 10-39%	MixDesSh 10-39%
Alkali Playa	Playa
Meadow and /or Seep	Meadow
Seasonally Dry Meadow	Seasonal Meadow
Pasture/Cropland	Cropland
Water	Water
Rock >90%	Rock >90%
Bare Ground	BG

Descriptions of these vegetation/land cover types are in Appendix G.

See Map 8 for the locations of vegetation/land cover in the Twin Peaks allotment.

See Table 8 for listing of vegetation/land cover and key plant species.

See Table 9 for listing of acreages and percentages of vegetation/land cover in relation to allotment subdivisions.

3. General Effects of Utilization

The general effects of rest, low utilization, moderate utilization, and high utilization at different seasons on vigor, litter accumulation, seedling establishment, and seed trampling on key plant species is presented in Tables 10-17 as follows:

Table 10. Anticipated impacts on key plant species from **Early Spring Grazing** (grazing from 3/1-4/30) in the Twin Peaks Allotment.

Table 11. Anticipated impacts on key plant species from **Early Spring Rest** (no grazing from 3/1-4/30).

Table 12. Anticipated impacts on key plant species from **Spring to Summer Grazing** (grazing from 5/1-7/1) in the Twin Peaks Allotment.

Table 13. Anticipated impacts on key plant species from **Spring to Summer Rest** (no grazing from 5/1-7/1) in the Twin Peaks Allotment.

Table 14. Anticipated impacts on key plant species from **Late Summer to Fall Grazing** (7/1-10/31) in the Twin Peaks Allotment.

Table 15. Anticipated impacts on key plant species from **Late Summer to Fall Rest** (no grazing from 7/1-10/31) in the Twin Peaks Allotment.

Table 16. Anticipated impacts on key plant species from **Winter Grazing** (grazing from 11/1-2/28) in the Twin Peaks Allotment.

Table 17. Anticipated impacts on key plant species from **Winter Rest** (no grazing from 12/1-2/28) in the Twin Peaks Allotment.

As described in this report, to determine utilization impacts on a particular plant in a particular season, we assumed the season of use and utilization level would be repeated for 1 years, i.e., the impacts on grasses of early spring grazing at 40%-60% utilization, and rest for the remainder of the year.

Grazing utilization levels are standard BLM percentages (USDI-BLM 1984):

Low = 0-40%
Moderate=41-60%

High= 61+%

At each utilization level the impact on a key species was determined to be either negative or positive.

Negative = -
Positive = +

Next to each - or + is an L, M, or H, representing the level of impact that particular grazing utilization level has on the plant.

The following considerations were used to determine the impacts from livestock use on key plant species:

Impacts of Grazing on Vigor

If the growing or flowering season dates of key species fell within the grazing dates, impacts to the plant were determined using the Nevada Range Monitoring Handbook guide to utilization impacts. Also considered was the desirability of a species to livestock during that particular season.

The vigor heading in Tables 10-17 represents vigor, production, seed production and ground cover.

Early Spring

The impacts of use in early spring were determined using the general guideline that only 20% of a grass plant will grow during this period. The major growth stage was considered to be Spring, 5/1-7/1.

Winter rest

No impact to grass was recorded because grasses are dormant during this season. Removal of litter from the plant crown can often improve vigor and production.

Summer to Fall Grazing

While most plants are dormant by September 1, our summer dates span from seed set through dormancy. Use in mid July is more damaging than use in mid September. Squirreltail can suffer moderately negative impacts with 80% use in mid July but may not suffer any impact at that level in September. Nevertheless, the overall impact of high utilization to squirreltail from July 1 to October is rated as -M because of the negative impacts to seed set and dispersal in July.

Riparian Species

These species have a very long growing season compared to the upland species due to continuous water availability. Carex and other riparian species are less impacted by early spring and spring grazing because there is ample opportunity for regrowth if rested the remainder of the growing season.

Seed Trampling

Overall we feel seed trampling can have a beneficial effect, but the process is not necessary for a thriving ecological system. Seed trampling is never rated higher than having a low positive impact.

Seedling Establishment

During heavy early spring and spring use, there is an increased chance of grass seedling mortality because seedlings are shallowly rooted.

4. Utilization Key Areas

Utilization was collected on key areas located on the uplands and on riparian areas using the Key Forage Plant Method. In some instances on riparian areas, the stubble height method was used in addition to or in place of the Key Forage Plant Method. Photographs of various areas were also taken.

5. Plant Phenology

Growth, flowering, and seed dispersal were determined for each key species using BLM phenology studies and other sources (USDI-BLM 1979a, USDI-BLM 1979b, Mozingo 1987, USDA-USFS 1965). For each key species, a range of time was determined for each specific growth stage at two elevational ranges: above 5500 feet and below 5500 feet (see Table 18).

The BLM phenology studies recorded growth periods in 1979 througout and near the Twin Peaks allotment area. Comparing 1979 data with other available but limited data from 1977 and 1978 on selected species indicated a 30 day range over the years for most growth stages, i.e., in 1977 Sitanion hystrix might set seed for a two week span from 7/15 to 8/1, while in 1978 it might set seed for a two week span from 8/1 to 8/15. After selecting an intermediate date in a reported span of growth, most species were given a 30 day range as the time most likely to encounter the plant in that particular stage. The stages of growth reported here are: Begin Growth, Vegetative Growth, Bud Stage, Flowering Period, Seed Ripe, and Seed Dissemination. For a few species, more precise information was available and the 30 day range was not applied.

6. Condition and Trend

In 1982, the Range Program Summary for the Cal-Neva reported

> "Historic heavy grazing by livestock and wild horses, especially continuous grazing during the spring and early summer, has resulted in a decline of ecological range condition over the past 100 years from excellent (climax state) to mostly poor and fair today (47% and 47%, respectively)."

Range condition is classified into four divisions. The four classes are used to express the degree to which the production or composition of the present plant community reflects that of the potential natural community (PNC), i.e., climax.

Seral Stage or Ecological Status Potential Natural Community	Percent of Present Plant Community that is Climax for the Range Site
PNC (climax)	76-100
Late Seral	51-75
Mid Seral	26-50
Early Seral	0-26

Percent climax for a given plant community is determined by frequency

measurements.

The Final EIS for Grazing in the Cal-Neva document of 1981 reported

> "Ecological range condition has declined from excellent (climax state) about 100 years ago to mostly poor and fair today. The trend of the vegetative communities are determined by their departure from the climax state. Vegetation composition has mostly changed from sagebrush-grassland communities to communities of sagebrush dominating less desirable annual grasses, forbs and other shrubs. Herbaceous vegetation desirable for livestock, Pronghorn antelope, Mule deer, and Sage grouse has been eliminated or greatly reduced in density and vigor. Ground cover has decreased, resulting in an increase in soil erosion. Range condition is poorest in areas easily accessible to livestock and areas near water.
>
> Historic heavy grazing by livestock and wild horses, especially continuous grazing during the spring and early summer, has been the most important environmental change agent adversely affecting range condition and trend. Spring is the most critical time for plants because carbohydrate reserves are at their lowest level. But, for every spring for 100 years, livestock have selectively grazed the more palatable plants and accessible areas in the planning unit. [Until 1982,] Most ranges have been grazed at the same time and same manner each year."

In general, May and June are the most critical months in Twin Peaks for grasses because eighty percent of the total vegetative growth can occur during these two months. Use of leaf area diminishes a plant's ability to maximize carbohydrate storage in the roots. Use of grasses prior to May-June growth will not negatively impact grass vigor. Early season grazing (March 1-May 1) can be damaging to grass vigor if grazing is maintained into May and June. Decreased vigor can also be expected if grass plants are grazed at moderate to heavy use levels year after year in May and June.

The Final EIS for Grazing in the Cal-Neva document of 1981 reported

> "As range condition deteriorated during the past 100 years, there was an associated decrease in production of palatable forage [for livestock]. Many areas are not presently producing the quantity and quality of vegetation they are capable of producing."

7. Vegetation Utilization

Utilization data summaries for key areas and selected locations are in Appendix I.

a. Use Pattern Mapping

In conjunction with key area utilization data, the majority of the allotment was use pattern mapped for the years 1992 and 1993 using as many as five classes of use: no use (0%), light use (1-40%), moderate use (41-60%), heavy use (61-100%) and low production areas.

See Map 9 for the results of Twin Peaks allotment 1992 Grazing Utilization mapping.

See Table 19 for listing of 1992 acreages and percentages of grazing utilization categories in relation to allotment subdivisions.

See Map 10 for the results of Twin Peaks allotment 1993 Grazing Utilization mapping.

See Table 20 for listing of 1993 acreages and percentages of grazing utilization categories in relation to allotment subdivisions.

The limited distribution of water contributes greatly to poor livestock distribution. Livestock concentrate near existing water sources and overgraze the vegetation in those areas. At the same time, some areas of good forage are underutilized by livestock because of lack of water and/or lack of desire to forage in areas away from the riparian zone while there is still forage there. The problem is compounded during the heat of summer when livestock do not graze as far from water as they do in cooler weather.

Utilization information indicates that streambank riparian vegetation in Buffalo, Parsnip, and Smoke Creeks was overgrazed in 1992 and 1993. Use pattern mapping and utilization information collected at riparian areas (springs, seeps and streams) in 1992 and 1993 indicates that greater than 40% utilization at 90 % of the riparian areas in 1992 and 1993. Utilization on grass key plant species (herbage) in upland areas exceeded 60% on approximately 2 percent of the allotment, by area, in both years.

H. Livestock

1. Current Grazing Permits

a. John Espil Sheep Company, Incorporated (Espil)

Espil's current grazing permit (issued May 15, 1990) on the Twin Peaks Allotment is as follows:

Permit Grazing Schedule

Allotment Number	Livestock Number	Kind	Grazing Period Begin	End	Percent Public Land	Type Use	AUM's
00701	971	Cattle	03/01	12/31	100	Active	9769
	4000	Sheep	04/01	05/30	100	Active	1578
	2000	Sheep	06/01	06/30	100	Active	395
	2000	Sheep	09/16	09/30	100	Active	197
	4000	Sheep	10/01	10/25	100	Active	658
	Not Scheduled					Active	163
	Not Scheduled					Suspended	6739
						Total	19,499

Terms and Conditions

Supplemental feeding is limited to salt, mineral and/or protein supplements in block, liquid or granular form. Such supplements shall be placed no closer than 1/4 mile from live waters (seeps, springs and streams). Proper placement of supplements (when needed) helps improve livestock distribution.

Term

The term of this permit is from 03/01/1990 to 02/28/2000.

b. Laver Ranches (Laver)

Laver's current grazing permit (issued March 24, 1993) on the Twin Peaks Allotment is as follows:

Grazing Schedule

Allotment Number	Livestock Number	Kind	Grazing Period Begin	End	Percent Public Land	Type Use AUM's
00701	102	Cattle	04/16	10/31	100	Active 667
Not Scheduled						Active 3
Not Scheduled						Suspended 362
						Total1032

Terms and Conditions

Supplemental feeding is limited to salt, mineral and/or protein supplements in block, liquid or granular form. Such supplements shall be placed no closer than 1/4 mile from any water source.

All range improvements authorized under Section 4 Range Improvement Permits or Cooperative Agreements shall be maintained in usable condition for the purpose intended, pursuant to the provisions of said Permit or Cooperative Agreement.

Grazing use offered or authorized hereby is subject to all provisions of the grazing regulations - 43 CFR Parts 4100. Livestock use may be temporarily delayed, discontinued or modified to allow for the restoration of vigor of plants, or to prevent compaction of wet soils (43 CFR 4130.6-2(f)).

Term of Permit

The term of this permit is from 03/20/1993 to 02/28/1999.

2. AMP Livestock Management Practices

a. Basic Cattle Operation

The grazing system employed for cattle is a two-pasture deferred rotation. The system allows the entire allotment to be grazed every year with the late pasture being deferred until the approximate phenology stage of seed dissemination for key grass species. The cattle graze in common.

Espil's full permitted cattle are not turned out on March 1. They are staggered out in bunches ranging from 40 to 200 or more, and usually reach full numbers in June. To remove all cattle by December 31, gathering starts in November. The cattle are gathered in bunches and herded back to the home ranch.

Laver Ranches usually delays their turnout, sometimes as late as July. This delay is in part to Laver's desire to graze in the south pasture near their private lands.

b. North Pasture-Cattle

-Prior to April 1, all cattle are to be turned out in the area east of Buffalo Creek and Northeast of Burro Mountain.

-After April 1, cattle can be turned out in any location of the north pasture except the Parsnip Management Area.

-After July 1, cattle can be moved to the south pasture.

In even numbered years, up to 225 Espil cattle will be authorized to graze in the north pasture from April 15 to December 31 provided the total number of cattle does no exceed the numbers provided for in the basic operation and flexibility sections of the AMP.

-In even numbered years, any cattle using Rowland Mountain subunit will be placed east of Rowland Mountain, including Hole-In-The-Ground with minimal use of the Norton Place. Cattle movement and drift to the west largely will be restricted by rimrocks on the east side of Rowland Mountain.

-In odd numbered years, any cattle using Rowland Mountain subunit will be placed on the west side of Rowland Mountain, thus avoiding east Rowland Mountain and the Hole-In-The-Ground area with some use of the Norton Place.

-Up to 200 cattle will be authorized to use lower Smoke Creek area from March 1 to April 30, annually, subject to the terms and conditions of the permit.

c. South Pasture-Cattle

-Prior to April 1, all cattle, are to be turned out in the area east of Dry Valley Rim and south of Burro Mountain.

-Prior to June 1 and after April 1, Laver's recommended turnout areas are either East Fork Skedaddle Creek and/or Spencer Basin.

-Prior to June 1, no cattle can be turned out in the Bull Flat/Skedaddle Basin Management Area.

d. Sheep

-Sheep use is primarily for spring lambing and secondarily for fall trailing. Sheep can use the entire allotment except for the following special conditions:

-When cattle turn out in the south pasture and a lamb band stays through the full season (7/1-9/15), one band can not use the management areas (Parsnip, Bull Flat/Skedaddle) before June 1.

-The 500 head dry band will be able to use the Skedaddle Mountains every other year between June 15 and August 1. Alternate areas of use are Dry Valley Rim, Five Springs Mountain, and the north pasture of the allotment.

-Sheep are to be herded away from aspen stands.

3. Actual Use

Livestock actual use was taken from actual use reports and compliance records.

a. 1992

Estimated livestock AUMs for 1992 were:

North Pasture-Cattle: 1252

North Pasture-Sheep: 1846
South Pasture-Cattle: 4212
South Pasture-Sheep: 1008
Total: 8318

b. 1993

Estimated livestock AUMs for 1993 were:

North Pasture-Cattle: 4817
North Pasture-Sheep: 1427
South Pasture-Cattle: 1792
South Pasture-Sheep: 1567
Total: 9603

4. Food Habits

A diet composition study by Hanley and Hanley (1982) used fecal analysis to partition food use among wild horses, cattle, sheep, antelope, and mule deer across seasons. Percent of forage density was determined for three forage classes:

Season	Grass	Forb	Browse
SHEEP:			
Spring	46.6	12.3	41.1
Summer	68.2	21.8	10.1
Fall	47.3	12.0	40.7
CATTLE:			
Spring	94.3	3.5	2.2
Summer	91.3	2.7	5.9
Fall	92.8	4.1	3.1

Spring = March, April, May; Summer = June, July, August; Fall = September, October, November; Winter = December, January, February.

Cattle primarily eat grass throughout the time they are on the range. In the spring, tender shoots of forbs are consumed and in the fall, protein rich shrub leaders are consumed. However, overall, grass is the dominant component.

Sheep are more generalized and opportunistic in their feeding habits than cattle. Sheep spend most of their foraging time seeking green and succulent vegetation, as opposed to specifically seeking out grass. Shrubs important in the sheep diet in the Twin Peaks allotment are Squaw apple, Bitterbrush, Sagebrush, Mt. Mahogany, and Juniper.

Most of the grazing use occurs during the spring and summer. Winter use is limited by snow cover in the higher areas of the allotment. The livestock operators use their base property for pasture, hay, and grain production and keep their stock on the base property when they are not on public lands. Both permittees have cow-calf operations. Calving generally occurs during spring on private land.

The limited distribution of water contributes greatly to poor livestock distribution. Livestock concentrate near water sources and overgraze the vegetation in those areas. At the same time, some areas of good forage

are under-utilized by livestock because of lack of water. The problem is compounded during summer when livestock do not graze as far from water as they do in cooler weather.

Seasonal and spatial distribution of water for livestock is a major problem. Water shortages are particularly evident in summer and fall, when many springs and seeps dry up and small reservoirs are empty.

I. Wildlife

1. Mule Deer

General

The only mule deer herd in the Twin Peaks Allotment area is the East Lassen deer herd, California's highest tag demand unit mule deer resource. It encompasses areas in California management unit X-5B and Nevada unit 015. Seasonal use areas inhabited by East Lassen mule deer are depicted in Map 11. Acreage and percent of each seasonal use area in the area are in Table 23.

East Lassen deer generally migrate in the fall in a north to southwest direction. At snow fall, the herd moves south, out of the high country in the north, through the Tuledad and Buckhorn areas. This area contains scattered communities of Bitterbrush, Juniper, and other browse species. During mild winters, East Lassen mule deer do not travel as far south or east as they will during snowy, more severe winters. The area frequented by deer during the more severe winters is located in the Parsnip Creek, Buffalo Creek, Twin Peak, Al Shinn Canyon, and Burro Mountain areas as far south as Smoke Creek.

Overall, Mule deer do well when a mosaic or high diversity of plant communities are present. A diverse landscape containing hiding cover, thermal cover, and foraging areas creates optimum habitat. The East Lassen deer herd population is limited by forage availability. Habitat features of the late winter use area do not meet optimum standards. Some perennial grasslands in the late winter range have been converted to cheatgrass communities. Wildfires and other factors have diminished bitterbrush availability throughout the entire winter and transition ranges. In summer range, optimum fawning habitat is scattered and not abundant. Shrub species characteristic of riparian zones in all seasonal use areas are lacking or severely hedged.

In April 1988, approximately 25% to 35% of the East Lassen Deer Herd died (Mike Dobel, Nevada Department of Wildlife, personal communication). Forage quality and availability were insufficient to support the herd. Deer were in poor physiological condition (low body fat) and were unable to withstand low temperatures. This loss was brought about by a period of hard snow cover that was preceded and followed by near drought conditions.

The 1993 herd population estimate was 4,500. The 1992 estimate was 4,900 (Table 7). These population estimates were determined by using the Nevada Department of Wildlife Modified Selleck-Hart Change In Ratio model. This model is highly sensitive to variation in data inputs. It provides only an estimate of numbers and is prone to considerable variation in year to year basis. Condition of deer in fall of 1991 was generally good, indicating a potential for high fawn ratios in the spring of 1992.

Stomach contents were obtained from six deer collected in March, 1986,

four miles north of Smoke Creek in Nevada. Green grass was the prevailing forage observed in the samples. Because the area where the deer were collected is dominated by cheatgrass rather than sagebrush or bitterbrush, it was unknown if these deer would have selected green grass over brush as late winter forage if brush species were available. General condition of deer collected was very poor.

Sixteen hunter shot adult does killed on Nevada winter ranges near Buffalo Creek in December 1987 were also examined. Approximately 80% of the volume of forage consumed by these deer was found to be cheatgrass. Big sagebrush was the second most common food item (13%) by volume. Cheatgrass and Big sagebrush were the only items to be found in all stomach samples. General condition of these deer was also poor.

While this herd has undergone wide "natural" fluctuations in population, the magnitude of losses that occurred in April 1988, (and previously less well documented losses) need not be repeated.

Locally, other decreases in the East Lassen Deer Herd population (since 1963) may be largely attributable to a downward trend in forage availability. The general population decline of the East Lassen Deer Herd has likely been influenced by the following:

1. Forage competition among cattle, sheep, deer, and antelope for bitterbrush has diminished the opportunity for deer to consume bitterbrush. Bitterbrush is a key plant species for deer in transition and winter ranges. Its availability influences the condition and survivability of deer throughout the winter.

2. Severe browsing has curtailed new bitterbrush plant establishment and hence bitterbrush availability. Severe browsing by deer, livestock, and pronghorn has reduced the overall reproductive capability of bitterbrush. (Bitterbrush seed are produced on two year and older leader growth. Shorter twig lengths produce fewer seeds).

3. Wildfires and prescribed burns have eliminated large areas of bitterbrush. Regeneration of bitterbrush on much of the burned areas has been very slow or non-existent.

4. Poor cattle distribution has resulted in overuse of riparian vegetation along drainages in the deer winter range. Deer contending with nutritional stress and extreme winter conditions do not find adequate thermal cover along these drainages.

5. Concentrations of livestock bedding and foraging in the area's few aspen stands has reduced available browse, cover, and fawning habitat for mule deer.

6. Management for increased production of perennial grass has been a traditional practice in this area. This practice has reduced the ability for bitterbrush to establish and hence its availability to deer. Similarly, perennial grasses may outcompete bitterbrush seedlings in some post-fire situations.

7. Forb and browse production has been significantly reduced by juniper expansion in a large block of deer summer range on the south end of the Warner Mountains. The reduced forb and browse production probably contributes to poorer condition animals and an increased chance of winter mortality.

8. Low rainfall and shallow soils in the Buffalo Hills critical deer

winter range (Buffalo, Chimney, Salt Marsh, Lower Smoke Creek, and Black Mountain allotment subdivisions) limit site potential and vegetative production. Mule deer must rely on dried annual and perennial grasses, and limited riparian vegetation for nutrition during the winter.

Vegetation currently available to deer for forage and cover can be managed using prescribed livestock grazing systems. Grazing prescriptions that recognize the forage and habitat demands of wildlife in Twin Peaks can help reduce the likelihood of major population losses.

Seasonal Habitats and Food Habits

Winter (mid November - mid March): Deer seek out thermal cover in riparian areas, and sunny south facing slopes, in winter. They are also found among rock outcrops, canyons and dense thickets. Dried cheatgrass, limited perennial grasses, and limited browse species (Big sagebrush, Low sage, Western juniper, Willow, and Wild rose) characterize the diet of the mule deer during late winter (Table 21). Deer benefit from fall and early winter green up of perennial grasses and annual grasses. Other forage species throughout the late winter are Rubber rabbitbrush, Green rabbitbrush, Snowbrush, Mule's ears, and Big sagebrush.

Spring/Summer (late March - mid July): Deer require increased shrub and tree cover for fawning. Optimum fawning habitat is a landscape of small trees with greater than 40% cover, near large trees, water, and succulent forage. Forbs and the early green up of grasses comprise the bulk of the mule deer diet in spring. Species consumed in Twin Peaks are: Phlox, lichens, thistles, Tumbling mustard, balsamroot, Desert peach, and lomatium. Cheatgrass, Snowbrush, and other plants with succulent, green forage are also consumed throughout the spring and early summer.

Late Summer/Fall (late July - October/early November): Mule deer movements occur during these months, initially to find browse species once the grasses and forbs have dried. Later, after snowfall, Mule deer migrate to the lowlands. Bitterbrush is consumed in the summer and transition ranges. Bitterbrush and other mixed shrub communities provide thermal and hiding cover. Other species consumed during these months are: Western juniper, Mt. Mahogany, Desert peach, Sweet clover, Choke cherry, Bitter cherry, Wild rose and Snowbrush.

Grasses are consumed throughout the year, contingent upon availability, succulence, and availability of other, more desirable species. Cheatgrass, Wheatgrass, Poa, Squirreltail, Fescue, Wild rye, and Needlegrass are found throughout the area and are consumed by East Lassen mule deer (Leckenby et al. 1982)

Shrub species dominated the Mule deer diet throughout the year in the diet composition study by Hanley and Hanley (1982). The four predominant species were: Mt. Mahogany, bitterbrush, juniper, and sagebrush.

Season	Grass	Forb	Browse
MULE DEER:			
Spring	9.1	6.2	84.7
Summer	8.4	4.0	87.6
Fall	4.0	3.5	92.5
Winter	3.2	3.0	93.8

2. Pronghorn

General

Pronghorn prefer low rolling topography with few slopes greater than 30%. Seasonal distribution of pronghorn in the Twin Peaks allotment is depicted in Map 12. Year round habitat is composed of 5-20% shrub ground cover, 10-30% forb ground cover, and 15-25" vegetative height that is 0-1.0 mile from water. Within this optimum habitat, pronghorn select plant species seasonally. Pronghorn population size is limited by the availability of high quality forbs and competition for forbs, grassland, and low sagebrush sites (Salwasser 1980, Kindschy et al. 1982).

Seasonal Habitats and Food Habits

Winter (December - March): Snow accumulation greater than 12" can prevent pronghorn from obtaining forage. During the winter, pronghorn are primarily dependent on the following browse species: Low sage, Black sage, Mountain big sagebrush, Wyoming big sagebrush, Shadscale, Rabbitbrush, and Winterfat (Table 21). Annual grasses and some dried forbs also provide winter nutrition.

Spring (March - mid June): Pronghorn prefer succulent vegetation and will select more forbs than grass during spring. They will continue to consume browse but to a lesser degree than in winter. Grass species found frequently in the pronghorn spring diet are: Cheatgrass, Indian ricegrass, Bottlebrush squirreltail, and Sandberg's bluegrass.

Summer (late June - September): Succulent forbs in meadow and riparian habitats are preferred in this season. Among preferred forbs are: Chenopods, Red-stem filaree, Buckwheats, Spurge, Povertyweed, Flax, Russian thistle, and Desert mallow. Various browse species continue to be consumed during this period, but pronghorn prefer forbs.

Fall (October - November): In fall, the preferred diet is browse dominated. Antelope bitterbrush, Low sage, Black sage, Big sagebrush, Rabbitbrush, Winterfat, and late growing forbs are all consumed by pronghorn in fall (USDI-BLM 1978, Kindschy et al. 1982).

Season	Grass	Forb	Browse
ANTELOPE:			
Spring	2.0	16.1	81.9
Summer	4.6	27.0	68.4
Fall	1.7	10.8	87.6
Winter	1.0	7.7	91.4

3. Sage Grouse

General

Sage grouse strutting grounds are depicted in Map 13. Use of strutting grounds ranges from mid February to mid May, with peak use occurring mid March. Nesting, brooding, and wintering usually occur within 5 miles of strutting grounds although wintering grounds can range further. Factors limiting population expansion are: availability of lek sites near sagebrush stands, riparian areas, and wet meadows for brood rearing. Limited succulent vegetation and water limits chick recruitment (Call and Maser, 1985).

There are three primary effects of livestock grazing on sage grouse habitat: 1) changes in composition, density, and structure of vegetation; 2) disturbance of nesting hens and possible trampling of nests; and 3) removal of brood forage and cover in meadows. Daily human disturbances on

sage grouse strutting grounds could cause reduction in mating, and some reduction in total production (Call and Maser, 1985).

Seasonal Habitats and Food Habits

Winter (November - March): Wind blown, snow free ridgetops, or areas with greater than 20% sagebrush cover and little slope constitute optimum winter habitat. Sage grouse are almost entirely dependent on sagebrush for forage during winter (Table 21). Sagebrush species of importance in the Twin Peaks area are: Big sagebrush, Low sage and Black sagebrush.

Spring (April - June): Cover for nesting is provided by sagebrush canopies and/or dense grass. Nesting success increases under canopies of sagebrush and grass ranging from 27%-60% cover. Sage grouse utilize forbs and new grass growth in early spring. Chicks require succulent, high protein forb and insect diets found in riparian areas and wet meadows. Meadows cropped low by livestock use do not provide adequate forage or escape cover for hens and chicks.

Summer/Fall (July - October): Sage grouse are common on dry sage sites in late summer. Meadows and riparian areas sustain the greatest use by sage grouse when upland forbs have matured and dried. Sage Grouse seeking succulent vegetation will move to wet meadows in valley bottoms or upward, toward mesic drainages, mountain meadows, and swales. Availability of free water is most crucial during this season (Call and Maser 1985)

J. Wild Horse and Burro

Wild horse and burros are managed in Twin Peaks allotment in the Twin Peaks North, Dry Valley Rim, and Skedaddle Home Range management units (Map 14). Wild horse and burro appropriate management levels (AML) within the allotment have been determined population estimates are presented in Table 24.

The wild horses and burros appear to be generally in good condition with minimum death losses and high reproduction rates. However, in 1993, there appeared to be only about an 8% foal crop in the Twin Peaks North Home Range.

The first aerial inventory of wild horses and burros in the Twin Peaks HMA was conducted in February, 1973. At that time, 835 horses and 104 burros were observed. A second inventory was completed in August, 1973 and 1491 horses and 104 burros were counted. The population increased to an estimated 2600 head of horses and 167 burros by 1977. The latest full census of the Twin Peaks North Home Range was made in April, 1993. At that time, 355 horses, 4 mules, and 45 burros were counted. In August and September, 1993, 190 horses were removed. No burros were removed at that time. Post removal estimates are as follows: 209 horses (including 4 mules) and 45 burros.

The greatest concentration of wild horses is in the northeast portion of the planning unit. Much of this area is very stony with steep slopes. There is poor access into the area with ordinary vehicles so that the animals are least disturbed in this area.

The greatest concentration of wild burros is in the Burro Mountain to Twin Peaks area, east of the Smoke Creek drainage. This area is characterized by steep, stony terrain with a transition from the salt desert shrub to the sagebrush-perennial grass vegetation. It is not known at this time which areas are crucial for the survival of these horses and burros.

From casual observations by Bureau personnel, it appears that these

animals occupy approximately the same home ranges throughout the year. In exceptionally severe winters, they migrate to the lower elevations but are reluctant to leave their home ranges.

The wild horses forage primarily on grasses and are in direct competition with cattle and, to some extent, with sheep. They will travel several miles to water during cool weather and are quite well distributed over the range. In the summer, they tend to frequent water sources more often and trample as will as graze the forage on these valuable areas where there is competition with domestic livestock and all classes of wildlife.

The wild burros are somewhat less selective and forage on both grasses and shrubs. They are concentrated on an area of relatively low potential for forage production.

A diet composition study by Hanley and Hanley (1982) used fecal analysis to partition food use among wild horses, cattle, sheep, antelope, and mule deer across seasons. Percent of forage density was determined for three forage classes:

Season	Grass	Forb	Browse
HORSES:			
Spring	86.2	9.4	4.3
Summer	95.2	3.9	1.0
Fall	94.9	2.1	3.0
Winter	81.5	6.7	11.8

Spring = March, April, May; Summer = June, July, August; Fall = September, October, November; Winter = December, January, February.

K. Fisheries/Aquatics

Smoke Creek above Smoke Creek Reservoir supported a rainbow trout fishery as late as 1975 (USDI-BLM, 1982). Rainbow trout were still present during surveys conducted in the late 1980s (Sada 1990). Stream surveys of this upper reach conducted in 1977 found moderate to heavy streambank disturbance, moderate streambank erosion, and diurnal water temperatures of 53-78 F (Susanville District Stream Survey 1977).

Streambank vegetation along upper Smoke Creek presently exhibits a noticeable lack of riparian plant species. In many areas where livestock use is not inhibited by steep rocky terrain, willows and many perennial grass species have been replaced by sagebrush, yarrow, thistle, and annual grass and forb species.

Smoke Creek below Smoke Creek Station contains a native fish assemblage, including the Lahontan tui chub, a federal category 2 candidate species. A visual survey in 1991 found Tahoe suckers and speckled dace, both native species. Electrofishing at a single site in 1992 yielded Tahoe sucker, speckled dace, and Lahontan redside. Stream surveys of the lower reach conducted in 1977 found severe surface erosion, few and stagnant pools, reduced flows (0 to 0.5 cfs) high temperatures of 61 to 74 F and low dissolved oxygen levels (Susanville District Stream Survey 1977).

The west fork of Buffalo Creek was considered "fishable" in 1991 near the confluence with the Middle Fork (NDOW 1991). Surveys found native Tahoe suckers and speckled dace. The stream survey found this fork to have good bank and vegetation stability, large and deep pools, and water temperatures within trout tolerance limits.

Streambank vegetation along the west fork of Buffalo Creek exhibits evidence of past vegetation damage but presently light use and damage. Riparian species found were: sedges, reeds, rushes, and other grasses and forbs, and some Red-osier dogwood. Also present, however, were sagebrush, yarrow, and thistle.

The main fork of Buffalo Creek surveys (NDOW 1991) found native Tahoe suckers, redside shiner and speckled dace. The stream survey found this fork to have limited shading and bank stability, with water temperatures outside of trout tolerance limits.

Streambank vegetation along the main fork is currently insufficient to stabilize the banks to prevent erosion and mass wasting during periods of high water.

Parsnip Wash, tributary to Buffalo Creek, has perennial flow in its lower reaches that is capable of supporting fisheries. A visual survey in 1991 found Tahoe sucker and speckled dace. Banks were stable where vegetation was present, but a full survey and habitat condition analysis of the wash has not been made. Electrofishing in 1992 yielded Tahoe sucker, speckled dace, and Lahontan redside.

L. BLM Riparian Policy

In 1987, the BLM Director established the Riparian Area Management Policy (Appendix H). In 1991, the BLM Director approved the Riparian-Wetland Initiative for the 1990's, which establishes goals and objectives for managing riparian-wetland resources on public lands. One of the chief goals of this initiative is to restore and maintain riparian-wetland areas so that 75 percent or more are in proper functioning condition by 1997.

V. MANAGEMENT EVALUATION AND CONCLUSIONS

A. Grazing Decision and Agreement of 3/6/92

The Grazing Decision and agreement of 3/6/92 intended to:

- Temporarily modify grazing permits and authorized grazing use to provide immediate protection to vegetation and wildlife resources within the Twin Peaks allotment and place the decision in full force and effect.

1. GD#1

Intent: - To improve current and future communication concerning the management of the allotment through the use of subunits.

The subunits have proven helpful in communications about geographic areas of the allotment. However, BLM has not been successful in using the subunits as livestock use areas because of the need to refine the boundaries into the most practical livestock control areas possible based on topography, vegetation, fences, and other factors. The use of these allotment subdivisions (Map 4) , as opposed to North and South pastures only, will provide for reasonable livestock control and consideration of useability, suitability, monitoring, and other future management considerations, including the need for future refinement of allotment subdivisions.

2. GD#2

Intent: - Avoid adverse effects on vegetation and wildlife habitat

from continuous growing season use in the North pasture by providing rest from grazing in alternate years.

- Provide for lack of adequate livestock water in South pasture during the hot season.

During 1992, 225 cattle used the North pasture. This action did provide relief for cattle in relation to water problems in the South pasture during the hot months by simply moving the cattle to the North pasture. Water problems were present throughout the allotment in 1992 and the BLM ultimately issued a grazing decision that modified the grazing authorizations for that year. Cattle were required to be removed from the entire allotment on 10/15/92 due the continuing drought conditions. The locations of use by the 225 cattle in the North pasture were not specifically known, but at least some of the 1992 use occurred in the same areas as 1991, thus the deferment in the alternate year did not occur. Use pattern mapping, utilization, and other information indicated that utilization greater than 60% occurred on stream and upland related riparian key plant species in 1992 and 1993.

3. GD#3

Intent: - Provide food for mule deer by minimizing cattle competition with mule deer for available annual leader growth of bitterbrush.

Cattle competition with mule deer for available annual leader growth of bitterbrush was minimal in 1992 and 1993 but problems with cattle control in the area occurred. Cattle had a propensity to move to riparian areas in the vicinity of Painter Flat, Hole in the Ground, Norton Place, and other riparian areas much earlier than 7/15 with resultant heavy use. In 1993, the Norton Place area received heavy use again while the Hole in the Ground area received slight use.

4. GD#4

Intent: - Provide recovery of riparian areas and aquatic habitat associated with Lower Smoke Creek by limiting use of vegetation to 40 percent and allowing for regrowth after 4/30 with minimum use of willow, rose, and other vegetation.

In 1992, cattle removal occurred by 4/30. However, periodic return of the cattle occurred throughout the summer and resulted in greater than 40% (heavy) use of the regrowth of some riparian related key plant species. In 1993, cattle were removed by 4/30 and return problems were minimal after that date. Overall, use was slight to light and regrowth occurred. Trailing by cattle after 4/30 took place during both 1992 and 1993 and was generally confined to the road and not the creek and riparian areas. Sheep trailing did not occur through this area in either year.

5. GD#5

Intent: - Provide food for mule deer by minimizing cattle competition with mule deer for available annual leader growth of bitterbrush. No cattle use on West side of Rowland Mountain after July 15 to minimize competition with mule deer for available annual leader growth of bitterbrush, or when 60% utilization is exceeded on grass key plant species so as not to exceed the moderate use level (40-60%) standard set forth

in the Cal-Neva land use plan.

- Provide for a total of 10 days sheep trailing in the Rowland subunit after 7/15 to minimize competition with mule deer for available annual leader growth of bitterbrush.

See GD#3.

6. GD#6

Intent: - Provide recovery of riparian areas and aquatic habitats by not exceeding 40% utilization of riparian related key plant species.

See GD#4.

7. GD#7

Intent: - Provide recovery of riparian areas and aquatic habitats by not exceeding 40% utilization of riparian related key plant species in the Parsnip and North Fork Buffalo Creek drainages.

During 1992 and 1993 utilization exceeding 40% occurred on riparian related key plant species in the Parsnip Creek drainage. Cattle were present in these drainages on numerous occasions after 4/30/92. Sheep and wild horses contributed to non-attainment of the utilization limitation in 1992.

8. GD#8

Intent: - Limit utilization on key plant species to 60 percent so as not to exceed the moderate use level (40-60 percent) standard set forth in the Cal-Neva land use plan.

Very few areas of non-riparian related key plant species in the allotment received use exceeding 60% during 1992-1993. In 1992 and 1993 cattle continued to make heavy use in areas of riparian related key plant species while adjacent use of non-riparian vegetation generally had light use. In the drought year of 1992, approximately 30% of the allotment had little or no herbaceous vegetative production.

9. GD#9

Intent: - Evaluate existing and establish new key areas for monitoring.

In 1992 and 1993 six upland, 7 riparian, 22 bitterbrush additional key areas were established under the auspices of the monitoring action plan. No evaluation of existing key areas for monitoring occurred.

10. GD#10

Intent: - Avoid sheep conflicts with sage grouse strutting grounds.

No known sheep camps and bedding of sheep occurred on sage grouse strutting grounds during 1992 or 1993. Sheep camps and bedding of sheep has occurred in adjacent areas and no information has been gathered to indicate if there were adverse effects on sage grouse strutting

activities. No documentation of BLM providing information to the operator as to the locations of sage grouse strutting grounds to be avoided is available.

11. GD#11

Intent: - Provide recovery to important wildlife habitat by minimizing sheep use in aspen stands.

During 1992, three of the six aspen stands monitored received bedding or feeding use by sheep.

12. GD#12

Intent: - Identify monitoring needs, key plant species, and subunits.

See GD#9

13. GD#13

Intent: - Provide for ongoing recording and reporting of numbers of livestock and dates of use on maps, by subunit.

No reporting of actual use occurred by subunit during 1992. In 1993, actual use was reported in terms of subunits where livestock were turned out and gathered from, only. There is no evidence of recording and submitting this information during the grazing season of 1992 or 1993.

14. GD#14

Intent: - Provide for use of short term monitoring information for livestock adjustments.

No annual adjustment of grazing for livestock based on actual use and utilization occurred in 1992 or 1993.

B. Other Issues and Concerns

1. The purpose and intent of the March 6, 1992 Grazing Decision was to provide refinement to the grazing practices authorized within the Twin Peaks Allotment Management Plan to provide temporary protection to vegetative and wildlife resources while adhering to the Cal-Neva MFP, Range Program Summary, Cal-Neva Grazing FEIS/ROD, Upper Smoke Creek Aquatic Habitat Management Plan, and Bureau policy. Since the issuance of the Grazing Decision, some of the grazing practices prescribed within the Grazing Decision achieved its intent, others did not. The practices prescribed within the AMP as modified by the decision and as implemented with varying degrees of success have not adequately improved or maintained resource conditions in riparian areas. Cattle use has significantly contributed to areas of heavy utilization on riparian vegetation and to heavy to extreme utilization and excessive trampling in and around riparian areas. Allowing cattle use to continue as authorized in the AMP and Agreement in light of riparian use and forage conditions would contribute to vegetation damage. The actual grazing use made during 1993 was 9603 AUMs. This level of use exceeded the desired use level in many riparian and other sensitive areas. The Bureau should not authorize the use level above that made in 1993 and should withhold a portion of the active preference from active use during grazing year 1994. Any

adjustments made in subsequent years should be based on the method for determining adjustments described in BLM handbook TR-4400-7. Future monitoring data must be evaluated to determine if any adjustments are necessary and/or if any additional modifications in existing management will be necessary. Modification of the grazing practices are needed immediately, as in 1992, to allow for a greater chance of success to provide temporary protection to vegetative and wildlife resources, including riparian areas. The grazing decision of March 6, 1992, should be vacated in its entirety. Due to the lack of recovery of severely deteriorated riparian vegetation and associated habitat since 1992, changes should be made immediately through a grazing decision placed in Full Force and Effect in accordance with 43 CFR 4160.3(c). The 1994 decision should be an interim measure to remain in effect until the Bureau of Land Management either: in accordance with its requirements and procedure, develops and implements a revised allotment management plan for the Allotment, and/or an integrated, comprehensive management plan that addresses the vegetation, wildlife, and other resource issues and concerns in the overall East Lassen area; or, until a subsequent Decision replacing or modifying this Decision is issued by the BLM.

2. In the case of "sacrifice areas" in the AMP, the grazing management guidance it provides is out of date and/or inappropriate when compared with current BLM management policy and guidance, specifically concerning riparian areas.

3. Wildlife numbers in the allotment are not at the objective numbers of the Cal-Neva MFP. Wildlife does not appear to be a cause for failing to meet Land Use Plan or Activity Plan goals or objectives. Therefore, wildlife habitat objectives or objective numbers should not be changed.

4. The use of allotment subdivisions (Map 4) , as opposed to North and South pastures only, will provide for reasonable livestock control and consideration of useability, suitability, monitoring, and other future management considerations. These subdivisions have now been refined into the most practical livestock control areas possible based on topography, vegetation, fences, and other factors.

5. The Allotment Specific Objectives of the AMP as modified by the grazing decision lack the specificity necessary to sufficiently address the need for management and temporary protection of vegetative and wildlife resources.

6. The types of monitoring discussed in the current monitoring section of the AMP are inadequate to meet BLM informational needs concerning the allotment and do not provide needed management flexibility. Monitoring as a process undergoes changes and adjustments depending on, among other things, the information desired and the decisions to be made. The types and amount of the monitoring information to be collected support grazing use adjustments need to be specified in an update of the Monitoring Action Plan for the Twin Peaks Allotment.

7. There is a need for increased intensity of management. Increased intensity of management will help provide needed control of grazing use to maintain and improve the condition of riparian and aquatic resources in some areas of the allotment, will optimize forage available to mule deer during fall transition and winter seasons in some areas, and to allow the short-term objectives to be met in other areas.

8. The season of use for cattle needs to be changed to provide immediate short-term protection to public rangeland resources and specifically to eliminate overutilization by cattle of vegetation associated with riparian

areas on the allotment in 1994 and succeeding years. This will initiate or continue recovery and improvement of at least some riparian resources in the allotment.

9. There is a need for improved coordination and understanding among BLM, the operators and other parties than that provided by the Twin Peaks AMP as modified by the Grazing Decision (AMP as modified).

10. A mechanism for determining the most appropriate livestock use annually, based on examination of monitoring and other information is necessary to provide for a more immediate response in making grazing use adjustments.

11. The "Flexibility/Requirements" section as currently written in the AMP is in some cases no longer applicable and in other cases is out-of-date. As authorized grazing use will be specified in advance by the annual grazing authorization, any changes to such use beyond provided flexibility will need advance approval by the authorized officer. Notifications to BLM concerning sheep use and locations are necessary and inherent to the process. Reconciliation privilege provides that the BLM timely receives payment for grazing use authorized while allowing for flexibility in changes in grazing that may occur during the authorized period of use.

12. After consideration of:

1992 and 1993 actual livestock use,
1992 and 1993 utilization studies,
1992 and 1993 use pattern mapping,
useability in relation to terrain and other factors,
precipitation,
location of key plant species,
key plant species phenology,
effect of various utilization levels at various seasons on key plant species,
seasonal use areas (habitats) and food habits of mule deer, sage grouse, and other animals,

in relation to achieving and adhering to the intent/goals/objectives, and decisions of the:

Grazing Decision of 3/6/92
Cal-Neva MFP
Range Program Summary
Grazing FEIS/ROD

it is apparent that there is a low likelihood of success if livestock management practices are not changed.

13. The Cal-Neva MFP (Land Use Plan), Range Program Summary (RPS), and Cal-Neva Grazing FEIS and Record of Decision (ROD) split the Cal Neva summer allotment into the Cal-Neva #1, Cal-Neva #2, and Cal-Neva #3 areas. Later, the Twin Peaks allotment was formed primarily from the Cal-Neva #1 and the northern 2/3 of the Winter Range allotment. The Cal-Neva #1 area corresponds to the Rowland, Stone Corral, Painter, Buffalo, Buffalo Hills, Chimney, Lower Smoke Creek, Five Springs, Skedaddle, and Rim allotment subdivisions of the Twin Peaks allotment. The Cal-Neva Winter Range allotment portion corresponds with the Salt Marsh and Dry Valley allotment subdivisions of the Twin Peaks allotment.

These documents also provided for

"Implement a livestock grazing program to include the following (see

Rangeland Program Summary for a complete description):

a. Implement intensive grazing systems on the Cal-Neva Summer, Cal-Neva Winter, Spanish Springs AMP, and Shinn Mountain Individual Allotments.

Develop systems to give particular consideration toward improving and maintaining riparian, wetland, and meadow habitat to enhance and protect wildlife and watershed values. Monitor key areas to determine to what degree the systems are meeting the resource objectives.

b. Provide a minimum of one season's rest from cattle during the growing season for every year's grazing during the growing season.

c. Establish grazing seasons to meet plant and soil needs (see RPS)."

In the RPS and Grazing FEIS and ROD, planning unit-wide mitigation measures were identified and adopted, including

"In addition to meeting all Federal Laws and policy guidelines and the above Standard Operating Procedures, the following Mitigation Measures will be required:

a.) Turnout dates and dates for moving livestock from one pasture to another will be synchronized with range readiness and the phenological development of the key plant species. These dates can vary from year to year due to fluctuations in the conditions that affect plant phenology. Yearly monitoring of plant phenological stages will be necessary for proper adjustment of dates for turnout and pasture moves. For the Cal-Neva #1 Allotment, turnout onto the native range pastures from the Dry Valley seeding will not occur before range readiness."

Range readiness is defined in these documents as "the stage of growth of the important palatable plants on the range and condition of soil which permit grazing without undue compacting of the soil or endangering the ability of the plants to maintain themselves".

The RPS stated that the Cal-Neva #1 use area, which is now a portion of the Twin Peaks allotment, is to have a cattle season of use for Espil of 4/1-10/31, cattle season of use for Laver of 5/1-10/31, and sheep seasons of use for Espil of 4/1-7/2 and 9/1-10/26. Additionally, the RPS stated that the Cal-Neva Winter Range allotment, which is now a portion of the Twin Peaks allotment, is to have a cattle season of use for Espil of 11/1-1/31 and a sheep season of use for Espil of 3/17-3/31.

The RPS also stated, for the Cal-Neva Winter Range allotment

"The FEIS proposed a grazing season of 11/01 to 02/28. Except for 2 weeks of sheep use, livestock use during March would be eliminated. This proposal would provide grazing deferment during the early spring growing period while perennial grasses are breaking dormancy and it would also prevent trampling of muddy soils. A closer inspection of the Winter Range has revealed areas, such as Dry Valley, which would be exceptions to the above proposal, because of their lack of perennial grass and the occurrence of well drained, trample resistant soils. Consultation with the permittees is needed to determine how grazing can continue into March and still provide

protection from grazing on the more susceptible range sites."

The Grazing FEIS and ROD stated that the Cal-Neva #1 use area, which is now a portion of the Twin Peaks allotment, is to have a cattle and sheep season of use 4/1-10/31. Additionally, the Grazing FEIS and ROD stated that the Cal-Neva Winter Range allotment, which is now a portion of the Twin Peaks allotment, is to have a cattle season of use of 11/1-2/28 and a sheep season of use of 11/1-3/31.

The Central Washoe County and the Lassen County Soil Survey indicate the presence of soils that are susceptible to damage if cattle use occurs when they are too wet in various areas of the Twin Peaks allotment. Vegetatively, the concern for the timing of use of the key plant species associated with winter use in the Salt Marsh and Dry Valley allotment subdivisions centers on the need to avoid use of shrubs prior to initiation of, and during, the growth period (Blaisdell and Homgren, 1984). In other allotment subdivisions, the concern for the timing of livestock use on some other key plant species, especially grasses, is associated with the need to provide rest during the growing season to restore needed plant vigor, and other considerations.

The current Grazing Permits authorize use of the entire allotment for Espil cattle for 3/1-12/31, for Laver cattle for 4/16-10/31, and sheep seasons of use for Espil of 4/1-6/30 and 9/16-10/26.

Given the requirements of the LUP and associated documents (above), and other information it is apparent that BLM authorizing cattle use of the entire allotment during the period 3/1-12/31 is inappropriate.

VI. SHORT TERM RECOMMENDATIONS

Temporarily modify grazing permits and authorized grazing use to provide immediate protection to vegetation and wildlife resources within the allotment. Place the grazing decision in full force and effect due to the lack of recovery of severely deteriorated riparian and associated habitat in accordance with 43 CFR 4160.3(c). Management actions and implementation should reflect the conclusions and short term recommendations contained in this document to more adequately fulfill the continuing need to meet the intent of the Grazing Decision of 3/6/92.

A. Livestock Use Areas

The principle allotment subdivisions (Map 4) are:

Rowland
Stone Corral
Painter
Buffalo
Buffalo Hills
Chimney
Lower Smoke Creek
Salt Marsh
Five Springs
Skedaddle
Rim
Dry Valley

B. Objectives and Key Management Areas

Allotment Management Plan specific objective "a" is changed from:

a. Utilization of key forage species shall not exceed moderate use level of 40-60% exclusive of water sacrifice areas."

to:

Short Term Management Objectives

1. Riparian Key Management Areas: Utilization of key plant species on public lands in riparian key management areas shall result in not less than a stubble height of 4-6 inches relative to ungrazed herbage vegetation on October 31 and shall not exceed 40 percent of current annual growth on shrubs and trees, as determined by examinations acceptable to the authorized officer. The riparian key management areas are the publicly owned portions of North Fork Buffalo Creek, West Fork Buffalo Creek, Middle Fork Buffalo Creek, Buffalo Creek, South Fork Parsnip Creek, Parsnip Creek below South Fork confluence, Chimney Creek, Smoke Creek, Phone Spring, Jenkins Trough, Red Rock 1 Spring, Red Rock 2 Spring, Rocky Table Spring, Jenkins Spring, Indian Spring, Parsnip Spring, Sage Hen Spring; and publicly owned areas associated with Horn Spring, Morgan Spring, Antelope Spring, Rush Canyon Spring, and Tin House Spring.

2. Other Riparian Areas: Utilization of riparian related key plant species on public lands shall result in not less than an average stubble height of 4 inches relative to ungrazed herbage vegetation on October 31 and shall not exceed 60 percent of current annual growth on shrubs and trees, as determined by examinations acceptable to the authorized officer.

3. Aspen Key Management Areas: Utilization of key plant species on public lands in aspen key management areas shall not exceed 60 percent on current annual growth relative to ungrazed herbage and shall not exceed 40 percent of current annual growth on shrubs and trees, as determined by examinations acceptable to the authorized officer. The aspen key management areas are the publicly owned aspen stands in the Skedaddle subdivision.

4. Bitterbrush Key Management Areas: Utilization of bitterbrush on public lands in bitterbrush key management areas shall not exceed 40 percent of current annual growth on July 15, as determined by examinations acceptable to the authorized officer. The bitterbrush key management areas are the publicly owned bitterbrush stands in the Rowland and Black Mountain subdivisions.

5. Non-Riparian Areas and Non-Key Management Areas: Utilization of key plant species on public lands shall not exceed 60 percent of current annual growth on October 31, as determined by examinations acceptable to the authorized officer.

6. Sage Grouse Strutting Grounds: Sheep use and placement of sheep camps on sage grouse strutting grounds shall be avoided between March 1 and April 30.

C. Key Plant Species

The key plant species are those listed in Table 7.

D. Grazing Preference Status

Espil Sheep Company grazing preference status for grazing use in the Twin Peaks Allotment is as follows:

AUM's

Active	Suspended Non-Use	Total
12,760	6739	19,499

Laver Ranches grazing preference status for grazing use in the Twin Peaks Allotment is as follows:

	AUM's	
Active	Suspended Non-Use	Total
670	362	1032

All grazing use made by Laver Ranches is by cattle.

E. Number of Livestock, Kind, Period of Use, Amount of Use by Subdivision

SCHEDULE 1 — Permit Grazing Schedule - Espil Sheep Company - Twin Peaks Allotment - 1994

Allotment Sub-Division	Livestock Number	Kind	Grazing Period Begin	End	Percent Public Land	Type Use	AUM's
BUFFALO BUFFALO HILLS	400	CATTLE	04/01	05/14	100	Active	616
LOWER SMOKE CK.	0	CATTLE	----------		100	Active	0
RIM	200	CATTLE	05/15	06/14	100	Active	400
SKEDADDLE	400	CATTLE	06/15	10/31	100	Active	1,828
FIVE SPRINGS	0	CATTLE	----------		100	Active	0
BLACK MOUNTAIN	400	CATTLE	05/16	07/14	100	Active	788
PAINTER	500	CATTLE	07/15	10/31	100	Active	1,792
ROWLAND	0	CATTLE	----------		100	Active	0
STONE CORRAL	0	CATTLE	----------		100	Active	0
CHIMNEY	0	CATTLE	----------		100	Active	0
	Not Scheduled	CATTLE			100	Nonuse	554
SCHEDULE 2							
DRY VALLEY SALT MARSH	212	CATTLE	11/01	01/31	100	Active	640
	Not Scheduled	CATTLE			100	Nonuse	3,292
SCHEDULE 3							
SALT MARSH,BUFFALO, BUFFALO HILLS	2,000	SHEEP	04/01	05/31	100	Active	801
DRY VALLEY, RIM, SKEDADDLE	2,000	SHEEP	04/01	05/31	100	Active	801
SKEDADDLE, 5 SPRINGS	1,000	SHEEP	06/01	06/30	100	Active	198
ROWLAND, STONE CORRAL	1,000	SHEEP	06/01	06/30	100	Active	198
PAINTER, STONE CORRAL	2,000	SHEEP	09/16	09/30	100	Active	196
BUFFALO, BUFFALO HILLS	4,000	SHEEP	10/01	10/25	100	Active	656

SCHEDULE 1 Permit Grazing Schedule - Laver Ranches - Twin Peaks Allotment - 1994

Allotment SubDivision	Livestock Number	Kind	Grazing Period Begin	End	Percent Public Land	Use	Type AUM's
SKEDADDLE	78	CATTLE	05/01	10/31	100	Active	470

VII. SELECTED MANAGEMENT ACTIONS

The selected management action selected is to incorporate the short term recommendations outlined in this document.

VII. FUTURE MONITORING

Update the Monitoring Action Plan and continue to collect the necessary data for subsequent evaluations.

IX. NEPA REVIEW

The selected management action for grazing in the Twin Peaks Allotment conforms to the environmental analysis of grazing impacts described in the Final Cal-Neva Grazing Environmental Impact Statement dated August 9, 1982 and the Environmental Assessment Concerning Grazing in the Twin Peaks Allotment of March 6, 1992.

Table 1. Elevation of the Twin Peaks allotment subdivisions.

Acres/% Elevation by increments of 200	ALLOTMENT SUBDIVISION												
	Rowland	Stone Corral	Painter	Buffalo	Buffalo Hills	Black Mtn.	Chimney	Lower Smoke Creek	Salt Marsh	Five Springs	Rim	Dry Valley	Skeda d-dle
3799 - 4000 ft.	-	-	-	-	-	-	-	-	13581/34	-	-	5999/18	-
4001 - 4200 ft.	-	-	-	492/1	-	-	-	798/6	7178/18	-	1383/2	3988/12	-
4201 - 4400 ft.	-	-	-	2151/5	-	-	1064/5	3038/23	7157/18	46/.2	1414/2	9226/27	-
4401 - 4600 ft.	-	-	-	5839/13	55/.3	116/1	4038/19	3094/23	4415/11	2025/10	2273/4	4899/14	75/.2
4601 - 4800 ft.	-	7/.03	-	6203/14	169/1	310/2	3033/15	1876/14	3135/8	7680/39	4546/7	2338/7	741/2
4801 - 5000 ft.	-	235/1	-	5899/14	1137/7	2680/13	2761/13	1930/14	1620/4	3156/16	8128/13	2247/7	4100/9
5001 - 5200 ft.	-	823/4	26/.1	5681/13	1388/8	4719/23	2815/14	1305/10	1286/3	2370/12	7310/12	1864/5	7295/17
5201 - 5400 ft.	-	726/3	359/1	4380/10	1650/10	3139/15	2371/11	672/5	731/2	1280/7	12320/20	1546/5	5686/13
5401 - 5600 ft.	-	2461/11	3030/9	5911/14	3380/20	2979/15	2288/11	480/4	411/1	1324/7	7166/12	1078/3	6235/14
5601 - 5800 ft.	993/9	5797/26	20166/62	1735/4	3322/20	2519/12	1503/7	149/1	162/.4	1273/6	4242/7	585/2	4269/10
5801 - 6000 ft.	1482/13	4924/22	8027/25	234/1	3459/21	3358/17	681/3	88/1	26/.1	455/2	836/1	323/1	4058/9
6001 - 6200 ft.	2147/19	1788/8	720/2	60/.1	1279/8	527/3	111/1	20/.2	-	-	46/.1	3/.01	3610/8
6201 - 6400 ft.	2668/23	48/.2	-	20/.1	663/4	-	29/.1	-	-	-	-	-	2852/7
6401 - 6600 ft.	3959/34	-	-	.5/0	316/2	-	36/.2	-	-	-	-	-	1549/4

6601 - 6800 ft.	292/3	-	-	-	4/.03	-	6/.03	-	-	-	-	-	1067/2
6801 - 7000 ft.	28/.2	-	-	-	-	-	-	-	-	-	-	-	760/2
7001 - 7200 ft.	-	-	-	-	-	-	-	-	-	-	-	-	585/1
7201 - 7400 ft.	-	-	-	-	-	-	-	-	-	-	-	-	612/1
7401 - 7600 ft.	-	-	-	-	-	-	-	-	-	-	-	-	95/.2

Public Lands Only

Table 2. Slope of the Twin Peaks allotment subdivisions.

	ALLOTMENT SUBDIVISION												
Acres/%	Rowland	Stone Corral	Painter	Buffalo	Buffalo Hills	Black Mtn.	Chimney	Lower Smoke Creek	Salt Marsh	Five Springs	Rim	Dry Valley	Skeda d-dle
0-5%	2246/ 19	3214/ 14	11712/ 36	3905/ 9	2187/ 13	3097/ 15	2717/ 13	1330/ 10	8556/ 22	4045/ 21	12081/ 20	5566/ 16	3403/ 8
6-15%	2490/ 22	4847/ 21	7541/ 23	4163/ 10	1785/ 11	5203/ 26	2720/ 13	1416/ 11	10122/ 25	4643/ 24	9223/ 15	6536/ 19	4563/ 10
16-30%	2812/ 24	5268/ 23	5982/ 19	4459/ 10	1664/ 10	4509/ 22	2127/ 10	1203/ 9	8045/ 20	3174/ 16	11072/ 18	4807/ 14	6767/ 16
31-50%	2937/ 25	4420/ 20	5007/ 15	7938/ 18	2630/ 16	3873/ 19	3973/ 19	2481/ 18	6191/ 16	3721/ 19	15041/ 25	5021/ 15	9834/ 23
51-70%	857/ 7	2816/ 12	1846/ 6	9869/ 23	3479/ 21	2303/ 11	4547/ 22	2672/ 20	3353/ 8	2530/ 13	8271/ 14	4509/ 13	8198/ 19
71-100%	225/ 2	1879/ 8	235/ 1	1888/ 27	4602/ 27	1300/ 6	4359/ 21	3777/ 28	3236/ 8	1464/ 7	4811/ 8	6337/ 19	9285/ 21
> 100%	.9/ .01	130/ 1	4/ .01	1472/ 3	474/ 3	62/ .3	293/ 1	573/ 4	199/ 1	32/ .2	203/ .3	1321/ 4	1539/ 4

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Table 3. Average monthly and annual precipitation for Gerlach, Nevada; Susanville Airport, California; and combined average.

AVERAGE PRECIPITATION (inches) [Gerlach elevation = 3951 ft.; Susanville Airport elevation = 4210 ft.]			
Month	Gerlach Average	Susanville Airport Average	Combined Average
January	0.76	2.56	1.66
February	0.55	2.17	1.36
March	0.51	1.51	1.01
April	0.77	0.72	0.75
May	0.90	0.77	0.84
June	0.75	0.67	0.71
July	0.11	0.24	0.18
August	0.31	0.17	0.24
September	0.28	0.41	0.35
October	0.35	1.09	0.72
November	1.18	1.73	1.46
December	0.87	2.43	1.65
Total	7.35	14.45	10.9

Table 4. Average monthly maximum, minimum, and daily temperatures for Gerlach, Nevada and Susanville Airport, California.

TEMPERATURE (°F)						
Month	Average Daily Max		Average Daily Min		Average Daily	
	Gerlach	Susanville Airport	Gerlach	Susanville Airport	Gerlach	Susanville Airport
January	41	40	20	20	30	30
February	49	46	25	24	37	35
March	57	53	30	28	43	41
April	65	62	35	33	50	47
May	75	71	44	39	59	55
June	83	80	51	45	67	63
July	93	89	57	50	75	70
August	92	88	55	48	74	68
September	81	80	47	42	64	61
October	70	67	36	35	53	51
November	53	52	28	27	40	39
December	41	42	21	22	31	32

Table 5. Twin Peaks allotment average annual precipitation in relation to allotment subdivisions.

	ALLOTMENT SUBDIVISION												
Acres/%	Rowland	Stone Corral	Painter	Buffalo	Buffalo Hills	Black Mtn.	Chimney	Lower Smoke Creek	Salt Marsh	Five Springs	Rim	Dry Valley	Skeda d-dle
< 4 inches	-	-	-	-	-	-	-	-	-	-	3270/ 5	-	-
4 - 8 inches	-	-	-	790/ 2	-	7397/ 37	5614/ 27	3284/ 24	31708/ 80	9745/ 50	16157/ 27	18392/ 54	5809/ 13
8 - 12 inches	3219/ 28	11376/ 50	15431/ 48	26942/ 62	16821/ 100	10679/ 52	9411/ 45	10060/ 75	7909/ 20	9863/ 50	41275/ 68	15706/ 46	32781 / 75
12 - 16 inches	8350/ 72	11198/ 50	16897/ 52	15962/ 37	-	2272/ 11	5711/ 28	107/ 1	85/ .2	-	-	-	4999/ 11

Public Lands Only

Table 6. Twin Peaks allotment perennial and intermittent streams in relation to allotment subdivisions.

	ALLOTMENT SUBDIVISION													
Acres/%	Rowland	Stone Corral	Painter	Buffalo	Buffalo Hills	Black Mtn.	Chimney	Lower Smoke Creek	Salt Marsh	Five Springs	Rim	Dry Valley	Skedad -dle	Total
Intermittent Streams	20/ 98	33/ 97	27/ 99	82/ 86	30/ 100	17/ 68	47/ 100	28/ 91	98/ 97	20/ 99	97/ 100	61/ 99	47/ 100	607
Perennial Streams	.3/ 2	1/ 3	.3/ 1	13/ 14	-	8/ 32	.2/ .5	3/ 9	3/ 3	.2/ 1	-	.6/ 1	-	29.6

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Table 7. Twin Peaks allotment key plant species in relation to allotment subdivisions.

KEY PLANT SPECIES BY ALLOTMENT SUBDIVISION				
ALLOT. SUBD.	GRASSES	SEDGES	FORBS	SHRUBS
Stone Corral	Squirreltail Bluebunch wheatgrass Thurbur's needlegrass Basin wildrye	Carex sp.	Cusick sunflower Wooly sunflower Phlox	Bitterbrush Low sagebrush Mountain Mahogany Willow
Lower Smoke Creek	Squirreltail Bluebunch wheatgrass Thurbur's needlegrass Indian ricegrass	Carex sp.		Willow Interior rose Cottonwood Winterfat Budsage
Five Springs	Squirreltail Bluebunch wheatgrass Thurbur's needlegrass Basin wildrye Sandberg's bluegrass	Carex sp.	Phlox Balsamroot Hawksbeard Buckwheat	Low sagebrush Black sagebrush Willow
Painter	Squirreltail Bluebunch wheatgrass Mat muhly Creeping wildrye Thurbur's needlegrass Basin Wildrye	Carex sp.	Cusick sunflower Wooly sunflower Phlox	Silver sagebrush Black sagebrush Low sagebrush Willow Interior rose Bitterbrush Mountain Mahogany
Chimney	Squirreltail Bluebunch wheatgrass Thurbur's needlegrass Indian ricegrass	Carex sp.		Winterfat Budsage Willow Interior rose
Black Mtn.	Squirreltail Thurbur's needlegrass Basin wildrye		Phlox	Bitterbrush Mountain Mahogany Willow
Skeddaddle	Squirreltail Bluebunch wheatgrass Thurbur's needlegrass Basin wildrye	Carex sp.	Phlox Balsamroot Hawksbeard	Bitterbrush Low sagebrush Big sagebrush Aspen
Dry Valley	Squirreltail Thurbur's needlegrass Basin wildrye Indian ricegrass Sandberg's bluegrass	Carex sp.	Phlox Balsamroot Hawksbeard	Winterfat Budsage Spiny hopsage Fourwing saltbush Black sagebrush Low sagebrush Willow Interior rose Cottonwood
Rim	Squirreltail Thurbur's needlegrass Sandberg's bluegrass Bluebunch wheatgrass Basin wildrye	Carex sp.	Phlox Balsamroot Hawksbeard	Black sagebrush Low sagebrush Willow
Buffalo	Squirreltail Basin wildrye Mat muhly Sandberg's bluegrass Bluebunch wheatgrass Creeping wildrye Thurbur's needlegrass Indian ricegrass	Carex sp.	Cusick sunflower Wooly sunflower Phlox Hawksbeard Buckwheat	Willow Interior rose Black sagebrush Low sagebrush Winterfat Budsage Spiny hopsage Fourwing saltbush

Buffalo Hills	Squirreltail Thurbur's needlegrass Sandberg's bluegrass		Phlox Hawksbeard Buckwheat	Low sagebrush Winterfat Budsage Spiny hopsage Fourwing saltbush
Rowland	Squirreltail Bluebunch wheatgrass Thurbur's needlegrass Basin wildrye	Carex sp.	Phlox	Bitterbrush Mountain Mahogany Willow
Salt Marsh	Thurbur's needlegrass Sandberg's bluegrass Bluebunch wheatgrass Creeping wildrye Squirreltail Indian ricegrass	Carex sp.	Phlox Hawksbeard Buckwheat Cusick sunflower Wooly sunflower	Low sagebrush Winterfat Budsage Spiny hopsage Fourwing saltbush Willow Interior rose Black sagebrush

Table 8. Twin Peaks allotment vegetation/land cover types and related key plant species.

Vegetation/Land Cover	Key Plant Species
Aspen	Aspen
Willow	Willow, Carex, Interior rose
MM 40-59% /Mix Sh	Mountain mahogany, Big sagebrush, Antelope bitterbrush
MM 40-59% /Rock	Mountain mahogany, Big sagebrush, Antelope bitterbrush
MM 60-100%	Mountain mahogany, Big sagebrush, Antelope bitterbrush
GBJW 10-24% /Mix Sh /PG	Big sagebrush, Antelope bitterbrush, Squawapple, Squirreltail, Bluebunch wheatgrass, Thurbur's needlegrass, Basin wildrye, Sandberg bluegrass
GBJW 10-24% /LS	Low sagebrush, Antelope bitterbrush, Squawapple, Squirreltail, Buckwheat, Phlox
GBJW 25-39% /MM	Mountain mahogany, Big sagebrush, Antelope bitterbrush
Mix Mtn 25-39% /BG	Big sagebrush, Squirreltail
Mix Mtn Sh 40-59% /BG	Big sagebrush, Squirreltail, Bluebunch wheatgrass, Thurbur's needlegrass
BSSc 10-24% /BB/PG	Big sagebrush, Antelope bitterbrush, Basin wildrye, Squirreltail, Bluebunch wheatgrass, Sandberg bluegrass
BSSc 10-39% /BG	Big sagebrush
BSSc 10-24% /Rock	Big sagebrush, Antelope bitterbrush, Squirreltail, Bluebunch wheatgrass
BSSc 10-39% /PG	Big Sagebrush, Antelope bitterbrush, Squirreltail, Bluebunch wheatgrass, Sandberg bluegrass, Basin wildrye
Mix GBSh 10-24% /PG/BG	Big sagebrush, Antelope bitterbrush, Squirreltail, Bluebunch wheatgrass, Sandberg bluegrass, Basin wildrye
Mix GBSh 10-39% /Rock	Big sagebrush, Antelope bitterbrush, Squirreltail, Bluebunch wheatgrass
LSSc 10-24% /PG	Low sagebrush, Sandberg bluegrass, Bluebunch wheatgrass, Squirreltail
LSSc 10-24% /Rock	Low sagebrush, Sandberg bluegrass, Bluebunch wheatgrass, Cusick sunflower
SSSc 10-39% /Mix Sh	Silver sagebrush, Big sagebrush, Mat muhly
RabSC 0-24% /BG	Cusick sunflower
Grease Sc 10-24% /Mix Sh	Basin wildrye, Big sagebrush, Spiny hopsage
Shad Sh 10-24% /Rock	Budsage, Spiny hopsage, Fourwing saltbush, Indian ricegrass
MixDesSh 10-39%	Budsage, Spiny hopsage, Fourwing saltbush, Winterfat, Indian ricegrass
Playa	
Meadow	Carex, Interior rose
Seasonal Meadow	Mat muhly, Creeping wildrye, Carex

Cropland	
Water	
Rock >90%	
BG	

Table 9. Twin Peaks allotment vegetation/land cover in relation to allotment subdivisions. Derived from preliminary Landsat Thematic Mapper Vegetation Classification.

	ALLOTMENT SUBDIVISION												
Vegetation/Land Cover	Rowland	Stone Corral	Painter	Buffalo	Buffalo Hills	Black Mtn.	Chimney	Lower Smoke Creek	Salt Marsh	Five Springs	Rim	Dry Valley	Skeda d-dle
Aspen	-	-	-	-	-	-	-	-	-	-	-	-	9/ .02
Willow	3/ .03	.15/ -	3/ .01	6/ .01	.2/ -	4/ .02	4/ .02	3/ .02	5/ .01	.2/ -	-	2/ .01	-
MM 40-59% /BS	-	-	-	-	-	-	-	-	-	-	-	-	-
MM 40-59% /Mix Sh	.5/ -	-	2/ .01	.8/ -	.5/ -	4/ .02	.6/ -	-	-	-	-	-	15/ .03
MM 40-59% /Rock	20/ .2	14/ .06	1/ -	181/ .4	141/ .1	3/ .02	26/ .1	-	20/ .05	-	11/ .02	9/ .03	97/ .22
MM 60-100%	-	-	6/ .02	-	-	.1/ -	-	-	-	-	-	-	.2/ -
GBJW 10-24% /Mix Sh/PG	547/ 5	1462/ 6	2361/ 7	1670/ 4	1415/ 8	2087/ 10	546/ 3	12/ .09	15/ .04	60/ .3	150/ .3	34/ .1	313/ 1
GBJW 10-24% /LS	2688/ 23	3166/ 14	712/ 2	1349/ 3	3438/ 20	845/ 4	259/1	87/ .1	9/ .02	115/ .6	641/ 1	69/ .2	894/ 2
GBJW 25-39% /MM	169/ 1	85/ .4	10/ .03	66/ .2	349/ 2	19/ .1	6/ .03	.1/ .01	-	.2/ -	2/ -	.6/ -	421/ 1
Mix Mtn Sh 25-39% /BG	480/ 4	140/ .6	247/ .8	13/ .03	23/ .1	110/ .5	1/ .01	-	-	4/ .02	4/ .01	.5/ -	93/ .2
Mix Mtn Sh 40-59% /PG	24/ .2	10/ .04	40/ .1	65/ .15	9/ .06	27/ .1	10/ .05	10/ .07	1/ -	5/ .03	2 -	3/ .01	446/ 1
BSSc 10-24% /BB/PG	1011/ 9	1626/ 7	5238/ 16	2833/ 6	1328/ 8	2849/ 14	647/ 3	162/ 1	284/ 1	1265/ 7	3249/ 5	709/ 2	6641/ 15
BSSc 10-39% /BG	278/ 2	2793/ 12	7896/ 24	16021/ 37	2123/ 13	3118/ 15	9426/ 45	6805/51	13575/ 34	7192/ 37	20939/ 34	16072/ 47	12836 / 29
BSSc 10-24% /Rock	4/ .04	107/ .5	294/ .9	1068/ 2	110/ 1	32/ .1	640/ 3	286/ 2	659/ 2	985/ 5	1379/ 2	912/ 3	878/ 2
BSSc 10-39% /PG	3385/ 29	2351/ 10	4211/ 13	2094/ 5	1044/ 6	2691/ 13	468/ 2	109/ .1	257/ 1	696/ 4	1848/ 3	420/ 1	2412/ 6
Mix GBSh 10-24% /PG/BG	1613/ 14	3754/ 17	1947/ 6	3306/ 8	2071/ 12	1393/ 7	1137/ 5	454/ 3	1292/ 3	1472/ 8	7084/ 12	1581/ 5	6148/ 14

Mix GBSh 10-39% /Rock	12/ .1	130/ .6	191/ .6	1438/ 3	153/ 1	16/ .1	356/ 2	107/ .8	836/ 2	504/ 3	2778/ 5	596/ 2	2802/ 6
LSSc 10-24% /PG	15/ .1	62/ .3	167/ .5	506/ 1	30/ .2	5/ .02	309/ 1	36/ .3	446/ 1	797/ 4	468/ 1	173/ 1	577/ 1
LSSc 10-24% /Rock	892/ 8	4765/ 21	3202/ 10	7166/ 16	3260/ 19	5658/ 28	2752/ 13	1506/ 11	1834/ 5	1930/ 10	16548/ 27	2143/ 6	6708/ 15
SSSc 10-39% /Mix Sh	45/	99/ .4	1834/ 6	606/ 1	78/ .5	171/ .1	230/ 1	67/ .1	132/ .3	589/ 3	159/ .3	128/ .4	396/ 1
RabSC 0-24% /BG	5/ .04	60/ .3	384/ 1	864/ 2	30/ .2	136/ .1	804/ 4	210/ 2	732/ 2	1606/ 8	378/ 1	746/ 2	199/ .5
Grease Sc 10-24% /Mix Sh	11/ .09	6/ .02	62/ .2	148/ .3	.3/ -	.5/ -	46/ .2	15/ .1	113/ .3	284/ 1	107/ .2	195/ 1	14/ .03
GreaseSc 10-24%/Bud/Salt	-	-	-	-	-	-	-	-	-	-	-	-	-
Shad Sh 10-24% /Rock	.2/ -	-	28/ .09	5/ .01	-	-	2/ .01	1/ .01	20/ 1	2/ .01	156/ .3	178/ 1	1/ -
MixDesSh 10-39%	15/ .1	17/ .08	529/ 2	360/ .8	3/ .02	4/ .02	546/ 3	337/ 3	9821/ 25	186/ 1	1907/ 3	3859/ 11	154/ .4
Playa	15/ .13	8/ .03	373/ 1	188/ .4	.2/ -		46/ .2	80/ .1	6474/ 16	148/ 1	74/ .1	1878/ 6	22/ .05
Meadow	6/ .05	.2/ -	3/ .01	2/ .01	-	.2/ -	4/ .02	-	5/ .01	6/ .03	.3/ -	.2 -	.2 -
Seasonal Meadow	251/ 2	308/ 1	15/4/ 5	1006/ 2	363/ 2	102/ .1	116/ .1	51/ .4	249/ 1	880/ 4	245/ .4	308/ 1	951/ 2
Cropland	3/ .02	1/ .01	3/ .01	1/ -	.2/ -	-	2/ .01 -	.3/ -	82/ .2	117/ .6	.2/ -	93/ .3	2 -
Water	4/ .03	-	-	-	-	-	-	-	-	-	-	-	-
Rock >90%	61/ .5	1575/ 7	808/ 3	2491/ 6	843/ 5	1027/ 5	2212/ 11	2829/ 21	1252/ 3	143/ 1	2263/ 4	274/ 8	474/ 1
BG	12/ .1	36/ .2	213/ 1	241/ .6	6/ .04	46/ .2	141/ .1	284/ 2	1408/ 3	634/ 3	308/ 1	1248/ 4	67/ .2

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Table 10. Anticipated impacts on key plant species from **Early Spring Grazing** (grazing from 3/1-4/30) in the Twin Peaks Allotment. Utilization Levels: Low = 0-40%; Moderate = 41-60%; High = 61%+

KEY PLANT SPECIES AFFECTED	VIGOR			LITTER ACCUMULATION			SEEDLING ESTABLISHMENT			SEED TRAMPLING		
UTILIZATION:	L	M	H	L	M	H	L	M	H	L	M	H
GRASSES Squirreltail	0	0	-L	0	0	0	0	-M	-H	0	0	0
Bluebunch wheatgrass	0	0	-L	0	0	0	0	-M	-H	0	0	0
Needlegrass	0	0	-L	0	0	0	0	-M	-H	0	0	0
Great Basin wildrye	0	0	-L	0	0	0	0	-M	-H	0	0	0
Mat muhly	0	0	-L	0	0	0	0	-M	-H	0	0	0
Nevada bluegrass	0	0	-L	0	0	0	0	-M	-H	0	0	0
Indian ricegrass	0	0	-L	0	0	0	0	-M	-H	0	0	0
Sandberg's bluegrass	0	0	-L	0	0	0	0	-M	-H	0	0	0
Creeping Rye	0	0	-L	0	0	0	0	-M	-H	0	0	0
SEDGES Carex sp.	0	0	0	0	0	0	0	-M	-H	0	0	0
FORBS Cusick sunflower	0	0	0	0	0	0	0	0	0	0	0	0
Wooly sunflower	0	0	0	0	0	0	0	0	0	0	0	0
Phlox	0	0	0	0	0	0	0	0	-M	0	0	0
Balsamroot	0	-L	-M	0	-L	-M	0	-L	-M	0	0	0
Hawksbeard	0	-L	-M	0	-L	-M	0	-L	-M	0	0	0
SHRUBS Bitterbrush	0	-L	-M	0	0	-L	0	-L	-M	0	0	0

EARLY SPRING GRAZING 3/1-4/30 CONTINUED												
KEY PLANT SPECIES AFFECTED	VIGOR			LITTER ACCUMULATION			SEEDLING ESTABLISHMENT			SEED TRAMPLING		
UTILIZATION:	L	M	H	L	M	H	L	M	H	L	M	H
Silver sage	0	0	-L	0	0	0	0	-L	0	0	0	0
Black sage	0	-L	-M	0	0	-L	0	-L	-M	0	0	0
Low sage	0	-L	-M	0	0	-L	0	-L	-M	0	0	0
White sage	0	-M	-H	0	0	-L	0	-L	-M	0	0	0
Bud sage	0	-L	-M	0	-L	-L	0	-L	-M	0	0	0
Big sage	0	-L	-L	0	0	-L	0	0	-L	0	0	0
Squaw apple	0	-M	-M	0	-L	-L	0	-L	-M	0	0	0
Mountain mahogany	0	-L	-M	0	0	0	0	0	-L	0	0	0
Willow	0	0	-L	0	0	-L	0	0	-L	0	0	0
Rose	0	0	0	0	0	0	0	0	0	0	0	0
Cottonwood	0	0	-L	0	0	-L	0	0	-L	0	0	0
Aspen	0	-L	-M	0	-L	-L	0	0	-L	0	0	0
Spiny hopsage	0	-L	-M	0	-L	-L	0	0	-L	0	0	0
Fourwing saltbush	0	0	-L	0	0	-L	0	0	-L	0	0	0

General Treatment Impacts: + = Postitive; - = Negative; 0 = Negligible
L = Low; M = Moderate; H = High

Table 11. Anticipated impacts on key plant species from **Early Spring Rest** (no grazing from 3/1-4/30). Utilization Levels: Low = 0-40%; Moderate = 41-60%; High = 61%+

KEY PLANT SPECIES AFFECTED	VIGOR	LITTER ACCUMULATION	SEEDLING ESTABLISHMENT	SEED TRAMPLING
GRASSES Squirreltail	+H	0	+H	0
Bluebunch wheatgrass	+H	0	+H	0
Needlegrass	+H	0	+H	0
Basin wildrye	+H	0	+H	0
Mat muhly	+H	0	+H	0
Nevada bluegrass	+H	0	+H	0
Indian ricegrass	+H	0	+H	0
Sandberg's bluegrass	+H	0	+H	0
Creeping Rye	+H	0	+H	0
SEDGES Carex sp.	+M	0	+H	0
FORBS Cusick sunflower	0	0	0	0
Wooly sunflower	0	0	0	0
Phlox	+L	0	+M	0
Balsamroot	+L	0	+M	0
Hawksbeard	+L	0	+M	0
Buckwheat	+L	0	+M	0
SHRUBS Bitterbrush	+H	0	+M	0

EARLY SPRING REST (3/1-4/30), CONTINUED				
KEY PLANT SPECIES AFFECTED	**VIGOR**	**LITTER ACCUMULATION**	**SEEDLING ESTABLISHMENT**	**SEED TRAMPLING**
Silver sage	0	0	0	0
Black sage	+L	0	0	0
Low sage	+L	0	0	0
White sage	+H	0	0	0
Bud sage	+L	0	0	0
Big sage	+L	0	+L	0
Squaw apple	+M	0	+H	0
Mountain mahogany	+L	0	+H	0
Willow	+L	0	+L	0
Rose	+L	0	+L	0
Cottonwood	+L	0	+L	0
Aspen	+L	0	+L	0
Spiny hopsage	+H	0	+H	0
Fourwing saltbush	+H	0	+H	0

General Treatment Impacts: + = Postitive; - = Negative; 0 = Negligible
L = Low; M = Moderate; H = High

Table 12. Anticipated impacts on key plant species from **Spring to Summer Grazing** (grazing from 5/1-7/1) in the Twin Peaks Allotment. Utilization Levels: Low = 0-40%; Moderate = 41-60%; High = 61%+

KEY PLANT SPECIES AFFECTED	VIGOR			LITTER ACCUMULATION			SEEDLING ESTABLISHMENT			SEED TRAMPLING		
UTILIZATION:	L	M	H	L	M	H	L	M	H	L	M	H
GRASSES Squirreltail	-L	-M	-H	-L	-M	-H	-L	-M	-H	0	0	0
Bluebunch wheatgrass	-L	-M	-H	-L	-M	-H	-L	-M	-H	0	0	0
Needlegrass	-L	-M	-H	-L	-M	-H	-L	-M	-H	0	0	0
Great Basin wildrye	-L	-M	-H	-L	-M	-H	-L	-M	-H	0	0	0
Mat muhly	-L	-M	-H	-L	-M	-H	-L	-M	-H	0	0	0
Nevada bluegrass	-L	-M	-H	-L	-M	-H	-L	-M	-H	0	0	0
Indian ricegrass	-L	-M	-H	-L	-M	-H	-L	-M	-H	0	0	0
Sandberg's bluegrass	-L	-M	-H	-L	-M	-H	-L	-M	-H	0	0	0
Creeping Rye	-L	-M	-H	-L	-M	-H	-L	-M	-H	0	0	0
SEDGES Carex sp.	0	-L	-M	0	-L	-M	-L	-L	-M	0	0	0
FORBS Cusick sunflower	0	-L	-M	0	-L	-M	-L	-M	-H	0	0	0
Wooly sunflower	0	-L	-M	0	-L	-M	-L	-M	-H	0	0	0
Phlox	0	-L	-M	0	-L	-M	-L	-M	-H	0	0	0
Balsamroot	0	-L	-M	0	-L	-M	-L	-M	-H	0	0	0
Hawksbeard	0	-L	-M	0	-L	-M	-L	-M	-H	0	0	0
Buckwheat	0	-L	-M	0	-L	-M	-L	-M	-H	0	0	0
SHRUBS Bitterbrush	0	-L	-M	0	-L	-M	-L	-M	-H	0	0	0

SPRING TO SUMMER GRAZING (5/1-7/1), Continued												
KEY PLANT SPECIES AFFECTED	VIGOR			LITTER ACCUMULATION			SEEDLING ESTABLISHMENT			SEED TRAMPLING		
UTILIZATION:	L	M	H	L	M	H	L	M	H	L	M	H
Silver sage*	0	0	-L	0	0	-L	0	0	-L	0	0	0
Black sage*	0	0	-L	0	0	-L	0	0	-L	0	0	0
Low sage*	0	0	-L	0	0	-L	0	0	-L	0	0	0
White sage	-L	-M	-H	0	-L	-M	-L	-M	-H	0	0	0
Bud sage	-L	-M	-M	0	-L	-M	-L	-M	-H	0	0	0
Big sage*	0	0	-L	0	0	-L	0	0	-L	0	0	0
Squaw apple	-L	-M	-H	-L	-M	-H	-L	-M	-H	0	0	0
Mountain mahogany	-L	-M	-H	-L	-M	-H	-L	-M	-H	0	0	0
Willow	0	-L	-M	0	-L	-M	0	0	-L	0	0	0
Rose*	0	0	-L	0	0	-L	0	0	-L	0	0	0
Cottonwood	0	-L	-M	0	0	-L	0	0	-L	0	0	0
Aspen	0	-L	-M	0	0	-L	0	0	-L	0	0	0
Spiny hopsage*	0	0	-L	0	0	-L	0	0	-L	0	0	0
Fourwing saltbush*	0	0	-L	0	0	-L	0	0	-L	0	0	0

General Treatment Impacts: + = Postitive; - = Negative; 0 = Negligible
L = Low; M = Moderate; H = High

* These species are not normally grazed by livestock during this season.

Table 13. Anticipated impacts on key plant species from **Spring to Summer Rest** (no grazing from 5/1-7/1) in the Twin Peaks Allotment. Utilization Levels: Low = 0-40%; Moderate = 41-60%; High = 61%+

KEY PLANT SPECIES AFFECTED	VIGOR	LITTER ACCUMULATION	SEEDLING ESTABLISHMENT	SEED TRAMPLING
GRASSES Squirreltail	+H	0	+M	0
Bluebunch wheatgrass	+H	0	+M	0
Needlegrass	+H	0	+M	0
Great Basin wildrye	+H	0	+M	0
Mat muhly	+H	0	+M	0
Nevada bluegrass	+H	0	+M	0
Indian ricegrass	+H	0	+M	0
Sandberg's bluegrass	+H	0	+M	0
Creeping Rye	+H	0	+M	0
SEDGES Carex sp.	+L	0	+L	0
FORBS Cusick sunflower	+H	0	+L	0
Wooly sunflower	+H	0	+L	0
Phlox	+H	0	+M	0
Balsamroot	+H	0	+M	0
Hawksbeard	+H	0	+M	0
Buckwheat	+H	0	+M	0
SHRUBS Bitterbrush	+H	0	+M	0

SPRING TO SUMMER REST (5/1-7/1), Continued				
KEY PLANT SPECIES AFFECTED	VIGOR	LITTER ACCUMULATION	SEEDLING ESTABLISHMENT	SEED TRAMPLING
Silver sage	+L	0	0	0
Black sage	+M	0	0	0
Low sage	+M	0	0	0
White sage	+H	0	0	0
Bud sage	+M	0	0	0
Big sage	+L	0	0	0
Squaw apple	+L	0	0	0
Mountain mahogany	+L	0	0	0
Willow	+L	0	0	0
Rose	+L	0	0	0
Cottonwood	+L	0	0	0
Aspen	+L	0	0	0
Spiny hopsage	+M	0	0	0
Fourwing saltbush	+M	0	0	0

General Treatment Impacts: + = Postitive; - = Negative; 0 = Negligible
L = Low; M = Moderate; H = High

Table 14. Anticipated impacts on key plant species from **Late Summer to Fall Grazing** (7/1-10/31) in the Twin Peaks Allotment. Utilization Levels: Low = 0-40%; Moderate = 41-60%; High = 61%+

KEY PLANT SPECIES AFFECTED	VIGOR			LITTER ACCUMULATION			SEEDLING ESTABLISHMENT			SEED TRAMPLING		
UTILIZATION	L	M	H	L	M	H	L	M	H	L	M	H
GRASSES Squirreltail	0	-L	-M	-L	-M	-H	0	-L	-M	+L	+L	+L
Bluebunch wheatgrass	0	-L	-M	-L	-M	-H	0	-L	-M	+L	+L	+L
Needlegrass	0	-L	-M	-L	-M	-H	0	-L	-M	+L	+L	+L
Great Basin wildrye	0	-L	-M	-L	-M	-H	0	-L	-M	+L	+L	+L
Mat muhly	0	-L	-M	-L	-M	-H	0	-L	-M	+L	+L	+L
Nevada bluegrass	0	-L	-M	-L	-M	-H	0	-L	-M	+L	+L	+L
Indian ricegrass	0	-L	-M	-L	-M	-H	0	-L	-M	+L	+L	+L
Sandberg's bluegrass	0	-L	-M	-L	-M	-H	0	-L	-M	+L	+L	+L
Creeping Rye	0	-L	-M	-L	-M	-H	0	-L	-M	+L	+L	+L
SEDGES Carex sp.	0	0	-L	0	0	-L	0	-L	-M	+L	+L	+L
FORBS Cusick sunflower	0	-L	-M	-M	-H	-H	0	-L	-M	+L	+L	+L
Wooly sunflower	0	-L	-M	-M	-H	-H	0	-L	-M	+L	+L	+L
Phlox	0	-L	-M	-M	-H	-H	0	-L	-M	+L	+L	+L
Balsamroot	0	-L	-M	-M	-H	-H	0	-L	-M	+L	+L	+L
Hawksbeard	0	-L	-M	-M	-H	-H	0	-L	-M	+L	+L	+L
Buckwheat	0	-L	-M	-M	-H	-H	0	-L	-M	+L	+L	+L
SHRUBS Bitterbrush	-L	-M	-H	-L	-M	-H	-L	-M	-H	+L	+L	+L

LATE SUMMER TO FALL GRAZING (7/1-10/31), Continued												
KEY PLANT SPECIES AFFECTED	VIGOR			LITTER ACCUMULATION			SEEDLING ESTABLISHMENT			SEED TRAMPLING		
UTILIZATION	L	M	H	L	M	H	L	M	H	L	M	H
Silver sage	-L	-M	-H	0	-L	-H	0	0	0	+L	+L	+L
Black sage	0	-M	-	0	-L	-H	0	0	0	+L	+L	+L
Low sage	0	-M	-	0	-L	-H	0	0	0	+L	+L	+L
White sage	0	-L	-M	0	-L	-H	0	0	0	+L	+L	+L
Bud sage	0	0	0	0	-L	-H	0	0	0	+L	+L	+L
Big sage	0	-L	-M	0	-L	-H	0	0	0	+L	+L	+L
Squaw apple	0	-L	-M	0	-L	-H	0	0	0	+L	+L	+L
Mountain mahogany	0	0	-L	0	-L	-H	0	0	0	+L	+L	+L
Willow	-L	-M	-H	0	-L	-H	0	0	0	+L	+L	+L
Rose	-L	-M	-H	0	-L	-H	0	0	0	+L	+L	+L
Cottonwood	-L	-M	-H	0	-L	-H	0	0	0	+L	+L	+L
Aspen	-L	-M	-H	0	-L	-H	0	0	0	+L	+L	+L
Spiny hopsage	0	0	-L	0	-L	-H	0	0	0	+L	+L	+L
Fourwing saltbush	0	-L	-M	0	-L	-H	0	0	0	+L	+L	+L

General Treatment Impacts: + = Postitive; - = Negative; 0 = Negligible
L = Low; M = Moderate; H = High

Table 15. Anticipated impacts on key plant species from **Late Summer to Fall Rest** (no grazing from 7/1-10/31) in the Twin Peaks Allotment. Utilization Levels: Low = 0-40%; Moderate = 41-60%; High = 61%+

KEY PLANT SPECIES AFFECTED	VIGOR	LITTER ACCUMULATION	SEEDLING ESTABLISHMENT	SEED TRAMPLING
GRASSES Squirreltail	0	+H	+L	-L
Bluebunch wheatgrass	0	+H	+L	-L
Needlegrass	0	+H	+L	-L
Great Basin wildrye	0	+H	+L	-L
Mat muhly	0	+H	+L	-L
Nevada bluegrass	0	+H	+L	-L
Indian ricegrass	0	+H	+L	-L
Sandberg's bluegrass	0	+H	+L	-L
Creeping Rye	0	+H	+L	-L
SEDGES Carex sp.	0	+L	+L	-L
FORBS Cusick sunflower	0	+H	0	-L
Wooly sunflower	0	+H	0	-L
Phlox	0	+H	0	-L
Balsamroot	0	+H	0	-L
Hawksbeard	0	+H	0	-L
Buckwheat	0	+H	0	-L
SHRUBS Bitterbrush	+M	+H	0	-L

LATE SUMMER TO FALL REST (7/1-10/31), Continued				
KEY PLANT SPECIES AFFECTED	**VIGOR**	**LITTER ACCUMULATION**	**SEEDLING ESTABLISHMENT**	**SEED TRAMPLING**
Silver sage	+M	+L	0	-L
Black sage	+M	+L	0	-L
Low sage	+M	+L	0	-L
White sage	+M	+L	0	-L
Bud sage	+M	+L	0	-L
Big sage	+M	+L	0	-L
Squaw apple	+M	+L	0	-L
Mountain mahogany	+M	+L	0	-L
Willow	+M	+L	0	-L
Rose	+M	+L	0	-L
Cottonwood	+M	+L	0	-L
Aspen	+M	+L	0	-L
Spiny hopsage	+M	+L	0	-L
Fourwing saltbush	+M	+L	0	-L

General Treatment Impacts: + = Postitive; - = Negative; 0 = Negligible
L = Low; M = Moderate; H = High

Table 16. Anticipated impacts on key plant species from **Winter Grazing** (grazing from 11/1-2/28) in the Twin Peaks Allotment. Utilization Levels: Low = 0-40%; Moderate = 41-60%; High = 61%+

KEY PLANT SPECIES AFFECTED	VIGOR			LITTER ACCUMULATION			SEEDLING ESTABLISHMENT			SEED TRAMPLING		
UTILIZATION	L	M	H	L	M	H	L	M	H	L	M	H
GRASSES Squirreltail	0	0	0	-L	-M	-H	0	0	-L	+L	+L	+L
Bluebunch wheatgrass	0	0	0	-L	-M	-H	0	0	-L	+L	+L	+L
Needlegrass	0	0	0	-L	-M	-H	0	0	-L	+L	+L	+L
Great Basin wildrye	0	0	0	-L	-M	-H	0	0	-L	+L	+L	+L
Mat muhly	0	0	0	-L	-M	-H	0	0	-L	+L	+L	+L
Nevada bluegrass	0	0	0	-L	-M	-H	0	0	-L	+L	+L	+L
Indian ricegrass	0	0	0	-L	-M	-H	0	0	-L	+L	+L	+L
Sandberg's bluegrass	0	0	0	-L	-M	-H	0	0	-L	+L	+L	+L
Creeping Rye	0	0	0	-L	-M	-H	0	0	-L	+L	+L	+L
SEDGES Carex sp.	0	0	0	0	-L	-M	0	0	-L	+L	+L	+L
FORBS Cusick sunflower	0	0	0	-L	-M	-H	0	0	-L	+L	+L	+L
Wooly sunflower	0	0	0	-L	-M	-H	0	0	-L	+L	+L	+L
Phlox	0	0	0	-L	-M	-H	0	0	-L	+L	+L	+L
Balsamroot	0	0	0	-L	-M	-H	0	0	-L	+L	+L	+L
Hawksbeard	0	0	0	-L	-M	-H	0	0	-L	+L	+L	+L
Buckwheat	0	0	0	-L	-M	-H	0	0	-L	+L	+L	+L
SHRUBS Bitterbrush	0	-L	-M	-L	-M	-H	0	0	-M	+L	+L	+L

WINTER GRAZING (11/1-2/28), Continued												
KEY PLANT SPECIES AFFECTED	VIGOR			LITTER ACCUMULATION			SEEDLING ESTABLISHMENT			SEED TRAMPLING		
UTILIZATION	L	M	H	L	M	H	L	M	H	L	M	H
Silver sage	0	-L	-M	-L	-M	-H	0	0	-M	+L	+L	+L
Black sage	0	-M	-H	-L	-M	-H	0	0	-M	+L	+L	+L
Low sage	0	-M	-H	-L	-M	-H	0	0	-M	+L	+L	+L
White sage	0	-L	-M	-L	-M	-H	0	0	-M	+L	+L	+L
Bud sage	0	-L	-M	-L	-M	-H	0	0	-M	+L	+L	+L
Big sage	0	-L	-L	-L	-M	-H	0	0	-M	+L	+L	+L
Squaw apple	0	-L	-M	-L	-M	-H	0	0	-M	+L	+L	+L
Mountain mahogany	0	-L	-M	-L	-M	-H	0	0	-M	+L	+L	+L
Willow	0	-L	-M	-L	-M	-H	0	0	-L	+L	+L	+L
Rose	0	-L	-M	-L	-M	-H	0	0	-L	+L	+L	+L
Cottonwood	0	-L	-M	-L	-M	-H	0	0	-L	+L	+L	+L
Aspen	0	-L	-M	-L	-M	-H	0	0	-L	+L	+L	+L
Spiny hopsage	0	-L	-M	-L	-M	-H	0	0	-M	+L	+L	+L
Fourwing saltbush	0	-L	-M	-L	-M	-H	0	0	-M	+L	+L	+L

General Treatment Impacts: + = Postitive; - = Negative; 0 = Negligible
L = Low; M = Moderate; H = High

Table 17. Anticipated impacts on key plant species from **Winter Rest** (no grazing from 12/1-2/28) in the Twin Peaks Allotment.

KEY PLANT SPECIES AFFECTED	VIGOR	LITTER ACCUMULATION	SEEDLING ESTABLISHMENT	SEED TRAMPLING
GRASSES Squirreltail	0	+H	0	-L
Bluebunch wheatgrass	0	+H	0	-L
Needlegrass	0	+H	0	-L
Great Basin wildrye	0	+H	0	-L
Mat muhly	0	+H	0	-L
Nevada bluegrass	0	+H	0	-L
Indian ricegrass	0	+H	0	-L
Sandberg's bluegrass	0	+H	0	-L
Creeping Rye	0	+H	0	-L
SEDGES Carex sp.	0	+H	0	-L
FORBS Cusick sunflower	0	+H	0	-L
Wooly sunflower	0	+H	0	-L
Phlox	0	+H	0	-L
Balsamroot	0	+H	0	-L
Hawksbeard	0	+H	0	-L
Buckwheat	0	+H	0	-L
SHRUBS Bitterbrush	+M	+H	0	-L

WINTER REST (12/1-2/28), Continued				
KEY PLANT SPECIES AFFECTED	VIGOR	LITTER ACCUMULATION	SEEDLING ESTABLISHMENT	SEED TRAMPLING
Silver sage	+M	+H	0	-L
Black sage	+H	+H	0	-L
Low sage	+H	+H	0	-L
White sage	+M	+H	0	-L
Bud sage	+M	+H	0	-L
Big sage	+L	+H	0	-L
Squaw apple	+M	+H	0	-L
Mountain mahogany	+M	+H	0	-L
Willow	+M	+H	0	-L
Rose	+M	+H	0	-L
Cottonwood	+M	+H	0	-L
Aspen	+M	+H	0	-L
Spiny hopsage	+M	+H	0	-L
Fourwing saltbush	+M	+H	0	-L

General Treatment Impacts: + = Postitive; - = Negative; 0 = Negligible
L = Low; M = Moderate; H = High

Table 18. Phenological development of key plant species. Top Row = Above 5500 feet. Bottom Row = Below 5500 feet.

KEY PLANT SPECIES	BEGIN GROWTH	VEG. GROWTH	BUD STAGE	FLOWERING PERIOD	SEED RIPE	SEED DISS.	DORMANT
GRASSES Squirreltail	3/6-4/6 2/22-3/22	4/24-5/24 4/9-5/9	5/28-6/28 5/3-6/3	6/15-7/15 5/27-6/27	7/9-8/9 6/13-7/13	7/21-8/21 6/25-7/25	8/6→ 7/18→
Bluebunch wheatgrass	3/6-4/6 N/D	4/15-5/15 4/18-5/18	5/25-6/25 N/D	6/2-7/2 5/21-6/21	7/1-7/30 6/9-7/9	6/21-7/21 7/8-8/8	8/1→ 7/15→
Needlegrass	N/D 2/21-3/21	4/26-5/26 3/15-6/3	5/21-6/21 N/D	6/11-7/11 5/23-6/24	7/15-8/15 5/28-6/27	7/15-8/15 N/D	9/1→ 6/28→
Great Basin wild-rye	N/D 3/18-4/21	6/9-7/9 5/3-6/3	6/3-7/1 N/D	6/15-7/15 5/28-6/28	7/3-8/9 6/12-7/12	7/15-8/15 6/28-7/28	8/15→ 7/11→
Mat muhly	N/D N/D	N/D 4/15-4/30	N/D N/D	N/D 6/15-7/15	N/D 7/15-8/15	N/D N/D	N/D N/D
Nevada bluegrass	3/21-4/21 N/D	4/24-5/24 N/D	5/6-6/6 N/D	5/28-6/28 5/21-6/21	6/15-7/15 6/6-7/6	7/1-8/1 6/24-7/24	7/6→ 8/13→
Indian ricegrass	N/D N/D	5/6-6/6 4/15-5/15	N/D 5/15-6/15	6/15-7/15 6/1-7/1	N/D 6/1-7/1	7/21-8/21 6/18-7/18	8/6→ 7/18→
Sandberg's bluegrass	3/21-4/21 2/18-3/18	4/24-5/24 3/18-4/18	N/D 4/9-5/9	5/18- 6/18 5/2-6/2	6/1-7/1 N/D	6/6-7/6 N/D	7/1→ 5/27-6/27
Creeping rye	N/D N/D	4/15-5/15 4/18-5/18	5/25-6/25 N/D	6/2-7/2 5/21-6/21	7/1-7/30 6/9-7/9	6/21-7/21 7/8-8/8	8/1→ 7/15→
SEDGES Carex sp.	3/24-4/24 3/26-4/21	4/24-5/24 4/24-5/24	4/24-5/24 N/D	5/21-6/21 5/6-6/6	5/27-6/27 5/27-6/27	6/25-7/25 6/15-7/15	8/62→ 7/15→
FORBS Cusick Sunflower	N/D N/D	N/D 5/1-6/1	N/D 5/15-6/15	N/D 6/1-7/1	N/D 7/1-7/15	N/D N/D	N/D N/D
Wooly Sunflower	N/D N/D	N/D 4/15-5/15	N/D 5/6-5/15	N/D 5/15-6/15	N/D 6/15-7/1	N/D N/D	N/D N/D
Phlox	3/1-4/1 2/22-3/22	N/D N/D	4/22-5/22 3/22-4/22	5/14-6/14 4/25-5/25	N/D 5/22-6/22	6/6-7/6 6/6-7/6	7/6→ 7/6→
Balsamroot	N/D 4/1-5/1	N/D N/D	N/D 4/10-5/10	N/D 4/22-5/22	N/D 5/14-6/14	N/D 5/15-6/15	N/D 6/1→
Hawksbeard	3/22-4/22 N/D	N/D N/D	4/22-5/22 N/D	5/10-6/10 N/D	N/D N/D	7/6-8/6 N/D	N/D N/D

Table 18 Continued. Phenological development of key plant species.

KEY PLANT SPECIES	BEGIN GROWTH	VEG. GROWTH	BUD STAGE	FLOWERING PERIOD	SEED RIPE	SEED DISS.	DORMANT
SHRUBS	N/D	4/25-5/25	5/6-6/6	5/25-6/25	6/14-7/14	7/9-8/9	N/D
Bitterbrush	N/D	4/18-5/18	4/21-5/21	5/9-6/9	5/30-6/30	>6/28	N/D
	N/D	5/9-7/9	7/24-8/6	8/24-9/24	N/D	N/D	N/D
Silver sage	N/D	6/1-6/30	7/9-8/9	8/24-9/24	N/D	N/D	N/D
	N/D	N/D	N/D	N/D	N/D	N/D	N/D
Black sage	N/D	4/23-5/23	6/27-7/27	8/3-9/3	9/1-9/30	N/D	N/D
	N/D	N/D	N/D	N/D	N/D	N/D	N/D
Low sage	N/D	4/23-5/23	6/27-7/27	8/3-9/3	9/1-9/30	N/D	N/D
	N/D	N/D	N/D	N/D	N/D	N/D	N/D
Winterfat	3/15-4/15	4/9-5/9	N/D	5/15-6/6	6/18-7/18	7/18-8/18	N/D
	N/D	N/D	N/D	N/D	N/D	N/D	N/D
Bud sage	N/D	4/9-5/9	4/23-5/23	N/D	5/18-6/18	5/30-6/30	>7/3
	N/D	N/D	N/D	N/D	N/D	N/D	N/D
Big sage	N/D	4/22-5/22	6/5-7/5	N/D	10/1-11/1	N/D	N/D
	N/D	N/D	N/D	N/D	N/D	N/D	N/D
Squaw apple	N/D	N/D	5/1-5/30	6/1-6/30	6/15-7/15	6/21-7/21	7/1→
	4/1-5/1	N/D	N/D	6/1-7/1	N/D	6/1-12/30	N/D
Mt. mahogany	5/1-6/1	N/D	N/D	4/1-6/1	N/D	6/1-12/30	N/D
	N/D	N/D	4/1-5/1	5/1-6/1	N/D	5/15-6/15	N/D
Willow	3/1-3/30	4/15-5/30	5/6-6/6	5/26-6/26	7/6-8/6	7/6-8/6	N/D
	4/2-5/2	4/22-5/22	5/6-6/6	6/6-7/6	7/6-8/6	N/D	N/D
Rose	N/D	N/D	N/D	N/D	N/D	N/D	N/D
	N/D	N/D	N/D	N/D	N/D	N/D	N/D
Cottonwood	N/D	N/D	4/15-5/15	N/D	5/15-6/30	5/30-7/30	N/D
	4/1-5/1	4/22-5/22	4/22-5/22	4/28-5/28	5/22-6/22	6/6-7/6	N/D
Aspen	N/D	N/D	N/D	N/D	N/D	N/D	N/D
	N/D	N/D	N/D	N/D	N/D	N/D	N/D
Spiny hopsage	2/22-3/22	4/6-5/6	3/21-4/21	5/10-5/25	N/D	N/D	N/D
	N/D	N/D	N/D	N/D	N/D	N/D	N/D
Fourwing saltbush	N/D	5/3-6/3	N/D	6/1-7/1	7/1-7/30	8/1-8/31	N/D

Table 20. 1993 grazing utilization in relation to allotment subdivisions.

	ALLOTMENT SUBDIVISION													
Acres/%	Rowland	Stone Corral	Painter	Buffalo	Buffalo Hills	Black Mtn.	Chimney	Lower Smoke Creek	Salt Marsh	Five Springs	Rim	Dry Valley	Skedad -dle	Total
Severe Utilization - 81 - 100%	_	-	.9/ -	-	-	-	-	-	-	3/ .01	-	-	-	3.9
Heavy Utilization - 61 - 80%	20/ .2	-	802/ 2	-	-	-	170/ .8	-	-	191/ 1	107/ .2	-	39/ .1	1329
Moderate Utilization - 41 - 60%	341/ 3	-	184/ .5	-	-	171/ .8	231/ 1	-	-	556/ 3	606/ 1	28/ .1	734/ 2	2851
Light Utilization - 21 - 40%	383/ 3	-	1312/ 4	-	-	936/ 5	1364/ 7	-	-	1981/ 10	516/ 1	231/ 1	1191/ 3	7914
Slight Utilization - 6 - 20%	10105/ 87	32/ .1	9406/ 29	-	-	33/ .2	-	-	-	3757/ 19	7603/ 13	1321/ 4	9992/ 23	42249
No Utilization - 0-5%	-	-		-	-	-	-	-	-	3058/ 16	1446/ 2	-	4579/ 11	9083
Ephemeral Range (Low Production)	-	-		-	-	-	7536/ 36	3583/ 27	-	3204/ 16	-	-	-	14323
Area Not Mapped	719/6	22543/ 99.8	20623/ 64	43694/ 100	16821/ 100	19207/ 94	11435/ 55	9869/ 73	39702/ 100	6859/ 35	50424/ 83	32518/ 95	27053/ 62	301467

Public Lands Only

Table 19. 1992 grazing utilization in relation to allotment subdivisions.

	ALLOTMENT SUBDIVISION													
Acres/%	Rowland	Stone Corral	Painter	Buffalo	Buffalo Hills	Black Mtn.	Chimney	Lower Smoke Creek	Salt Marsh	Five Springs	Rim	Dry Valley	Skedad -dle	Total
Heavy Utilization - 61+%	221 /2	360/ 2	802/ 2	461/ 1	129/ .8	46/ .2	558/ 3	-	-	1643/ 8	371/ .6	199/ .6	460/ 1	5250
Moderate Utilization - 41 - 60%	870 /8	241/ 1	763/ 2	656/ 2	-	-	6/ .03	-	-	-	1761/ 3	38/ .1	1151/ 3	5486
Light Utilization - 10 - 40%	10477/ 91	21897/ 97	29421/ 91	31118/ 71	12308/ 73	20174/ 99	9814/ 47	6637/ 49	3109/ 8	12088/ 62	53513/ 88	14717/ .2	41946/ 96	267219
Ephemeral Range (Low Production)	-	76/ .3	1341/ 4	11458/ 26	4385/ 26	127/ .6	10358/ 50	6814/ 51	36593/ 92	5878/ 30	5057/ 8	19143/ 56	31/ .07	101261
Area Not Mapped	-	-	-	-	-	-	-	-	-	-	-	-	-	

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Table 21. Food items by wildlife species in the Twin Peaks Allotment area, by generalized season.

Animal	Winter	Spring	Summer	Fall
Sage Grouse	Sagebrush	Forbs, new grass, insects, sagebrush	Wet meadow & riparian forbs and grass, sagebrush	Wet meadow & riparian forbs and grass, sagebrush
Prong-horn	Sagebrush, rabbitbrush, shadscale, winterfat, cheatgrass	Grasses, forbs, some browse, big sagebrush	Upland & wet meadow forbs and grass.	bitterbrush, rabbitbrush, sagebrush,
Mule Deer	cheatgrass, big sagebrush, juniper, rose, willow, mule's ears, rabbitbrush	phlox, lichens, thistles, tumbling mustard, balsamroot, desert peach, lomatium.	Forbs, green grasses, snowbrush, willow, aspen, chokecherry, squaw apple, serviceberry	bitterbrush, sagebrush, summer forbs and shrubs that are still available

Table 22. Population estimates California X-5B and Nevada 015 combined East Lassen Deer Herd 1978-1993.

EAST LASSEN DEER HERD POPULATION*	
Year	Population
1993	4,500
1992	4,900
1991	5,200
1990	5,100
1989	6,500
1988	4,000
1987	6,900
1986	6,900
1985	6,800
1984	5,150
1983	6,900
1982	4,700
1981	6,200
1980	7,650**
1979	9,100
1978	7,000

* Estimates made in April for following fall.
** Average of previous and following year.

Table 23. Twin Peaks allotment mule deer seasonal use areas in relation to allotment subdivisions.

	ALLOTMENT SUBDIVISION													
Acres/%	Rowland	Stone Corral	Painter	Buffalo	Buffalo Hills	Black Mtn.	Chimney	Lower Smoke Creek	Salt Marsh	Five Springs	Rim	Dry Valley	Skedad -dle	Total
Transition	-	-	-	-	-	-	-	-	-	2519/ 13	21827/ 36	-	20032/ 46	44378
Winter	-	4143/ 18	4798/ 15	37050/ 85	7368/ 44	6223/ 31	17579/ 85	12555/ 93	16769/ 42	.3/ -	32654/ 54	19282/ 57	24/ .06	158445
Yearlong and Fawning	-	-	4141/ 13	1321/ 3	-	656/ 3	2575/ 12	-	-	806/ 4	999/ 2	6944/ 20	6634/ 15	24076
Summer and Transition	11410/ 99	5986/ 27	22773/ 70	1529/ 4	-	13468/ 66	583/ 3	-	-	-	-	-	13932/ 32	69681
Winter and Transition	158/ 1	12445/ 55	615/ 2	3072/ 7	9333/ 55	-	-	897/ 7	-	7936/ 40	2538/ 4	-	-	36994
Little or No Use	-	-	-	723/ 2	220/ 1	-	-	-	22933/ 58	8348/ 43	2684/ 4	7872/ 23	2967/ 7	45747

Public Lands Only

Table 24. Wild Horse and Burro Population estimates by Home Range Management Unit.

WILD HORSE AND BURRO EST. POPULATION BY HOME RANGE MANAGEMENT UNIT					
HOME RANGE	MANAGEMENT LEVELS	EST. 1988 POPULATION	EST. 1991 POPULATION	EST. 1992 POPULATION	EST. 1993 POPULATION
TWIN PEAKS N.	H=83-169* B=22-42*	H=335 B=43	H=337 B=83	H=391 B=97	H=355** B=45,M=4
DRY VALLEY RIM	H=50-71 B=15-22	H=95 B=25	H=52 B=40	H=64 B=47	H=74 B=34,M=2
SKEDADDLE	H=75-106 B=10-15	H=74 B=9	H=95 B=19	H=110 B=18	H=127 B=28,M=8

* Established 12/92

** Numbers are from census of 4/93 prior to Aug/Sept. 1993 removal: Post removal census of 9/8/93 indicated 209 horses (including 4 mules) and 45 burros

Appendix A. Interested or Affected Parties

Boyd Gibbons, California Dept. of Fish and Game
William Molini, Nevada Division of Wildlife
Lassen County Cattlemens' Association
Lassen Sportsmens' Club
Organized Sportsmen of Lassen County
National Audubon Society
California Mule Deer Association
Sierra Club, Mother Lode Chapter
Mountain Lion Foundation
Nevada Woolgrowers Association
Wayne Howle, NV Deputy Attorney General
Organized Sportsmen of Modoc County
Mark J. Urban, CA Deputy Attorney General
Dawn Lappin, Wild Horse Organized Assistance
Stan Boltz, USDA, SCS
Rose Strickland, Sierra Club, Toiyabe Chapter
Natural Resources Defense Council (Johanna Wald)
NV Commission for the Preservation of Wild Horses
W. Alan Schroeder
California Native Plant Society
Bob Schwiegert, Intermountain Range Consultants
Nevada Cattlemens' Association
Rich Elliott, California Dept. of Fish and Game
Frank Hall, California Dept. of Fish and Game
Lassen County Farm Bureau
Lassen County Fish and Game Commission
Lassen County Planning Department
Lassen CARES
Glenn Nader, U. C. Cooperative Extension
Jean Loubet, Lassen County Board of Supervisors
Congressman Wally Herger, Second District, California
Ed Hastey, California State Director, Bureau of Land Management
Jim Morrison, Bureau of Land Management, CA
Vivian Vaught, Sierra Club
Burton Stanley, Regional Solicitor
Banky Curtis, California Dept. of Fish and Game
Mary Messmer, Sierra Club
California State Senator Tim Leslie
George Berrier, American Mustang and Burro Assoc.
Dr. Eric Loft, California Department of Fish and Game
Washoe County Planning Department
Sherm Swanson, University of Nevada, Reno
Tom Ballow, Nevada Department of Agriculture
Congresswoman Barbara Vucanovich, Second District, Nevada
The Mule Deer Foundation
Mike Dobel, Nevada Division of Wildlife
Fred Wright, Nevada Wildlife Federation
Roy Leach, Nevada Division of Wildlife

Appendix B. Twin Peaks Allotment Management Plan of 4/18/85.

For clarity and organizational purposes of this document, the applicable Goals, Objectives, and Decisions have been assigned identification numbers. These identification numbers are enclosed in brackets and are italicized.

The following information is an excerption from the Twin Peaks Allotment Management Plan dated March 17, 1984 (AMP).

The AMP on page 7 contains the following:

Allotment Specific Objectives

[AMP #1] a. Forage Utilization

Utilization of key forage species shall not exceed moderate use level of 40-60% exclusive of water sacrifice areas.

[AMP #2] b. Grazing Preference Allocation

Provide livestock forage to satisfy the permittees active grazing preference. During first five years after AMP is implemented, determine actual grazing capacity and reallocate suspended preference if excess forage is permanently available.

[AMP #3] c. Range Condition

1. Maintain 25,165 acres in good condition.

2. Improve 28% of the 176,155 acres in poor condition and 36% of the 158,180 acres in fair condition in 20 years.

[AMP #4] d. Prevent soil loss exceeding 2 tons/acre/year.

[AMP #5] e. Allow deferment to key winter shrubs every other year to improve vigor.

[AMP #6] f. Allow early deferment every year and to start an upward trend in range condition to north side of Skedaddle Mountain/Bull Flat & Rush Creek Basins and the Parsnip Drainage Basins. (See attached map #2) for areas in Grazing System Section).

[AMP #7] g. Prevent the introductory spread of medusahead through the allotment by vegetative manipulation and grazing management techniques.

Monitoring

Procedures to be Used to Check if Resource Objectives are Being Satisfied

a. Range Trend - Modified Pace Frequency Method to determine change in key forage species occurrence.

- squirreltail (Sihy)
- bluebunch wheatgrass (Agsp)
- Giant wild rye (Elci)

Photos will be taken at each trend plot location for visual comparison. Soil stability will be evaluated by USLE in conjunction with trend plots. Seventeen trend plots established in 1983 and will be reread 5 years after AMP implementation (See attached map #3 for location).

b. Forage Utilization - Determined by Key Forage Species method and will be run on an annual basis for first 5 years after AMP implementation.

c. Livestock Use Patterns - In conjunction with item b. above, allotment will be mapped into Heavy, Moderate and light utilization areas on an annual basis for first 5 years after AMP is implemented.

d. Weather - Precipitation data will be gathered from the Susanville Airport and annually plotted for comparative purposes.

e. Actual Use - Actual grazing use will be submitted by the permittee and used for utilization correlation and after the fact billing.

Compliance

BLM will check the allotment to assure the terms and conditions of the grazing permit and this AMP are followed. Of specific concern will be:

a. Numbers of authorized livestock & AUM's.

b. On/Off dates (Cattle & sheep).

c. Pasture move dates (Check for drift and cattle number).

d. Early use areas (Check for drift and cattle number).

e. Management areas (Cattle number).

f. Track wild horse and burro numbers in each pasture to correlate cattle and sheep use and horse and burro gathering areas and herd build up areas.

Trespass

Grazing use exceeding that authorized in the Twin Peaks AMP is subject to trespass if prior authorization has not been obtained (see Flexibility/Requirement in Administration section). The BLM will notify the permittee of alleged unauthorized use prior to initiating trespass proceedings.

Appendix C. Upper Smoke Creek Aquatic Habitat Management Plan of 12/14/83.

For clarity and organizational purposes of this document, the applicable Goals, Objectives, and Decisions have been assigned identification numbers. These identification numbers are enclosed in brackets and are italicized.

The following information is an excerption from the Upper Smoke Creek Aquatic Habitat Management Plan, dated December 14, 1983 (AHMP).

[AHMP#1] The general management objective is to restore and maintain the capability of Upper Smoke Creek to provide habitat suitable for survival and reproduction of trout and to increase habitat quality for all species associated with riparian habitats.

Specific objectives are:

[AHMP#2] 1. To increase stream shading to 70% or more (Present shading is 40% or less).

[AHMP#3] 2. To improve streambank condition.

a. To increase streambank vegetation so as to decrease amount of bare soil to less than 5%.

b. To decrease streambank sloughing and erosion to 10% or less.

[AHMP#4] 3. To decrease the degree of stream channel movement to 5% or less.

[AHMP#5] 4. To decrease the percent of fine sediments covering the stream bottom to less than 10%.

[AHMP#6] 5. To reduce summer maximum high water temperatures to 70° or less.

[AHMP#7] 6. To reestablish a viable trout population.

Appendix D. Land Use Plan: Cal-Neva Management Framework Plan (MFP).

For clarity and organizational purposes of this document, the applicable Goals, Objectives, and Decisions have been assigned identification numbers. These identification numbers are enclosed in brackets and are italicized.

The following information is an excerption from the "Land Use Plan Summary, Rangeland Program Summary, and Grazing EIS Record of Decision for the Cal-Neva Planning Unit" dated August 9, 1982. In the MFP the Cal Neva summer allotment was split into the Cal-Neva #1, Cal-Neva #2, and Cal-Neva #3 areas. Later, the Twin Peaks allotment was formed primarily from the Cal-Neva #1 and the northern 2/3 of the Winter Range allotment.

1. Overall Land Use Objectives

[LUP #1] 1. Improve the ecological condition of public lands by minimizing destructive uses and by providing for their orderly use and improvement under multiple use management.

[LUP #2] 2. Give consideration and priority to the protection and management of areas with special environmental concern.

[LUP #3] 3. Stabilize the social and economic environment of the local community.

2. Overall Planning Goals

[LUP #4] 1. To improve native range condition on public lands within 20 years to bring "poor" condition lands to "fair" and "fair" lands to "good" condition while maintaining "good" condition lands in their present class. Assure an upward trend on "poor" and "fair" lands and maintain stable trend on "good" condition lands.

[LUP #5] 2. To improve water distribution to more adequately meet livestock, wildlife, and wild horse and burro needs and to obtain better dispersement of animals.

[LUP #6] 3. To allocate forage for "reasonable" and "objective' wildlife populations (deer - 12,900 winter and 10,700 non-winter; antelope - 2,000 winter and 1,300 resident non-winter) as determined by the Nevada Department of Wildlife and the California Department of Fish and Game.

[LUP #7] 4. To manage wild horse and burro populations to assure healthy herd condition as well as to prevent undue destruction of the range from overpopulation.

[LUP #8] 5. To improve important wildlife habitat including:

a. Improvement of the unprotected willow-riparian areas from poor to fair ecological condition.

b. Improvement of the fair condition meadows to good condition and the poor condition meadows to fair condition.

c. Maintenance or improvement of the condition of pronghorn antelope kidding grounds and mule deer fawning areas.

[LUP #9] 6. To increase or maintain the quality and quantity of water on or beneath public lands so as not to degrade the beneficial uses of that water, including flood plain and wetland values.

[LUP #10] 7. To maintain or enhance soil, within its potential as a growing medium for range plants, to provide for the sustained yield of desirable range plants. Generally on range lands, 2 tons/acre/year is considered tolerable surface soil loss.

3. General MFP Decisions/Rationales

[LUP #11] Decision #10--Implement a livestock grazing program to include the following (see Rangeland Program Summary for a complete description):

a. Implement intensive grazing systems on the Cal-Neva Summer, Cal-Neva Winter, Spanish Springs AMP, and Shinn Mountain Individual Allotments.

Develop systems to give particular consideration toward improving and maintaining riparian, wetland, and meadow habitat to enhance and protect wildlife and watershed values. Monitor key areas to determine to what degree the systems are meeting the resource objectives.

b. Provide a minimum of one season's rest from cattle during the growing season for every year's grazing during the growing season.

c. Establish grazing seasons to meet plant and soil needs (see RPS).

d. Establish moderate use limitations of 40 percent to 60 percent use during the grazing season.

e. Authorize near existing livestock use of 25,248 AUMs for cattle and 4,766 AUMs for sheep. Adjust future stocking levels as range condition and trend improves and production increases.

f. Divide the Cal-Neva Summer Allotment into three use areas.

g. Allow partial conversion of cattle to sheep use.

Rationale-- Most rangeland within the planning unit is either in poor or fair range condition and is not producing its potential quality or quantity of livestock forage. Development of a more intensive livestock management program can improve range condition, trend, and production, increase forage production, and enhance other resource values without creating economic hardships for existing permittees.

[LUP#12] Decision #11--Adjust wild horse and burro populations to 600 horses and 75 burros. Allow populations to build to 850 and 110, respectively, when range condition improves.
Rationale-- Reducing horse and burro populations will help improve range condition while still ensuring healthy, viable wild horse and burro herds.

[LUP#13] Decision #19--Enhance and maintain aspen groves in good condition.
Rationale-- Aspen groves provide important wildlife habitat and enhance scenic quality.

[LUP#14] Decision #23--Provide forage and habitat for "objective" deer and

antelope populations as follows:

a. Mule Deer (approximate numbers)

1. Cal-Neva Summer Allotment
10,100 from 05/01 to 11/30
12,500 from 12/01 to 04/30

2. Cal-Neva Winter Allotment
350 from 12/01 to 04/30

3. All other allotments
Meet California Fish and Game objective numbers.

b. Antelope (approximate numbers)

1. Cal-Neva Summer Allotment
1,300 from 10/16 to 14/15
1,250 from 04/16 to 10/15

2. Cal-Neva Winter Allotment
400 from 10/16 to 04/15

3. Shinn Individual Allotment
13 from 07/01 to 10/31

Rationale-- The California Department of Fish and Game and the Nevada Department of Wildlife have provided the BLM with objective numbers of mule deer and antelope. Both species provide exceptional recreational opportunities for hunting and sightseeing. Providing adequate forage and habitat will help maintain healthy, viable game populations.

4. MFP Subunit Objectives/Decisions/Rationales

[LUP#15] Subunit 1 - Wilderness Study Areas

This subunit includes six wilderness study areas (WSAs) encompassing 357,515 acres or 56 percent of the planning unit. It is subject to the Bureau's wilderness interim management criteria which prohibits activities that would impair wilderness suitability. The primary objective for this subunit, then, is to allow multiple use activities while protecting the suitability of the WSAs for possible wilderness designation.

Decision 1-3--Study the feasibility of reintroducing bighorn into the Skedaddle escarpment and Buffalo Hills area (see map 3, page 15). Maintain the Amedee Mountains in suitable condition for possible future bighorn reintroduction. Do not irreversibly commit this area for continued livestock grazing.
Rationale-- The Skedaddle escarpment and Buffalo Hills area are potentially suitable for bighorn reintroduction. The Amedee Mountains are topographically and vegetatively suitable for bighorn. However, due to other management concerns and because the California Department of Fish and Game does not appear fully committed to the project at this time, any bighorn reintroduction program will be delayed.

[LUP#16] Subunit 2 - Deer/Livestock Range

The primary objective of this subunit is to protect and enhance deer habitat while maintaining livestock production. No vegetation manipulations would be allowed, except to improve deer habitat.

Decision 2-3--Rescind the withdrawal order designating the 640 acre Button Mountain Bitterbrush Natural Area (see map 3, page 15).
Rationale-- Although this area contains a great deal of bitterbrush, it is not unique and does not warrant Natural Area status.

[LUP#17] Subunit 3 - Livestock Range

Livestock grazing is the major use in this area and the primary objective of this subunit is to maximize livestock use while maintaining or improving range condition.

Decision 3-1--Manage Painter Flat to protect the flood plain and the plant *Lomatium ravenii*, listed as endangered by the State of California (see map 3, page 15).
Rationale-- The Painter Flat area is a flood plain containing populations of *Lomatium ravenii*. Grazing by livestock, horses, and wildlife would continue, but no agricultural conversion would be allowed.

[LUP#18] Subunit 5 - Smoke Creek

This area includes 7 linear miles of stream and riparian habitat critical for wildlife, provides important watershed and visual values, and contains many cultural resource sites. The primary objective for this subunit is to protect and enhance these resource values.

Decision 5-1--Develop a Coordinated Resource Management Plan, addressing fisheries, cultural resources, and water quality, for the public land portion of Smoke Creek. Fence all or part of the 7 linear miles of riparian habitat, if necessary, to meet wildlife, water quality, and cultural resource objectives. Close this area to ORV use.
Rationale-- Protection of Smoke Creek is important for wildlife, watershed, and cultural values. Although fencing has been recommended and could eventually be necessary, improved grazing management could achieve the same objectives without the expense of fence construction.

[LUP#19] Subunit 6 - Antelope/Livestock Range

This area contains good livestock forage and important antelope habitat. The primary objective of this subunit is to protect and enhance antelope habitat while maintaining livestock production. Coordination with the California Department of Fish and Game will be necessary for fence construction to meet antelope needs. Any vegetation manipulations must consider antelope and sage grouse requirements.

[LUP#20] Subunit 7 - Dry Valley Seeding

The primary objective for this 15,000 acre subunit is to increase livestock forage production.

Decision 7-1--Spray and seed 15,000 acres in Dry Valley if a benefit/cost analysis and site-specific precipitation study determine that the project is feasible. Fence to exclude horses and burros while allowing passage by antelope. Restrict ORV use to existing roads and trails. See RPS, pages 25-28, for more detailed analysis.
Rationale-- This area contains high potential soil and is currently

below potential in range condition and production. Treatment would help stabilize soils, provide important additional forage for livestock, and facilitates grazing systems to improve the surrounding native range.

[LUP#21] Subunit 8 - Winter Range

The primary objective of this subunit is to allow winter livestock grazing at levels to minimize conflicts with wintering wildlife (see RPS for the detailed grazing management program).

Appendix E. Rangeland Program Summary.

For clarity and organizational purposes of this document, the applicable Goals, Objectives, and Decisions have been assigned identification numbers. These identification numbers are enclosed in brackets and are italicized.

The following information is an excerption from the "Land Use Plan Summary, Rangeland Program Summary, and Grazing EIS Record of Decision for the Cal-Neva Planning Unit" dated August 9, 1982.

1. Overall

The management actions proposed in this document are designed to meet the land use objectives and goals identified in the Cal-Neva Land Use plan (see Land Use plan Summary). Modifications suggested during the consultation period will be considered to help meet the land use objectives.

Seasonal and spatial distribution of water for livestock is a major problem. Water shortages are particularly evident in summer and fall, when many springs and seeps dry up and small reservoirs are empty.

Range Management Program (Planning Unit-Wide)

The proposed Range Management program establishes a method for implementing intensive grazing management and incorporates the land use goals of the Proposed Action of the Cal-Neva EIS and the Land Use Plan. It is recognized that the overriding goal of improving all poor condition lands to fair and all fair condition lands to good cannot be accomplished within 20 years. The proposed course of action will meet or exceed most of the remaining land use goals (see Land Use Plan, page 7) without severe adverse environmental impacts. With the exception of a few changes in season of use, area of use, and livestock movement, a "status quo" outlook would be maintained for the livestock permittees. No significant reductions in livestock use are proposed.

[RPS #1] 1. Forage Allocation: Forage was allocated so as not to exceed the rangelands grazing capacity. Sufficient vegetation was reserved for the plants physiological requirements and the balance of the production was allocated as forage to the following consumptive uses:

a. Objective deer and antelope populations (deer: 12,900 winter and 10,700 nonwinter; antelope: 2,000 winter and 1,300 resident nonwinter).

b. 600 wild horses and 75 burros.

c. Near existing livestock demand of 25,248 AUMs for cattle use and 4,766 AUMs for sheep use. A reduction in livestock use is required in the Coldren Allotment (from 256 AUMs) due to insufficient available forage. Reductions in livestock use can be phased in over a five year period.

Table 1 (page 29) details how the available forage was allocated in the proposed areas of use. The table notes the existence of 7,041 potentially suitable AUMs and 24,252 unallocated AUMs. This excess forage is a result of past administrative actions canceling 15,000 AUMs of active grazing preference. Also, 10,417 AUMs would be realized by reducing wild horses and burros to a minimum herd size. Though currently allocated to nonconsumptive uses, this forage will

be reserved for livestock and wild horses and burros, and allocated for their use at a future time.

Allocation of the excess forage would be evaluated on each area of use and would depend primarily on accomplishing the goals of the Allotment Management Plans (AMPs). To increase forage allocations, grazing systems must be implemented, additional stock waters developed, and monitoring should indicate an improving trend in range condition with forage utilization not exceeding moderate use (40 to 60 percent) levels. Wild horse and burro populations would be allowed to build out to 850 and 110, respectively, and the livestock permittees would be allowed to recover all or a portion of their 18,064 suspended preference AUMs.

[RPS #2] 2. Selective Management: The Bureau has implemented a new policy which places all allotments in selective management categories. These categories are improvement, maintenance, and custodial. Selective management directs funds and management where they will be most effective.

Although this policy was adopted after the Final Cal-Neva EIS, we have categorized all the allotments in the Cal-Neva Planning Unit. The categories are listed in Table 1, page 29.

[RPS #3] 3. Grazing Systems: Rotation grazing systems are proposed for 6 use areas which occupy 638,819 public land acres, or 99 percent of the Cal-Neva Planning Unit (see Table 1, page 29). Key to the implementation of intensive grazing management for the unit is the division of the Cal-Neva Common Summer Allotment into three independent areas of use: Cal-Neva #1, Cal-Neva #2, and Cal-Neva #3. This will allow development of one AMP to develop three grazing systems covering the 515,835 acres of public land within the Cal-Neva Common Summer Allotment.

Map 4, page 25 delineates areas of use while Table 1, page 29 outlines how livestock use has been proportioned in the use areas and the type of grazing system considered. Because of its unique character each use area deserves a separate discussion.

a. Cal-Neva Summer Allotment: Cal-Neva #1 Use Area: One of three new proposed use areas, this unit represents the eastern half of the Cal-neva Common Summer range. About 30 miles of fence is needed to separate Cal-neva #1 from the other two new use areas. The southern 12 mile portion of the division fence is scheduled for completion in FY 83 (see Cal-Neva #3 for a further discussion of the Cal-Neva division fence). Smoke Creek would divide the use area into two large native pastures.

The FEIS Preferred Alternative recommends that the grazing management of Cal-neva #1 be combined with the proposed Dry Valley Seeding. The seeding provides numerous benefits, but concern has been expressed over the high estimated cost ($454,000 including fence, wells, and pipeline) and the probability of failure due to low precipitation. A detailed cost-benefit analysis and a site-specific precipitation study will probably be necessary before the seeding is constructed. Without the seeding, Cal-Neva #1 would be managed under an interim two-pasture deferred rotation grazing system. Construction of additional water sources is needed to improve livestock distribution.

Cal-Neva #2 Use Area: One of three new proposed use areas, this

unit is located in the extreme southwest portion of the Cal-neva Common Summer range. The southern 12 mile portion of the Cal-Neva division fence is scheduled for completion in FY 83 and would separate this unit from the Cal-neva #1 use area. An internal pasture fence would allow implementation of the proposed two-pasture deferred rotation grazing system. The opportunity to fence out an early use area on the south facing slopes south of Little Mud Flat needs to be discussed with the affected permittees. Additional reservoir work and a centrally located well are also essential to improve management.

Cal-neva #3 Use Area: One of three new proposed use areas, this unit is located in the northwest portion of the Cal-neva Common Summer range. About 20 Miles of fence (from Pilgrim Lake to Smoke Creek Ranch) is needed to separate this use area from Cal-neva #1 and is tentatively scheduled for completion in FY 84. Proper location of this fence is important and additional consultation is needed with the affected parties prior to construction. Wild horse interests and grazing permittees have shown significant concern for this segment of fence. After construction of the fence, this use area would be composed of two large pastures with the Shinn Ranch separating the two. The unit would be managed under an interim two-pasture deferred rotation system until a pasture division fence can be constructed to allow the three-pasture rest-rotation grazing system proposed in the FEIS.

b. Cal-Neva Winter Range Allotment: This allotment would be enlarged 17,000 acres by including the southern flanks of the Skedaddle and the Amedee mountains.

The FEIS proposed a grazing season of 11/01 to 02/28. Except for 2 weeks of sheep use, livestock use during March would be eliminated. This proposal would provide grazing deferment during the early spring growing period while perennial grasses are breaking dormancy and it would also prevent trampling of muddy soils. A closer inspection of the Winter Range has revealed areas, such as Dry Valley, which would be exceptions to the above proposal, because of their lack of perennial grass and the occurrence of well drained, trample resistant soils. Consultation with the permittees is needed to determine how grazing can continue into March and still provide protection from grazing on the more susceptible range sites.

If the Dry Valley Seeding is constructed, 15,000 acres would be removed from the Winter Range and used in conjunction with the Cal-Neva #1 grazing system. an interim management opportunity would be to fence Dry Valley and use it during early spring. This would allow more efficient use of the early annual vegetation and provide grazing deferment to the native ranges in Cal-Neva #1. This proposal needs to be further discussed with the affected permittees.

Six miles of fence would be constructed from Burro Mountain to Red Rock Canyon to tie off the Winter Range from Cal-Neva #1, and additional stock waters would be constructed to improve livestock distribution.

[RPS #4] 4. Range Developments: Development of range improvements is part of the management proposal and is addressed in the Cal-Neva EIS. However, until detailed AMPs are completed it is not known exactly how many improvement projects will be required to allow full implementation of the grazing plan. Initially, the following improvements have been identified: 6 wells, 10 reservoirs, 11 spring developments, 15,000 acres of seeding, and 10 miles of

pipeline with troughs. The FEIS noted a need for 120 miles of fence. However, by using natural barriers and existing fences, the amount of additional fence needed can be reduced to 90 miles. A field examination completed during 1982 revealed the opportunity to develop an additional 56 reservoirs and 7 springs (see map 4, page 25).

[RPS #5] 5. Resource Protection:

a. A Wildlife Habitat Management Plan (HMP), Cultural Resource Management Plan (CRMP) and watershed Best Management Practice (BMP) study will be conducted on seven miles of Smoke Creek to determine management for this riparian area. If necessary, the stream will be fenced to exclude livestock, horses, and burros.

[RPS #6] 6. Monitoring: A monitoring program will be implemented on each AMP area to ensure that management objectives are being met. Utilization, condition and trend, actual use, precipitation, water quality and quantity, soil movement, threatened and endangered plants, cultural resources, and wild horses and burros would all be monitored to determine the effectiveness of the proposed management and provide data for making any needed adjustments. Adjustments could include changes in seasons of use, livestock numbers, and grazing systems. Changes in grazing systems could include extensions or reductions in periods of use, based on climatic variations, which would provide flexibility in the rotation of pastures. Monitoring of non-AMP use areas will be conducted on a limited basis for special problems or concerns.

7. Program Implementation: The following steps will be used to implement grazing management:

a. Reduce stocking levels on those allotments where existing use exceeds the grazing capacity and adjust seasons of use.
b. Develop AMPs addressing objectives, grazing systems, existing improvements, proposed improvements, and use flexibility.
c. Construct range improvements as necessary.
d. Develop and implement a monitoring system to evaluate the effectiveness of the Rangeland Management Program.

AMPs will be implemented as funds are available and priorities are set with consideration given to the following criteria:

a. The number of acres in unsatisfactory range condition.
b. The potential for improvement.
c. Resource conflicts.
d. Economic return from public investment.
e. Feasibility of improving management.

2. Standard Operating Procedures (Planning Unit-Wide)

[RPS #7] Allotment Management plans (AMPs) developed to implement grazing management decisions would include range developments and vegetation manipulations, as appropriate. Standard Operating Procedures for implementation of the range developments would include the following:

1.) Site-specific endangered species inventories will be completed before any project is implemented.
2.) Land treatment areas and seedings will be rested until seedlings are sufficiently established to resist pull-up from

grazing.

3.) Before construction of range developments and vegetation manipulations, cultural resources will be inventoried and evaluated, and attempts to avoid adverse effects will be made. Where this is not possible, consultation will be made with the State Historic Preservation Officer (SHPO) and the Advisory Council on Historic Preservation to develop acceptable mitigative strategies in accordance with the Programmatic Memorandum of Agreement (dated January 14, 1980) between the Bureau and the Advisory Council. In addition, the views of responsible spokesmen of the local Native American community will be solicited. Conflicts will be resolved in accordance with the Native American Religious Freedom Act of 1979.

4.) Construction of fences in wildlife use areas will meet BLM specifications to permit the movement of identified wildlife.

5.) Where possible, fences which must cross steep, erodible soils will not run perpendicular to the slope, but will be angled across the slope.

6.) Livestock watering developments will be available and safe for wildlife and wild horse and burro needs, as identified.

7.) Spring developments generally will be fenced to prevent trampling of the immediate area.

8.) All disturbed areas will be reseeded with native and/or introduced species to provide ground cover.

9.) New range developments and maintenance of existing developments within Wilderness Study Areas will meet the Bureau's Interim Management policy.

10.) All water projects or projects which could influence the beneficial use of water will conform to BLM Best Management Practices Guidelines.

11.) Visual impacts on an area will not exceed limits imposed for the area's designated VRM class. A contrast rating will be conducted on the ground for each type of range improvement project to meet Bureau Manual 8431.11 Requirements. The contrast rating will also suggest mitigation to future lessen the impacts.

12.) Sheep will be herded and lambing grounds, trails, and bedding grounds will be rotated.

3. Mitigation Measures (Planning Unit-Wide)

[RPS #8] In addition to meeting all Federal Laws and policy guidelines and the above Standard Operating Procedures, the following Mitigation Measures will be required:

a.) Turnout dates and dates for moving livestock from one pasture to another will be synchronized with range readiness and the phenological development of the key plant species. These dates can vary from year to year due to fluctuations in the conditions that affect plant phenology. Yearly monitoring of plant phenological stages will be necessary for proper adjustment of dates for turnout and pasture moves. For the Cal-Neva #1 Allotment, turnout onto the native range pastures from the Dry Valley seeding will not occur before range readiness.

b.) Salt or mineral blocks and spring developments will be located and designed to encourage livestock use away from spring meadows.

c.) Grazing on Painters Flat will be monitored and if grazing of Lomatium ravenii by sheep is more than 20 percent by weight, sheep will be excluded from grazing on the flat from April

through June.

d.) At the end of the grazing season, gates will be left open to allow passage by wild horses and burrows.

e.) Water will be left or made available (by leaving gaps in the fence or piping water outside the fence to a trough) on both sides of the Smoke Creek protective exclosures.

f.) For the Dry Valley Seeding, a suitable perennial forb will be included in the seed mixture and about 5 percent of the total area treated will be left in native vegetation to provide interspersion within the seeded area.

F. Record of Decision for the Cal-Neva Grazing Final EIS

The following information is an excerption from the "Land Use Plan Summary, Rangeland Program Summary, and Grazing EIS Record of Decision for the Cal-Neva Planning Unit" dated August 9, 1982.

The management actions proposed in this document are designed to meet the land use objectives and goals identified in the CA-Neva Land Use plan (see Land Use plan Summary). Modifications suggested during the consultation period will be considered to help meet the land use objectives.

Overview
Historic heavy grazing by livestock and wild horses, especially continuous grazing during the spring and early summer, has resulted in a decline of ecological range condition over the past 100 years from excellent (climax state) to mostly poor and fair today (47% and 47%, respectively). In recent years livestock trespass has been a major problem in the planning unit. This problem was largely resolved when one livestock operator's grazing permit was permanently canceled, effective August 1, 1979.

That cancellation resulted in a 25 percent reduction of total livestock use in the Cal-Neva Summer and Winter Allotments. Also, in 1975 a livestock tagging program was implemented which effectively discouraged several other past permittees from exceeding their authorized use.

Fifteen livestock operators currently graze approximately 4,270 cattle and 9,000 sheep in the planning unit and are authorized 30,320 AUMs of active use. Most of the use occurs during the spring and summer. Winter use is limited by snow cover in the higher areas.

Seasonal and spatial distribution of water for livestock is a major problem. Water shortages are particularly evident in summer and fall, when many springs and seeps dry up and small reservoirs are empty.

The limited distribution of water contributes greatly to poor livestock distribution. Livestock concentrate near existing water sources and overgraze the vegetation in those areas. At the same time, some areas of good forage are underutilized by livestock because of lack of water. The problem is compounded during summer when livestock do not graze a far from water as they do in cooler weather.

Management Alternatives (from Cal-Neva Grazing Environmental Impact Statement)

The approved plan consists of the Preferred Alternative:

Alternative A - Proposed Action
An existing allotment management plan (AMP) would be maintained and AMPs implemented on seven additional allotments, totalling 642,851 acres of public land. Seven miles of streambank habitat and 120 acres of a proposed natural area would be excluded from livestock levels of 30,014 AUMs (30,084 active preference AUMs). Two allotments would require a combined 62 percent (246 AUMs) reduction in livestock use. The eight allotment management plans would include different grazing systems of varying intensities. Proposed

range developments consist of a 15,000 acre seeding, 120 miles of fence, 10 miles of pipeline, and 27 stock watering facilities. Available forage would be allocated to consumptive users so the rangeland carrying capacity would not be exceeded.

with the following modifications:

[ROD #1] 1. The present Cal-Neva Summer Allotment would not be immediately divided into three separate allotments (Cal Neva #1, #2, #3) as proposed in the EIS, but would remain as one allotment with three "use areas". However, management of the "Use Areas" would essentially be the same as if they were divided into three separate allotments.

Rationale: By initially dividing the Cal-neva Summer Allotment into "Use Areas" rather than individual allotments and absorbing the Coldren Allotment into the Cal-Neva #3 Use area, the same management practices would be undertaken to achieve the same objectives. It would also allow more flexible interim management before adjudicating final allotment boundaries.

[ROD #2] 2. Wild horse and burro herds would initially be reduced to 600 and 75, respectively, as proposed in the EIS, but the numbers would be allowed to expand up to 850 horses and 110 burros as the range improves.

Rationale: Allowing a modest range of wild horse and burro numbers would provide more realistic management guidelines. The lower populations, when combined with other elements of the Preferred Alternative, would help improve range condition, increase forage production, and reduce competition for food and space. The higher papulation level would provide an acceptable range of horse and burro numbers to be adjusted depending on the resource needs and responses.

[ROD #3] 3. The FEIS proposed fencing seven miles of riparian habitat along Smoke Creek to protect wildlife habitat, watershed, and cultural resources from livestock grazing. However, prior to fence construction, a Habitat Management Plan (HMP), Cultural Resource Management Plan (CRMP), and water quality Best Management Practice (BMP) analysis must be developed to identify management objectives, and through monitoring, determine if the objectives are being met without fencing. Protective fencing would still be constructed if necessary to meet wildlife, water quality, and cultural objectives.

Rationale: Developing a Habitat Management Plan prior to authorizing fence construction along Smoke Creek would identify management objectives and, through monitoring, determine if the objectives are being met without fencing. Improved grazing management practices may sufficiently protect the concerned values. if not, protective fencing would then be constructed.

[ROD #4] <u>Mitigation Measures</u>

In addition, those mitigating measures listed in the RPS (page 30) will be followed.

VEGETATION CLASSIFICATION COMMUNITY DESCRIPTIONS (DRAFT)
TWIN PEAKS ALLOTMENT

ASPEN FOREST

STRUCTURE: Dense to relatively open deciduous forest of 30-100% canopy cover. Trees vary from dense, short (10 ft.) stands with little understory to tall (60 ft.) trees with open larger treed stands. Understory varying from open grass and forb communities or medium (< 3 ft.) deciduous shrub and forb communities.

DOMINANTS: Quaking aspen (Populus tremuloides)

OTHER ASSOCIATES: White fir (Abies concolor), western juniper (Juniperus occidentalis var. occidentalis), curlleaf mtn. mahogany (Cercocarpus ledifolius var. intermontanus), big sagebrush (Artemisia tridentata var.'s), snowberry (Symphoricarpos rotundifolius var. rotundifolius), gooseberry (Ribes velutinum), wax currant (Ribes cereum), California brome (Bromus carinatus), columbine (Aquilegia formosa), western chokecherry (Prunus virginiana var. demissa).

LOCATION: Gentle to moderate, mostly north and east facing slopes at elevations of 1500-3000 m. (5000-10,000 ft.). Occurs throughout the region from the foothills near Susanville, the Warner Mtns., and upper elevations of the Great Basin.

**Refer to Eagle Lake Resource Area 1993 Aspen Inventory Report for more information.

WILLOW SCRUB

STRUCTURE: Moderately dense to open deciduous tall shrub (< 8 ft.) or tree (< 30 ft.) community with associated wet meadow plants and scattered low (< 3 ft.) shrubs.

DOMINANTS: Willows (Salix spp.)

OTHER ASSOCIATES: Narrow-leaved willow (Salix exigua), arroyo willow (Salix lasiolepis), red willow (Salix laevigata), Scouler's willow (Salix scouleriana), Lemmon's willow (Salix lemmonii), shining willow (Salix lucida ssp.'s), interior rose (Rosa woodsii ssp. ultramontana), sedges (Carex spp.), rushes (Juncus spp.), columbine (Aquilegia formosa), mountain alder (Alnus incana ssp. tenuifolia), American dogwood (Cornus sericea ssp. sericea), quaking aspen (Populus tremuloides var. tremuloides), black cottonwood (Populus balsamifera ssp. trichocarpa).

LOCATION: Flat to gentle slopes in meadows, wet drainages, and springs throughout the region. Often associated with aspen stands.

MOUNTAIN MAHOGANY 59-100%

STRUCTURE: Dense broad-leaved, evergreen shrub to tree community with a canopy cover of 59-100%. Trees short, 8-15 ft. high. Understory vegetation will be sparse in the densest stands. May have mosaics of big sagebrush communities and perennial bunchgrasses.

DOMINANTS: Curlleaf mountain mahogany (Cercocarpus ledifolius var. intermontanus)

OTHER ASSOCIATES: Jeffrey pine (Pinus jeffreyi), western juniper (Juniperus occidentalis var. occidentalis), white fir (Abies concolor), big sagebrush (Artemisia tridentata vars.), gooseberry and currant (Ribes spp.), antelope bitterbrush (Purshia tridentata var. tridentata), rubber rabbitbrush (Chrysothamnus nauseosus vars.), chokecherry (Prunus virginiana var. demissa), bluebunch wheatgrass (Pseudoroegneria spicata), and Idaho fescue (Festuca idahoensis).

LOCATION: Occurs on gentle to steep slopes at elevations from 1400-3000 m. (4500-9800 ft.) Occurs throughout area from foothills around Susanville to the top of the Warner Mtns.

MOUNTAIN MAHOGANY 40-59% / MIXED SHRUB

STRUCTURE: Open broad-leaved, evergreen shrub to tree community with a canopy cover of 40-59%. Mahogany varies from shrub type (3-6 ft.) to small trees (10-15 ft.) high. Associated interspace community consists of medium shrubs (< 6 ft.) and perennial grasses and shrubs.

DOMINANTS: Curlleaf mountain mahogany (Cercocarpus ledifolius var. intermontanus), big sagebrush (Artemisia tridentata var.'s).

OTHER ASSOCIATES: Rubber rabbitbrush (Chrysothamnus nauseosus ssp.'s), yellow rabbitbrush (Chrysothamnus viscidiflorus ssp.'s), serviceberry (Amelanchier pallida), antelope bitterbrush (Purshia tridentata var. tridentata)snowberry (Symphoricarpos rotundifolius var. rotundifolius), Idaho fescue (Festuca idahoensis), bluebunch wheatgrass (Pseudoroegneria spicata), Jeffrey pine (Pinus jeffreyi), western juniper (Juniperus occidentalis var. occidentalis), white fir (Abies concolor), and chokecherry (Prunus virginiana var. demissa).

LOCATION: Occurs on gentle to steep slopes at elevations from 1400-3000 m. (4500-9800 ft.). Occurs throughout the region from the foothills around Susanville to the Warner Mtns.

MOUNTAIN MAHOGANY 40-59% / ROCK

STRUCTURE: Open to rather dense broad-leaved, evergreen shrub to tree community with a canopy cover of 40-59%. Mahogany usually of the small tree from (10-15 ft.) high. Associated with rock outcrops and lava flows with some other shrubs and perennial grasses and forbs.

DOMINANTS: Curlleaf mountain mahogany (Cercocarpus ledifolius var. intermontanus)

OTHER ASSOCIATES: Big sagebrush (Artemisia tridentata var.'s), antelope bitterbrush (Purshia tridentata var. tridentata), serviceberry (Amelanchier pallida), bluebunch wheatgrass (Pseudoroegneria spicata), Idaho fescue (Festuca idahoensis), Columbia tower butterweed (Senecio integerrimus var. exaltatus), sicklepod rockcress (Arabis sparsiflora var. sparsiflora).

LOCATION: Occurs on gentle to steep slopes at elevations from 1400-3000 m. (4500-9800 ft.). Occurs on Observation Mtn., Poodle Mtns., Fox Mtn., and the Warner Mtns. area.

GREAT BASIN JUNIPER WOODLAND 10-24% / MIXED SHRUB / PERENNIAL GRASS

STRUCTURE: Open to moderately dense evergreen woodland with a canopy cover of

10-24%. Trees usually less than 30 ft., often much shorter. Associated community of medium to tall shrubs (3-6 ft.), perennial bunch grasses and forbs. Often considerable rock cover.

DOMINANTS: Western juniper (Juniperus occidentalis var. occidentalis), big sagebrush (Artemisia tridentata var.'s), antelope bitterbrush (Purshia tridentata var. tridentata).

OTHER ASSOCIATES: Serviceberry (Amelanchier pallida), rubber rabbitbrush (Chrysothamnus nauseosus ssp.'s), yellow rabbitbrush (C. viscidiflorus ssp. viscidiflorus), low sagebrush (Artemisia arbuscula ssp. arbuscula), plateau gooseberry (Ribes velutinum), squawapple (Peraphyllum ramosissimum), bluebunch wheatgrass (Pseudoroegneria spicata), Idaho fescue (Festuca idahoensis), Thurber's needlegrass (Achnatherum thurberiana), squirreltail (Elymus elymoides ssp. elymoides), one-sided bluegrass (Poa secunda ssp. secunda), mountain blue penstemon (Penstemon roezlii), rock eriogonum (Eriogonum sphaerocephalum var. sphaerocephalum), Oregon sunshine (Eriophyllum lanatum var. integrifolium).

LOCATION: Flat to moderate slopes at elevations from 1300 -2500 m. (4200-8200 ft.). Often with rocky basalt flows. Occurs on much of the Modoc Plateau and many area of the Great Basin.

GREAT BASIN JUNIPER WOODLAND 10-24% / LOW SAGE

STRUCTURE: Open to moderately dense evergreen woodland with a canopy cover of 10-24%. Trees usually older, large diameter trees, mostly less than 20 ft. tall. Associated community consists primarily of low (< 2ft.), evergreen shrubs and perennial grasses and forbs. May have other scattered larger shrubs (3-6 ft.) and often with considerable rock.

DOMINANTS: Western juniper (Juniperus occidentalis var. occidentalis) and low sagebrush (Artemisia arbuscula ssp. arbuscula).

OTHER ASSOCIATES: Mountain mahogany (Cercocarpus ledifolius var. intermontanus), big sagebrush (Artemisia tridentata var.'s), antelope bitterbrush (Purshia tridentata var. tridentata), chokecherry (Prunus virginiana var. demissa), rubber rabbitbrush (Chrysothamnus nauseosus ssp.'s), squawapple (Peraphyllum ramosissimum), plateau gooseberry (Ribes velutinum), Idaho fescue (Festuca idahoensis), Sandberg bluegrass (Poa secunda ssp. secunda), squirreltail (Elymus elymoides ssp. elymoides), bluebunch wheatgrass (Pseudoroegneria spicata), basin wildrye (Leymus cinereus), Oregon sunshine (Eriophyllum lanatum var. integrifolium), mountain blue penstemon (Penstemon roezlii), Columbia tower butterweed (Senecio integerrimus var. exaltatus), Hooker's balsamroot (Balsamorhiza hookeri), rock eriogonum (Eriogonum sphaerocephalum var.'s).

LOCATION: Flats to steep slopes at elevations from 1300-2000 m. (4200-6500 ft.). Usually parts of rock outcrops and lava flows. Occurs on Observation Mtn., Express canyon, and Hays Canyon areas. Community often in good ecological condition.

GREAT BASIN JUNIPER WOODLAND 25-39% / MOUNTAIN MAHOGANY

STRUCTURE: Open to moderately dense evergreen woodland with a canopy cover of 25-39%. Trees generally less than 30 ft. tall. Associated community consists primarily of evergreen shrubs 3-6 ft. tall and perennial grasses and forbs.

DOMINANTS: Western juniper (Juniperus occidentalis var. occidentalis), curlleaf mountain mahogany (Cercocarpus ledifolius var. intermontanus).

OTHER ASSOCIATES: Mountain big sagebrush (Artemisia tridentata var. vaseyana),

low sagebrush (Artemisia arbuscula var. arbuscula), antelope bitterbrush (Purshia tridentata var. tridentata), plateau gooseberry (Ribes velutinum), bluebunch wheatgrass (Pseudoroegneria spicata), Idaho fescue (Festuca idahoensis), squirreltail (Elymus elymoides ssp. elymoides), rock eriogonum (Eriogonum sphaerocephalum var.'s), tapertip hawksbeard (Crepis acuminata), arrowleaf balsamroot (Balsamorhiza sagittata), phlox (Phlox spp.), Lewis's lomatium (Lomatium triternatum var. macrocarpum), mulesear (Wyethia mollis).

LOCATION: Occurs on flats to steep slopes at elevations from 1400-2500 m. (4500-8000 ft.), often on rocky soils. Occurs on Observation Mtn. and in the Cedar Creek area.

MIXED MOUNTAIN SHRUB 25-39% / BAREGROUND

STRUCTURE: Medium (3-6 ft.) mostly broad-leaved, evergreen shrub community with a canopy cover of 25-39%. Associated community of annual grasses and forbs and a few perennial grasses and forbs.

DOMINANTS: Mountain big sagebrush (Artemisia tridentata var. vaseyana), snowberry (Symphoricarpos rotundifolius var. rotundifolius)

OTHER ASSOCIATES: Western juniper (Juniperus occidentalus var. occidentalis), yellow rabbitbrush (Chrysothamnus viscidiflorus ssp.'s), plateau gooseberry (Ribes velutinum), green leaf manzanita (Arctostaphylos patula), mulesear (Wyethia mollis), squirreltail (Elymus elymoides ssp. elymoides), California brome (Bromus carinatus var. carinatus), cheatgrass (Bromus tectorum), bluebunch wheatgrass (Pseudoroegneria spicata).

LOCATION: On moderate to steep mountain slopes at higher elevations at 2000-2300 m. (6600-7600 ft.). Often associated with burned or grasses areas. Occurs on Fredonyer Peak.

MIXED MOUNTAIN SHRUB 40-59% / PERENNIAL GRASSES

STRUCTURE: Dense medium tall (3-6 ft.), mostly broad-leaved evergreen shrub community with a canopy cover of 40-59%. Associated community consists primarily of perennial grasses and forbs.

DOMINANTS: Mountain big sagebrush (Artemisia tridentata var. vaseyana), snowberry (Symphoricarpos rotundifolius var. rotundifolius)

OTHER ASSOCIATES: White fir (Abies concolor), curlleaf mountain mahogany (Cercocarpus ledifolius var. intermontanus), yellow rabbitbrush (Chrysothamnus viscidiflorus ssp.'s), plateau gooseberry (Ribes velutinum), green leaf manzanita (Arctostaphylos patula), tobacco brush (Ceanothus velutinus var. velutinus), western choke-cherry (Prunus virginiana var. demissa), bitter cherry (Prunus emarginata), California brome (Bromus carinatus var. carinatus), western needlegrass (Achnatherum occidentalis ssp.'s), Idaho fescue (Festuca idahoensis), bluebunch wheatgrass (Pseudoroegneria spicata), mulesear (Wyethia mollis), old man's whiskers (Geum triflorum), silvery lupine (Lupinus argenteus var. argenteus).

LOCATION: On moderate to steep slopes at higher elevations from 2200-2300 m. (7200-7600 ft.). Occurs on the east slope of the Warner Mtns. and on Divine Peak east of Hays Canyon.

BIG SAGEBRUSH SCRUB 10-24% / BITTERBRUSH / PERENNIAL GRASS

STRUCTURE: Open broad-leaved, evergreen shrub community with a canopy cover of 10-24%. Shrubs medium to tall (3-6 ft.). Associated community primarily of

perennial bunch grasses and perennial and annual forbs.

DOMINANTS: Big sagebrush (Artemisia tridentata var.'s), antelope bitterbrush (Purshia tridentata var. tridentata).

OTHER ASSOCIATES: Rubber rabbitbrush (Chrysothamnus nauseosus ssp.'s), basin wildrye (Leymus cinereus), squirreltail (Elymus elymoides ssp. elymoides), Sandberg bluegrasses (Poa secunda ssp.'s), bluebunch wheatgrass (Pseudoroegneria spicata), cheatgrass (Bromus tectorum), lupine (Lupinus spp.).

LOCATION: Gentle to moderate slopes at elevations from 1300-2000 m. (4200-6500 ft.). Often on rocky loam soils predominantly in the Bass Hill area near Susanville.

BIG SAGEBRUSH SCRUB 10-39% / PERENNIAL GRASS

STRUCTURE: Open to moderately dense, broad-leaved, evergreen shrub community with a canopy cover of 10-39%. Shrubs medium height (3-6 ft.). Associated community of perennial grasses and forbs.

DOMINANTS: Big sagebrush (Artemisia tridentata var.'s), bluebunch wheatgrass (Pseudoroegneria spicata).

OTHER ASSOCIATES: Rubber rabbitbrush (Chrysothamnus nauseosus ssp.'s), Morman tea (Ephedra viride), plateau gooseberry (Ribes velutinum), antelope bitterbrush (Purshia tridentata var. tridentata), snowberry (Symphoricarpos rotundifolius var. rotundifolius), Sandberg bluegrass (Poa secunda ssp.'s), basin wildrye (Leymus cinereus), squirreltail (Elymus elymoides ssp. elymoides), Idaho fescue (Festuca idahoensis), arrowleaf balsamroot (Balsamorhiza sagittata), mulesear (Wyethia mollis), prickly gilia (Leptodactylon pungens).

LOCATION: On flat to steep slopes, mostly at higher elevations from 1400-2400 m. (4700-7800 ft.). Often occurs on north slopes in the drier portions of the region. Occurs on the Amedee Mtns., Skedaddle Mtns., Observation Peak, Fredonyer Peak, Hays Canyon, and Cedar Creek areas.

BIG SAGEBRUSH SCRUB 10-24% / ROCK

STRUCTURE: Open broad-leaved, evergreen shrub community with a canopy cover of 10-24%. Shrubs medium to tall (3-6 ft.). Interspace usually occupied by rocky soil with cover of small rocks to boulders and lava flow outcrops.

DOMINANTS: Big sagebrush (Artemisia tridentata var.s)

OTHER ASSOCIATES: Black sage (Artemisia nova), rubber rabbitbrush (Chrysothamnus nauseosus ssp.'s), gray horsebrush (Tetradymia canescens), antelope bitterbrush (Purshia tridentata var. tridentata), Morman tea (Ephedra viridis), spiny hopsage (Grayia spinosa), squawapple (Peraphyllum ramosissimum), bluebunch wheatgrass (Pseudoroegneria spicata), basin wildrye (Leymus cinereus), squirreltail (Elymus elymoides ssp. elymoides), Sandberg bluegrasses (Poa secunda ssp.'s), cheatgrass (Bromus tectorum), Thurber's needlegrass (Achnatherum thurberiana), lupine (Lupinus spp.), stemless goldenweed (Stenotus acaulis), sandwort (Arenaria congesta var.'s), desert yellow daisy (Erigeron linearis), Oregon sunshine (Eriophyllum lanatum var. integrifolium), mountain blue penstemon (Penstemon roezlii), cespitose buckwheat (Eriogonum cespitosum), low phlox (Phlox hoodii ssp. canescens).

LOCATION: Along drainages, mountain slopes, and lava flow areas at elevations from 1300-1850 m. (4200-6000 ft.). Occurs around Snowstorm Mtn., Skedaddle Mtn.,

Painter Flat area, and scattered throughout the region.

BIG SAGEBRUSH SCRUB 10-24 % / BAREGROUND (ANNUALS)

STRUCTURE: Open broad-leaved, evergreen shrub community with a canopy cover of 10-24%. Shrubs medium to tall (3-6 ft.). Interspace vegetation consisting primarily of weedy annuals during wetter springs or bareground during dry springs.

DOMINANTS: Big sagebrush (Artemisia tridentata var.'s), rubber rabbitbrush (Chrysothamnus nauseosus ssp.'s)

OTHER ASSOCIATES: Gray horsebrush (Tetradymia canescens), antelope bitterbrush (Purshia tridentata var. tridentata), spiny hopsage (Grayia spinosa), western juniper (Juniperus occidentalis var. occidentalis), squawapple (Peraphyllum ramosissimum), cheatgrass (Bromus tectorum), tumblemustard (Sisymbrium altissimum), tansy mustard (Descurainia spp.), filaree (Erodium cicutarium), basin wildrye (Leymus cinereus).

LOCATION: Mostly flat to gentle slopes around basins that have often been heavily grazed in earlier years. Very poor condition community. Occurs at elevations from 1300-1700 m. (4200-5500 ft.) primarily in Madeline Plains, Mud Flat, and Surprise Valley.

MIXED GREAT BASIN SHRUB 10-39% / PERENNIAL GRASS-BAREGROUND

STRUCTURE: Open to moderately dense, broad-leaved, evergreen and deciduous shrub community with a canopy cover of 10-39%. Shrubs of medium (3-6 ft.) height. Associated community varies from sparse annuals to perennial grasses and forbs. May often have high percentage of bareground or rock.

DOMINANTS: Big sagebrush (Artemisia tridentata var.'s)

OTHER ASSOCIATES: Rubber rabbitbrush (Chrysothamnus nauseosus ssp. consimilis), yellow rabbitbrush (Chrysothamnus viscidiflorus ssp.'s), squawapple (Peraphyllum ramosissimum), plateau gooseberry (Ribes velutinum), Morman tea (Ephedra viridis), low sagebrush (Artemisia arbuscula var. arbuscula), antelope bitterbrush (Purshia tridentata var. tridentata), gray horsebrush (Tetradymia canescens), Sandberg bluegrass (Poa secunda ssp.'s), squirreltail (Elymus elymoides ssp. elymoides), bluebunch wheatgrass (Pseudoroegneria spicata), basin wildrye (Leymus cinereus), Thurber's needlegrass (Achnatherum thurberiana), cheatgrass (Bromus tectorum), tapertip hawksbeard (Crepis acuminata), silvery lupine (Lupinus argenteus var.'s), skeletonweed (Stephanomeria spinosa), mulesear (Wyethia mollis), arrowleaf balsamroot (Balsamorhiza sagittata), Hooker's balsamroot (Balsamorhiza hookeri), sulfur buckwheat (Eriogonum umbellatum var.'s), rock eriogonum (Eriogonum sphaerocephalum var. halimioides).

LOCATION: Occurs mostly on flat to moderate slopes at elevations of 1350-1800 m. (4500-5800 ft.). Occurs mostly in the south and eastern portions of the region.

MIXED GREAT BASIN SHRUB 10-39% / ROCK

STRUCTURE: Open to moderately dense, broad-leaved, evergreen and deciduous shrub community with a canopy cover of 10-39%. Shrubs of medium (3-6 ft.) height. Associated community dominated by rock with scattered occurrences of perennial grasses and forbs. May also have a few scattered older western junipers.

DOMINANTS: Big sagebrush (Artemisia tridentata var.'s)

OTHER ASSOCIATES: Western juniper (Juniperus occidentalis var. occidentalis) rubber rabbitbrush (Chrysothamnus nauseosus ssp. consimilis), yellow rabbitbrush (Chrysothamnus viscidiflorus ssp.'s), squawapple (Peraphyllum ramosissimum), plateau gooseberry (Ribes velutinum), Morman tea (Ephedra viridis), low sagebrush (Artemisia arbuscula var. arbuscula), antelope bitterbrush (Purshia tridentata var. tridentata), gray horsebrush (Tetradymia canescens), Sandberg bluegrass (Poa secunda ssp.'s), squirreltail (Elymus elymoides ssp. elymoides), bluebunch wheatgrass (Pseudoroegneria spicata), Thurber's needlegrass (Achnatherum thurberiana), cheatgrass (Bromus tectorum), stemless goldenweed (Stenotus acaulis), ballhead sandwort (Arenaria congesta var. subcongesta), desert yellow daisy (Erigeron linearis), low pussy-toes (Antennaria dimorpha), silvery lupine (Lupinus argenteus var. heteranthus), skeletonweed (Stephanomeria spinosa), mulesear (Wyethia mollis), rock eriogonum (Eriogonum sphaerocephalum var. halimioides).

LOCATION: Scattered throughout the Great Basin and Modoc Plateau portions of the region at elevations from 1300-1900 m. (4200-6200 ft.). Occurs on gentle to moderate slopes but can be associated with steeper rimrock.

LOW SAGEBRUSH SCRUB 10-25% / PERENNIAL GRASS

STRUCTURE: Open broad-leaved, evergreen shrub community with a canopy cover of 10-25%. Shrubs low, usually less than 1 ft. high. Associated community consists primarily of perennial grasses and forbs, sometimes with scattered western juniper. Perennial grasses often pedastalled with some surface soil loss evident.

DOMINANTS: Low sagebrush (Artemisia arbuscula var. arbuscula), one-sided bluegrass (Poa secunda ssp. secunda).

OTHER ASSOCIATES: Western juniper (Juniperus occidentalis var. occidentalis) rubber rabbitbrush (Chrysothamnus nauseosus ssp.'s), plateau gooseberry (Ribes velutnum), antelope bitterbrush (Purshia tridentata var. tridentata), gray horsebrush (Tetradymia canescens), squirreltail (Elymus elymoides ssp. elymoides), bluebunch wheatgrass (Pseudoroegneria spicata), Thurber's needlegrass (Achnatherum thurberiana), Idaho fescue (Festuca idahoensis), ballhead sandwort (Arenaria congesta var. subcongesta), desert yellow daisy (Erigeron linearis), low pussy-toes (Antennaria dimorpha), rock eriogonum (Eriogonum sphaerocephalum var. halimioides), Oregon sunshine (Eriophyllum lanatum var. integrifolium), Bolander's yampah (Perideridia bolanderi ssp. bolanderi), Hooker's balsamroot (Balsamorhiza hookeri), cushion eriogonum (Eriogonum ovalifolium var. ovalifolium), hoary rockcress (Arabis puberula), phlox (Phlox spp.).

LOCATION: Occurs mostly on flat to gentle slopes at elevations from 1300-2200 m. (4200-7200 ft.) in the Great Basin and Modoc Plateau portions of the region. Significant amounts occur in the northeastern portion of the region in Nevada.

LOW SAGEBRUSH SCRUB 10-25% / ROCK

STRUCTURE: Open broad-leaved, evergreen shrub community with a canopy cover of 10-25%. Shrubs low, usually less than 1 ft. high. Associated community consists of perennial grasses and forbs dominated by rocks and rock outcrops. Can have scattered occurrence of western juniper.

DOMINANTS: Low sagebrush (Artemisia arbuscula var. arbuscula)

OTHER ASSOCIATES: Western juniper (Juniperus occidentalis var. occidentalis), antelope bitterbrush (Purshia tridentata var. tridentata), rubber rabbitbrush (Chrysothamnus nauseosus ssp.'s), big sagebrush (Artemisia tridentata var.'s),

squawapple (Peraphyllum ramosissimum), one-sided bluegrass (Poa secunda ssp. secunda), squirreltail (Elymus elymoides ssp. elymoides), bluebunch wheatgrass (Pseudoroegneria spicata), Thurber's needlegrass (Achnatherum thurberiana), Idaho fescue (Festuca idahoensis), low pussy-toes (Antennaria dimorpha), rock eriogonum (Eriogonum sphaerocephalum var. halimioides), Oregon sunshine (Eriophyllum lanatum var. integrifolium), Lewis' lomatium (Lomatium triternatum var. macrocarpum), bigseed lomatium (Lomatium macrocarpum), Bolander's yampah (Perideridia bolanderi ssp. bolanderi), Cusick's sunflower (Helianthus cusickii), Hooker's balsamroot (Balsamorhiza hookeri), cespitose eriogonum (Eriogonum cespitosum, phlox (Phlox spp.).

LOCATION: Occurs mostly on flat to gentle slopes at elevations from 1300-2200 m. (4200-7200 ft.) in the Great Basin and Modoc Plateau portions of the region. Significant amounts occur in the northeast portion of the region in Nevada.

SILVER SAGEBRUSH (Artemisia cana var. bolanderi)

STRUCTURE: Dense to open broad-leaved, evergreen, shrub community, usually less than 2 ft., with 20-40% shrub coverage. Interspace coverage may vary from low grasses, rushes, or sedges and forbs to nearly bare.

DOMINANTS: Silver sagebrush (Artemisia cana var. bolanderi)

OTHER ASSOCIATES: Big sagebrush (Artemisia tridentata var. tridentata), Baltic rush (Juncus balticus), basin wildrye (Elymus elymoides ssp. elymoides), mat muhly (Muhlenbergia richardsonis), Lassen lomatium (Lomatium ravenii), whitestem rubber rabbitbrush (Chrysothamnus nauseosus ssp. consimilis), variedleaf green rabbitbrush (Chrysothamnus viscidiflorus ssp. viscidiflorus), alkali plagiobothrys (Plagiobothrys leptocladus), meadow barley (Hordeum brachyantherum), basin wildrye (Leymus cinereus), creeping wildrye (Leymus triticoides).

LOCATION: Closed drainage basins and flats in moist, alkaline, poorly drained soils. Often associated with big sagebrush and rabbitbrush communities. Occurs at 1200-1700 m. (4000-5600 ft.) elevation at Painter Flat, Madeline Plains, etc.

RABBITBRUSH SCRUB 5-25% / BAREGROUND

STRUCTURE: Open broad-leaved deciduous shrub community with a canopy cover of 5-25%. Associated community mostly of weedy annuals with abundant bareground.

DOMINANTS: Rubber rabbitbrush (Chrysothamnus nauseosus ssp. consimilis)

OTHER ASSOCIATES: Washoe rubber rabbitbrush (chrysothamnus nauseosus ssp. washoensis), big sagebrush (Artemisia tridentata var.'s), low sagebrush (Artemisia arbuscula ssp. arbuscula), antelope bitterbrush (Purshia tridentata var. tridentata), gray horsebrush (Tetradymia canescens), greasewood (Sarcobatus vermiculatus),medusahead (Taeniatherum caput-medusae), rushes (Juncus spp.), basin wildrye (Leymus cinereus), squirreltail (Elymus elymoides ssp. elymoides), cheatgrass (Bromus tectorum), Sandberg bluegrass (Poa secunda ssp.'s), skeletonweed (Stephanomeria spinosa), Cusick's sunflower (Helianthus cusickii), white-stemmed stickleaf (Mentzelia albicaulis), tumblemustard (Sisymbrium altissimum).
LOCATION: Flat to gentle slopes mostly at elevations from 1300-1600 ft. (4200-5000 ft.). Often on alkaline flats or associated with burns or disturbed sites. Occurs throughout the region.

GREASEWOOD SCRUB 10-59%

STRUCTURE: Open to rarely dense broad-leaved, deciduous desert shrub community with a canopy cover mostly of 10-25%. Shrubs medium (2-5 ft.) height. Associated community mostly desert annuals with some perennial grasses and forbs.

DOMINANTS: Greasewood (Sarcobatus vermiculatus)

OTHER ASSOCIATES: Basin big sagebrush (Artemisia tridentata ssp. tridentata), rubber rabbitbrush (Chrysothamnus nauseosus ssp.'s), spiny hopsage (Grayia spinosa), inland saltgrass (Distichlis spicata), basin wildrye (Leymus cinereus), squirreltail (Elymus elymoides ssp. elymoides), cheatgrass (Bromus tectorum), spreading thelypodium (Thelypodium flexuosum), tumblemustard (Sisymbrium altissimum), tansymustard (Descurainia spp.), clasping pepperweed (Lepidium perfoliatum), povertyweed (Iva axillaris ssp. robustior), Russian thistle (Salsola tragus).

LOCATION: On flat to very gentle slopes at elevations from 1200-1500 m. (4000-5000 ft.). Usually on alkaline soils associated with dry lake beds. Occurs primarily in the Honey Lake basin, Smoke Creek Desert, Mud Flat, and Surprise Valley areas.

SHADSCALE SCRUB

STRUCTURE: Open broad-leaved, deciduous desert shrub community with a canopy cover usually less than 25%. Shrubs low, less than 3 ft. tall. Associated community very sparse, primarily of annual with some perennial forbs.

DOMINANTS: Shadscale (Atriplex confertifolia)

OTHER ASSOCIATES: Spiny hopsage (Grayia spinosa), budsage (Artemisia spinosa), gray-molly (Kochia americana), western sea-blite (Suaeda occidentalis), Indian ricegrass (Achnatherum hymenoides), desert prince's plume (Stanleya pinnata var. pinnata).

LOCATION: Alluvial gentle slopes and flats in dry desert areas. Occurs at elevations from 1300-1700 m. (4200-5500 ft.) along the lower slopes of the Amedee Mtns. and western edge of the Smoke Creek Desert.

MIXED DESERT SHRUB 10-39%

STRUCTURE: Open, low to medium (1-5 ft.), mostly broad-leaved, deciduous desert shrub community with a canopy cover of 10-39%. Associated community mostly desert annuals with some perennial grasses and forbs.

DOMINANTS: Greasewood (Sarcobatus vermiculatus), shadscale (Atriplex confertifolia), and spiny hopsage (Grayia spinosa).

OTHER ASSOCIATES: Wyoming big sagebrush (Artemisia tridentata ssp. wyomingensis), budsage (Artemisia spinescens), Morman tea (Ephedra viride), rubber rabbitbrush (Chrysothamnus nauseosus ssp.'s, littleleaf horsebrush (Tetradymia glabrata), spiny horsebrush (Tetradymia spinosa), fourwing saltbush (Atriplex canescens ssp. canescens), winterfat (Krascheninnikovia lanata), purple sage (Salvia dorrii var. dorrii), golden prince's plume (Stanleya pinnata var. pinnata), Indian ricegrass (Achnatherum hymenoides), squirreltail (Elymus elymoides ssp. elymoides), basin wildrye (Leymus cinereus), cheatgrass (Bromus tectorum), tansymustard (Descurainia ssp.), azure penstemon (Penstemon speciosus), gooseberry leaf globemallow (Sphaeralcea grossulariifolia).

LOCATION: On flat to moderate slopes at elevations from 1200-1500 m. (4000-5000 ft.). Usually on gravelly to loamy alkaline alluvial soils surrounding dry lake beds. Occurs in the Honey Lake basin, Smoke Creek Desert, Mud Flat, and Surprise

Valley areas.

ALKALI PLAYA

STRUCTURE: Ephemeral lake basins that are usually light, fine textured, poorly drained soils. The areas are usually devoid of vegetation. They are usually closed drainage basins in which salts have accumulated. They are often inundated during wet winters, drying up in the summer months.

DOMINANTS: No vegetation or only a few scattered plants.

OTHER ASSOCIATES: Saltgrass (Distichlis spicata)

LOCATION: Occurs mainly at 1200-1500 m. (4000-5000 ft.) east of Cedarville, Duck Flat, Smoke Creek Desert, Madeline Plains, and Honey Lake Valley.

MEADOW AND/OR SEEP

STRUCTURE: A meadow, spring, or seep area that is wet most of the year. Supports a rather dense community of primarily riparian grasslike plants with possibly a few scattered medium (3-6 ft.) height shrubs.

DOMINANTS: Rushes (Juncus spp.) and sedges (Carex spp.)

OTHER ASSOCIATES: Willows (Salix spp.), golden currant (Ribes aureum), interior rose (Rosa woodsii var. ultramontana), Nebraska sedge (Carex nebrascensis), Baltic rush (Juncus balticus), common spikerush (Eleocharis macrostachya), short-awn foxtail (Alopecurus aequalis), meadow barley (Hordeum brachyantherum), spike redtop (Agrostis exarata), thingrass (Agrostis pallens), western blue flag (Iris missouriensis), smallflowered camas (Camassia quamash ssp. breviflora), hoary nettle (Urtica dioica ssp. holosericea), common monkeyflower (Mimulus guttatus).

LOCATION: Occurs mostly on flat to gentle slopes at elevations from 1200-2700 m. (4000-8400 ft.). Often associated with drainage outlets in large basins. Occurs throughout the region with considerable amounts in the Honey Lake Basin, Cedar Creek, and Warner Mtn. areas.

SEASONALLY DRY MEADOW

STRUCTURE: Areas with primarily remnant meadow soils that are wet in the spring, usually drying in the early summer months. Plant community consists primarily of perennial grasslike plants. Can have considerable amounts of weedy annuals or bareground. May also have scattered occurrence of medium (3-6 ft.) height shrubs.

DOMINANTS: Baltic rush (Juncus balticus), sedges (Carex spp.)

OTHER ASSOCIATES: Silver sagebrush (Artemisia cana ssp. bolanderi), rubber rabbitbrush (Chrysothamnus nauseosus ssp. consimilis), squirreltail (Elymus elymoides ssp.elymoides), annual beardgrass (Polypogon monspeliensis), clustered field sedge (Carex praegracilis), mat muhly (Muhlenbergia richardsonis), beardless wildrye (Leymus triticoides), inland saltgrass (Distichlis spicata), meadow barley (Hordeum brachyantherum), finebranched popcorn flower (Plagiobothrys leptocladus), tansyleaf eveningprimrose (Camissonia tanacetifolia ssp. tanacetifolia)

LOCATION: Occurs mostly on flat to gentle slopes at elevations from 1200-1850 m. (4000-6000 ft.). Occurs throughout the region but is often associated with overgrazed pastured in Honey Lake Valley, Madeline Plains, and Surprise Valley.

PASTURE / CROPLAND

STRUCTURE: Fenced pastures and agricultural fields that are usually irrigated and farmed to produce various crops such as alfalfa or grains.

DOMINANTS: Agricultural crops or fallow fields.

OTHER ASSOCIATES: Annual weedy plants.

LOCATION: Mostly around communities such as Surprise Valley, Alturas-Likely, Madeline Plains, and Honey Lake Valley at elevations from 1200-1500 m. (4000-5000 ft.)

WATER

STRUCTURE: Perennial deep water lakes and reservoirs.

DOMINANTS: Water

OTHER ASSOCIATES: None

LOCATION: Represented by areas such as Eagle Lake, West Valley Reservoir, Blue Lake, and Honey Lake.

ROCK

STRUCTURE: Rock outcrops and lava flows of greater than 90% rock cover.

DOMINANTS: Rock

OTHER ASSOCIATES: curlleaf mountain mahogany (Cercocarpus ledifolius var. intermontanus, western juniper (Juniperus occidentalis var. occidentalis), and creambush (Holodiscus microphyllus var. glabrescens).

LOCATION: Occurs through the region on mountain ridges and slopes and tableland areas of large lava flows and basalt outcrops. Occurs in the Warner Mtns., Likely Tablelands, Observation, and Skedaddle Mtns.

BAREGROUND

STRUCTURE: Dry farmland, sand dunes, and very sparsely vegetated areas.

DOMINANTS: Bare soil

OTHER ASSOCIATES: Annual weedy plants.

LOCATION: Often associated with disturbed areas, light soil, and very open sagebrush communities.

Appendix H. BLM Riparian Policy.

Bureau of Land Management
Riparian Area Management Policy

BACKGROUND

Riparian areas are unique and among the most productive and important ecosystems, comprising approximately 1 percent of the public lands. Characteristically, riparian areas display a greater diversity of plant, fish, wildlife, and other animal species and vegetation structure than adjoining ecosystems. Healthy riparian systems filter and purify water as it moves through the riparian zone, reduce sediment loads and enhance soil stability, provide micro-climate moderation when contrasted to extremes in adjacent areas, and contribute to groundwater recharge and base flow.

DEFINITIONS

Riparian Area - an area of land directly influenced by permanent water. It has visible vegetation or physical characteristics reflective of permanent water influence. Lake shores and stream banks are typical riparian areas. Excluded are such sites as ephemeral streams or washes that do not exhibit the presence of vegetation dependent upon free water in the soil.

Riparian Area-Dependent Resources - resources such as water, vegetation, fish, and certain wildlife that owe their existence to the riparian area.

OBJECTIVE

The objective of riparian area management is to maintain, restore, or improve riparian values to achieve a healthy and productive ecological condition for maximum long-term benefits.

POLICY STATEMENTS

In order to meet the foregoing objective, the Bureau will to the extent practical:

- Achieve riparian area improvement and maintenance objectives through the management of existing uses wherever feasible.
- Ensure that new resource management plans and activity plans, and existing plans when revised, recognize the importance of riparian values, and initiate management to maintain, restore, or improve them.
- Prescribe management for riparian values that is based upon site-specific characteristics and settings.
- Give special attention to monitoring and evaluating management activities in riparian areas and revise management practices where site-specific objectives are not being met.
- Cooperate with and encourage the involvement of interested Federal, State, and local governments and private parties to share information, implement management, coordinate activities, and provide education on the value, productivity, and management of riparian areas.
- Retain riparian areas in public ownership unless disposal would be in the public interest, as determined in the land use planning system.
- Identify, encourage, and support research and studies needed to ensure that riparian area management objectives can be properly defined and met.

Robt J Burford

Director, Bureau of Land Management

JAN 22 1987

Date

Appendix I. Utilization Data Summaries for Key Areas and Selected Locations.

2/12/94

1993 TWIN PEAKS ALLOTMENT
SUMMARY OF KEY AREA UTILIZATION DATA

TRANSECT LOCATION	RESULTS-USER-DATE
NORTH PASTURE UPLAND	
0715-Salt Works Well	EULA5 5%, (2/2/94);
0716-Smoke Creek Ranch	SIHY 7%, ORHY 3% (2/3/94);
0717-Tule Canyon	
0718-Parsnip Wash	2.5% on key grasses (05/07/93)
0719-Burn Spring	10/13/93
0720-Rowland Mountain	23-29% on key species by W/H (7/16/93)
0721-Norton Place	
0722-Buffalo Spring	
0723-Antelope Basin	
0753-Big Springs Burn	
0760-Painter Flat	20-40% on Key Grasses by S,C,W/H
(10/19/93);	
0756-Mixie Flat	24%-SIHY by L/S, W/H (8/5/93)
0757-Chimney Rock	
NORTH PASTURE RIPARIAN TRANSECTS	
0718A-Upper Parsnip Wash	Stubble Heights - Heavy by L/S, W/H (8/5/93);
	Stubble Height-Heavy by W/H, L/S (9/08/93)
0718B-Lower Parsnip Wash	Stubble Height-Heavy (7/30/93)
0771A-Lower North Fork Buffalo Cr.	Stubble Height (7") (6/23/93)
0771B-Upper North Fork Buffalo Cr.	
0772-Middle Fork Buffalo Cr.	
0773-Confluence-West/Middle Forks	Apparent use-Slight (9/28/93)
-West Fork/Buffalo Creek	Stubble Height-Slight (6/29/93)
SOUTH PASTURE UPLAND	
0707-Telephone Spring	SIHY 4%, AGSP 5%, STTH2 3% (2/4/94);
0708-Parker Canyon	SIHY 10%, STTH2 8%, POSA12 12% (2/4/94);
0709-Wild Horse Reservoir	18% on Key Species, (10/6/93)
	SIHY 17%, STTH2 16%, POSA12 8%, AGSP 35% (2/4/94);
0710-East Fork Skedaddle Creek	SIHY 16%, STTH2 24%, POSA12 20% (2/4/94);
0711-Antelope Spring	SIHY 6% by W/H, L/S (12/3/93)
0712-Willow Reservoir	SIHY 7%, STTH2 13%, POSA12 9%, AGSP 27% (2/4/94);
0713-Lower Smoke Creek Well	ORHY 11%, (2/2/94);
0714-Rush Creek Reservoir	SIHY 16%, POSA12 12% (2/2/94);
0729-Dry Valley # 1.	
0730-Dry Valley # 2.	
Rag House Transect	
SOUTH PASTURE RIPARIAN TRANSECTS	
0770-Lower Smoke Creek	24% Grasslike, 2% Willows by C,B

	(11/10/93);
-Morgan Spring	83% use on riparian area by W/H, L/S (10/06/93);
-Nye Basin	KFPM-PUTR 12%, Key Grasses-5-12% C, W/L 12/3/93

The Eagle Lake Resource Area uses the Key Forage Plant Method (KFPM) and use pattern mapping information (UPM) to determine utilization on uplands and riparian areas. Utilization is described by at lease five classes: no use (0%), slight or light use (1 to 40%), moderate (41-60%), heavy (61-100%) and ephermal range (low production. In some instances on riparian areas, stubble height method was in addition to or in place of the Key Forage Plant Method. User key user in this monitoring summary: Livestock (L/S); Cattle (C); Sheep (S); Wild Horses (W/H); Burros (B); Wildlife (W/L).

TWIN PEAKS ALLOTMENT
SUMMARY OF UTILIZATION COLLECTED AS OF 12/15/93

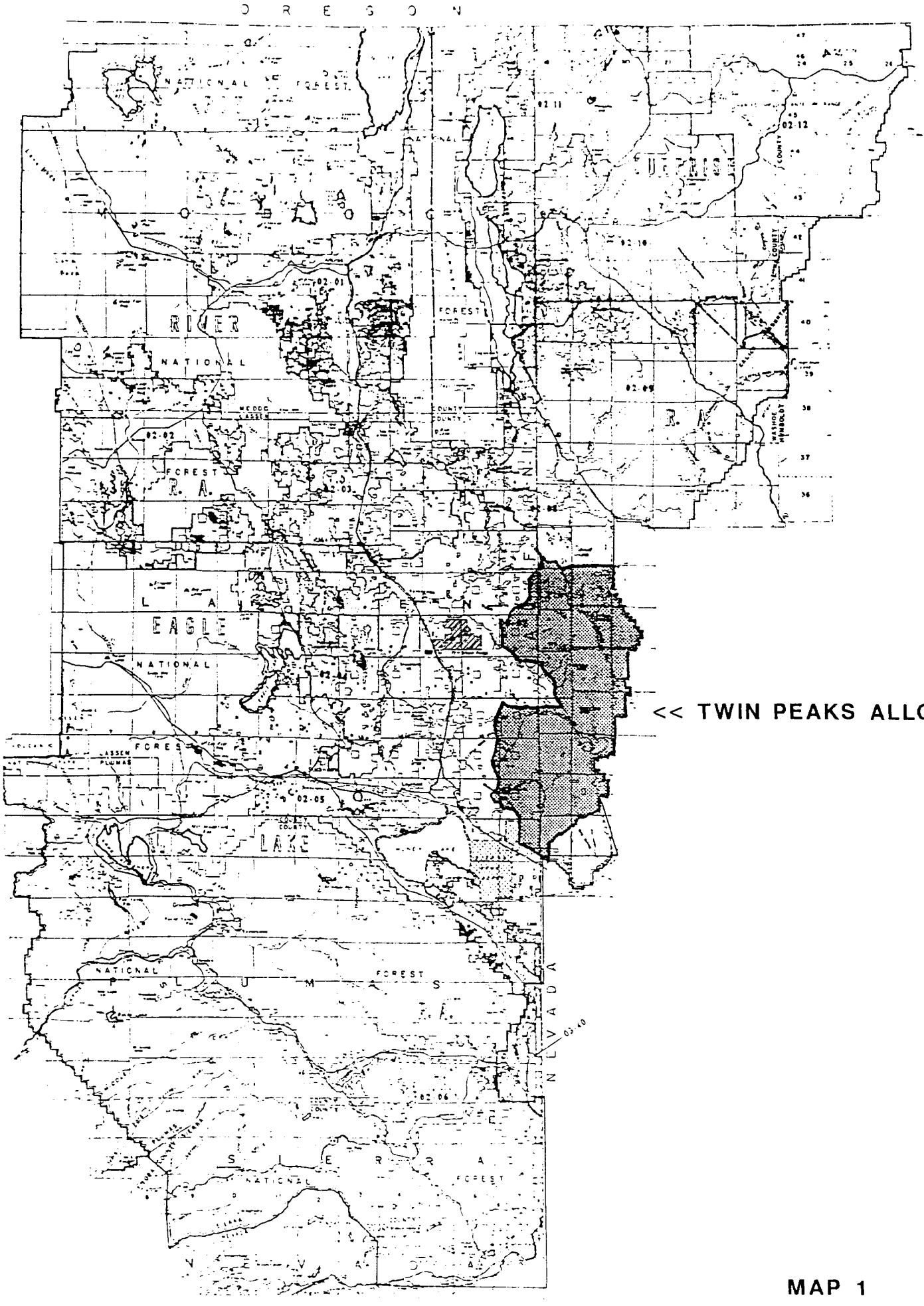
The Eagle Lake Resource Area uses the Key Forage Plant Method (KFPM) and use pattern mapping information (UPM) to determine utilization on uplands and riparian areas. Utilization is described by at lease four classes: no use (0%), slight or light use (1 to 40%), moderate (41-60%), heavy (61-100%). In some instances on riparian areas, stubble height method was in addition to or place of the Key Forage Plant Method. Key user in this monitoring summary: Livestock (L/S); Cattle (C); Sheep (S); Wild Horses (W/H); Burros (B); Wildlife (W/L).

LOCATION	STUDY METHOD - RESULTS	USER	DATE
-Confluence of West/Middle Forks	Apparent use-Slight	W/H, L/S	9/28/93
-Lower Parsnip - Transect #718C	Stubble Height-Heavy	W/H, L/S	7/30/93
-Mixie Flat, Indian Spring	Apparent-Heavy	W/H, L/S	7/28/93
-East Fork Smoke Creek Springs	Photo/apparent-Heavy	W/H, L/S	10/14/93
-Norton Place Private & Public Sprs	Apparent-Heavy	W/H, L/S	10/14/93
-Skedaddle above Raghouse Springs	KFPM-Moderate	C	9/08/93
-Horse Corral Spr to Byers spr.	UPM-Heavy	W/H, L/S	9/08/93
-South Fork Parsnip CR - #718B	Stubble Height-Heavy	W/H, L/S	9/08/93
-Southeast Painter/Burn Springs	KFPM-Slight Use (9%-16%)		10/13/93
-West Fork/Buffalo Creek	Stubble Height-Slight		6/29/93
-North Fork/Buffalo Creek	Stubble Height (7")-Slight		6/23/93
-Antelope Spring	Apparent-Slight	W/H, L/S	6/16/93
-Thomas Canyon	UPM-Slight to Light		10/23/93
-Painter Flat-transect	KFPM 20-40% on Key Grasses	S,C,W/H	10/19/93
-Lower Smoke Creek	KFPM 24% Grasslike, 2% Willows	C,B	11/10/93
-Jenkins Troughs	Heavy use on riparian area	W/H,C	10/08/93

-Rag House Aspen Stands	Severe on grasses at aspen stands	C, W/H	10/06/93
-Rag House-transect	KFPM-Light to Moderate	L/S	
-Wire Spring	Apparent-Slight	C, W/H	07/22/93
-Line Pit	Apparent-Heavy	Sheep	07/22/93
-Rowland Mtn #720	KFPM 23-29% on key species	W/H	7/16/93
-Rowland Mtn PC	UPM Slight to Moderate	W/H, S	7/16/93
-Parsnip #718	KFPM 2.5% on key grasses		05/07/93
-Crooked Creek	Stubble Height 2-4"	W/H, L/S	06/11/93
-Painter Flat,southside	Apparent-Slight	W/H, L/S	10/93
-So. Fk Rush Canyon	UPM Slight	W/H, C	10/93
-Morgan Spring	83% use on riparian area	W/H, L/S	10/06/93
-Horse Trail Reser. #709	18% on Key Species	C,W/H	10/06/93
-Spencer Basin	Slight	W/H	6/16/93
-East Side Reservoir	KFPM 3% Key grasses		6/16/93
-South Side Reservoir	KFPM 3% Key grasses		6/16/93

LOCATION	STUDY METHOD - RESULTS	USER	DATE
-So FK Parsnip	Stubble Heights 55%	L/S, W/H	8/5/93
-Mixie Flat	KFPM, 24%	L/S, W/H	8/5/93
-Parsnip Spring	Apparent use 50%	L/S, W/H	8/5/93
-Nye Basin	KFPM-PUTR 12%, Key Grasses-5-12%	C, W/L	12/3/93
-Jenkins Spr. Transect#0711	KFPM-SIHY 6%	W/H, L/S	12/3/93

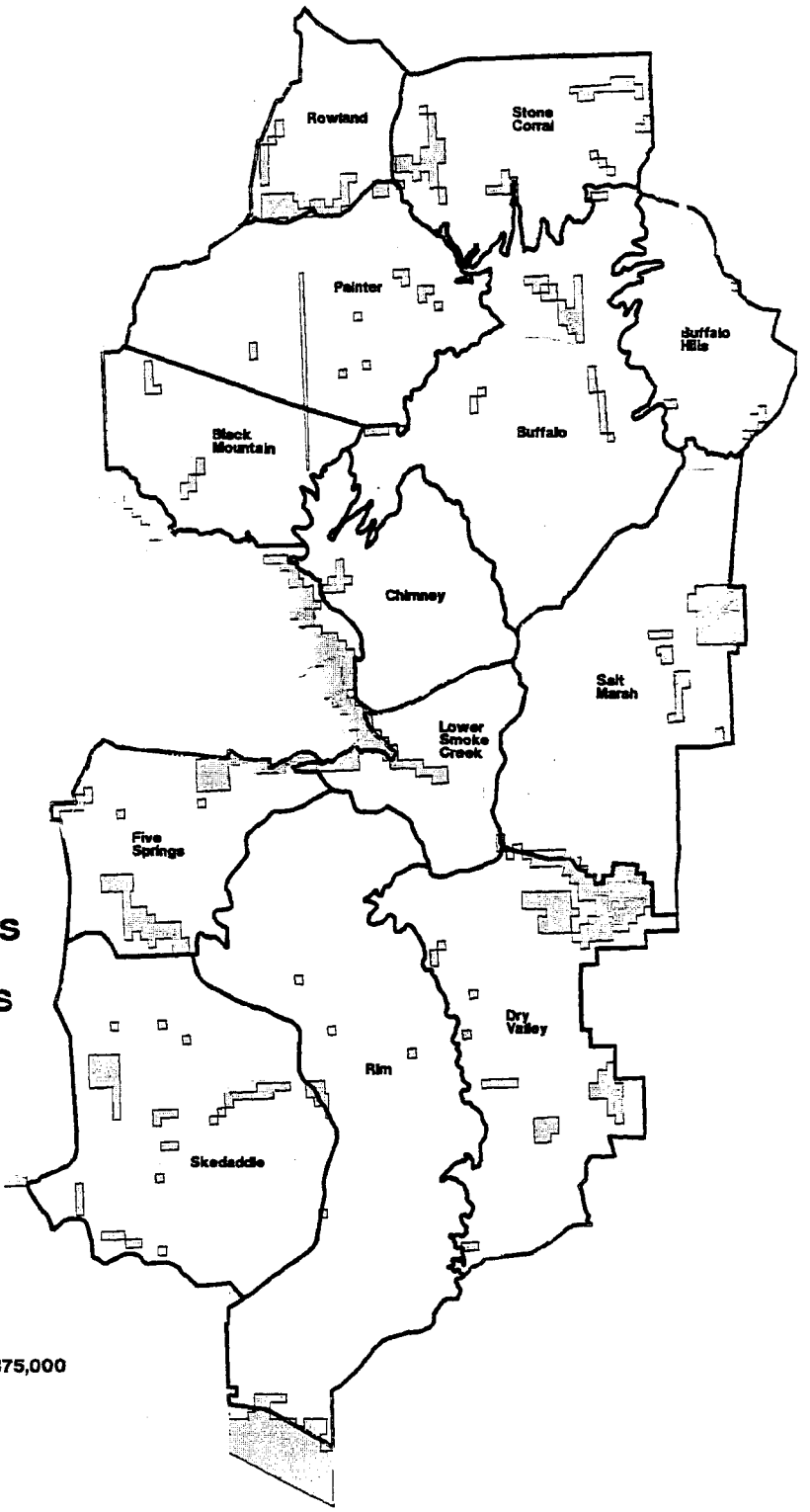
-Eagle Head Mountain	UPM-Slight on Key species	W/H, W/L



<< TWIN PEAKS ALLOTMENT

MAP 1

Twin Peaks Allotment



Ownership

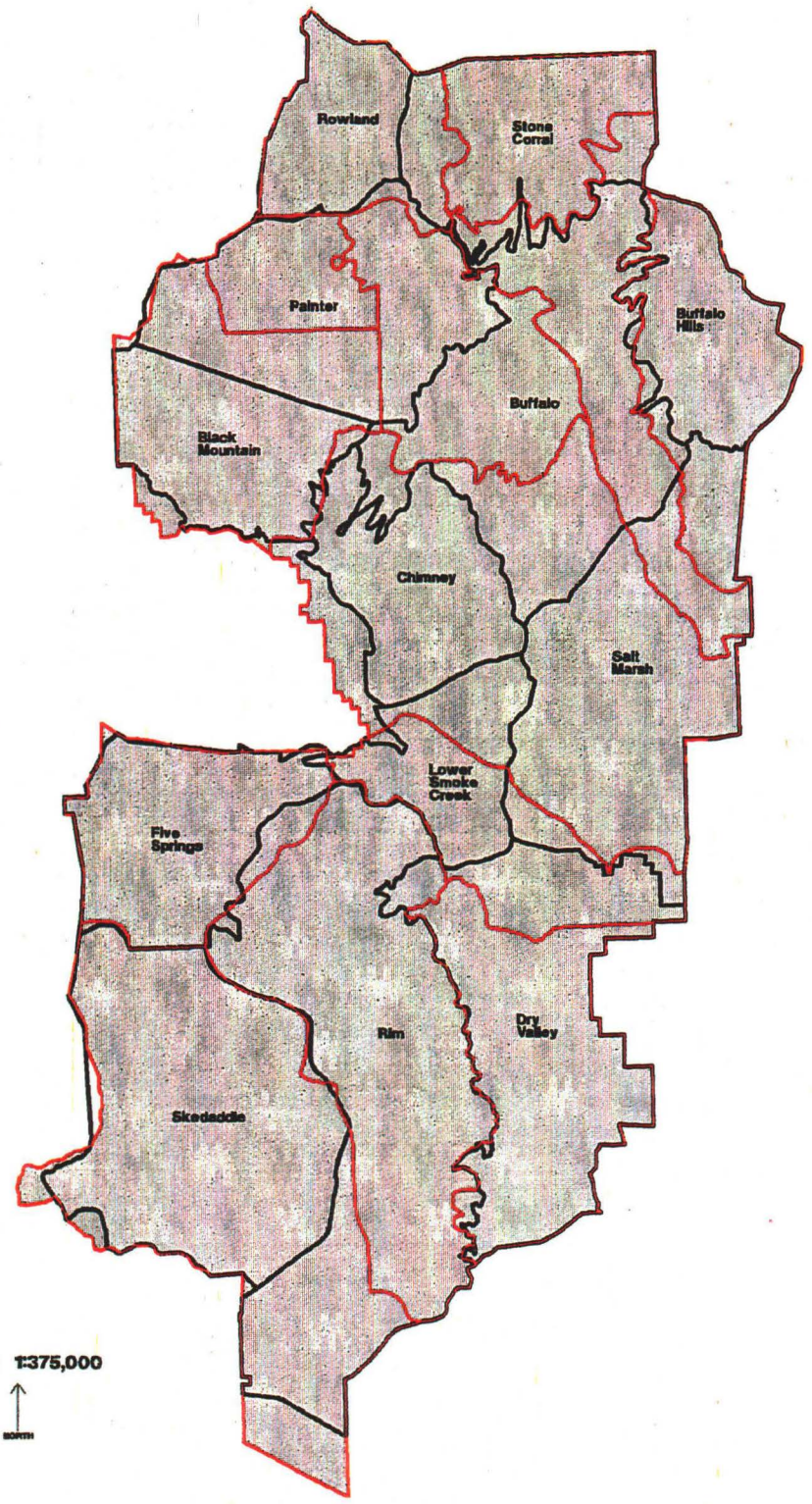
- BLM
- Private
- Public Water Reserves
- Fences
- Allotment Subdivisions

Scale 1:375,000

NORTH

MAP 2

Twin Peaks Allotment



Allotment Subdivisions and TPAMPRC Subunits

— Allotment Subdivisions

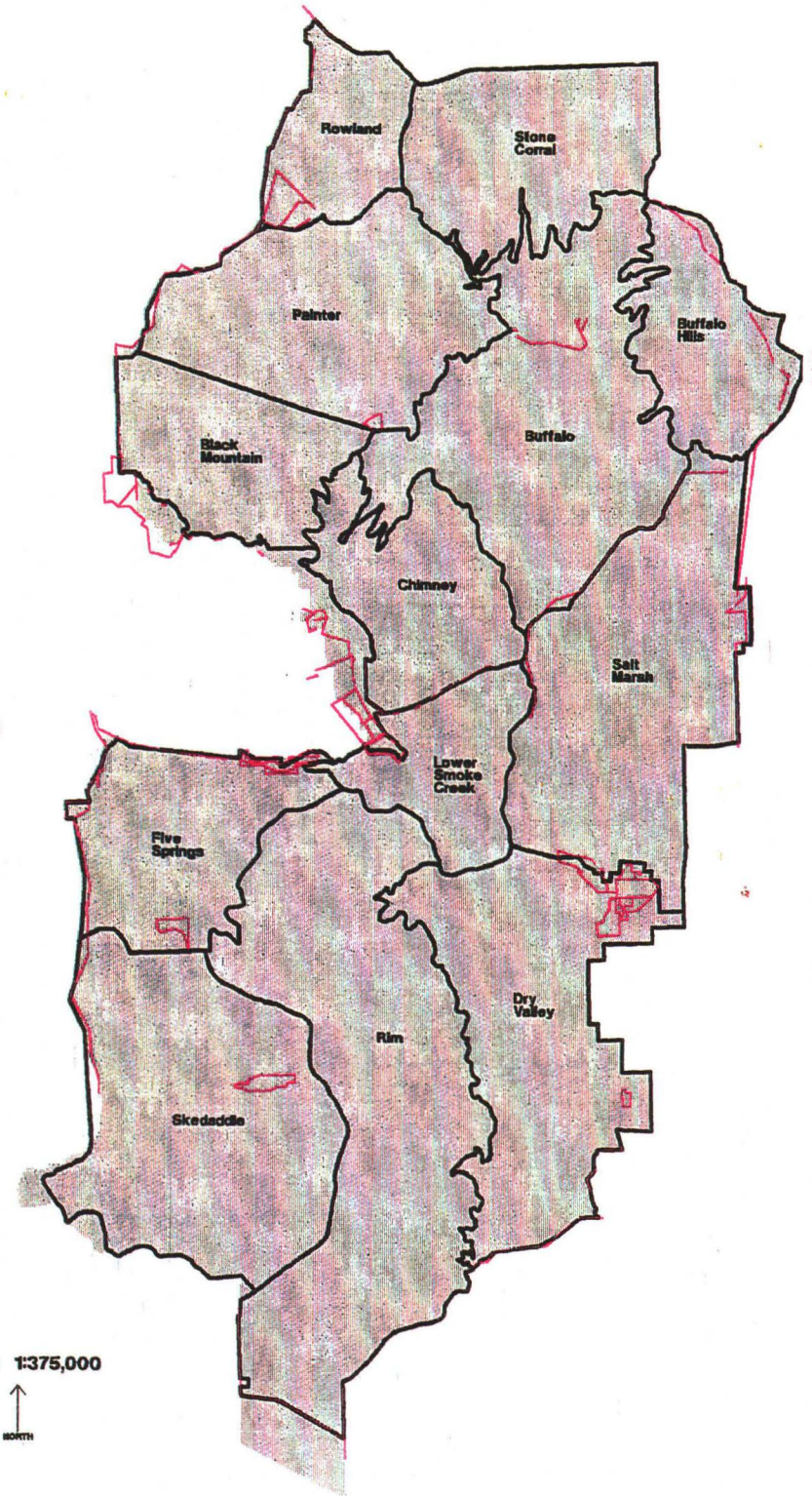
— TPAMPRC Subunits

Scale 1:375,000

NORTH

MAP 3

Twin Peaks Allotment



Allotment Subdivisions

— Fences

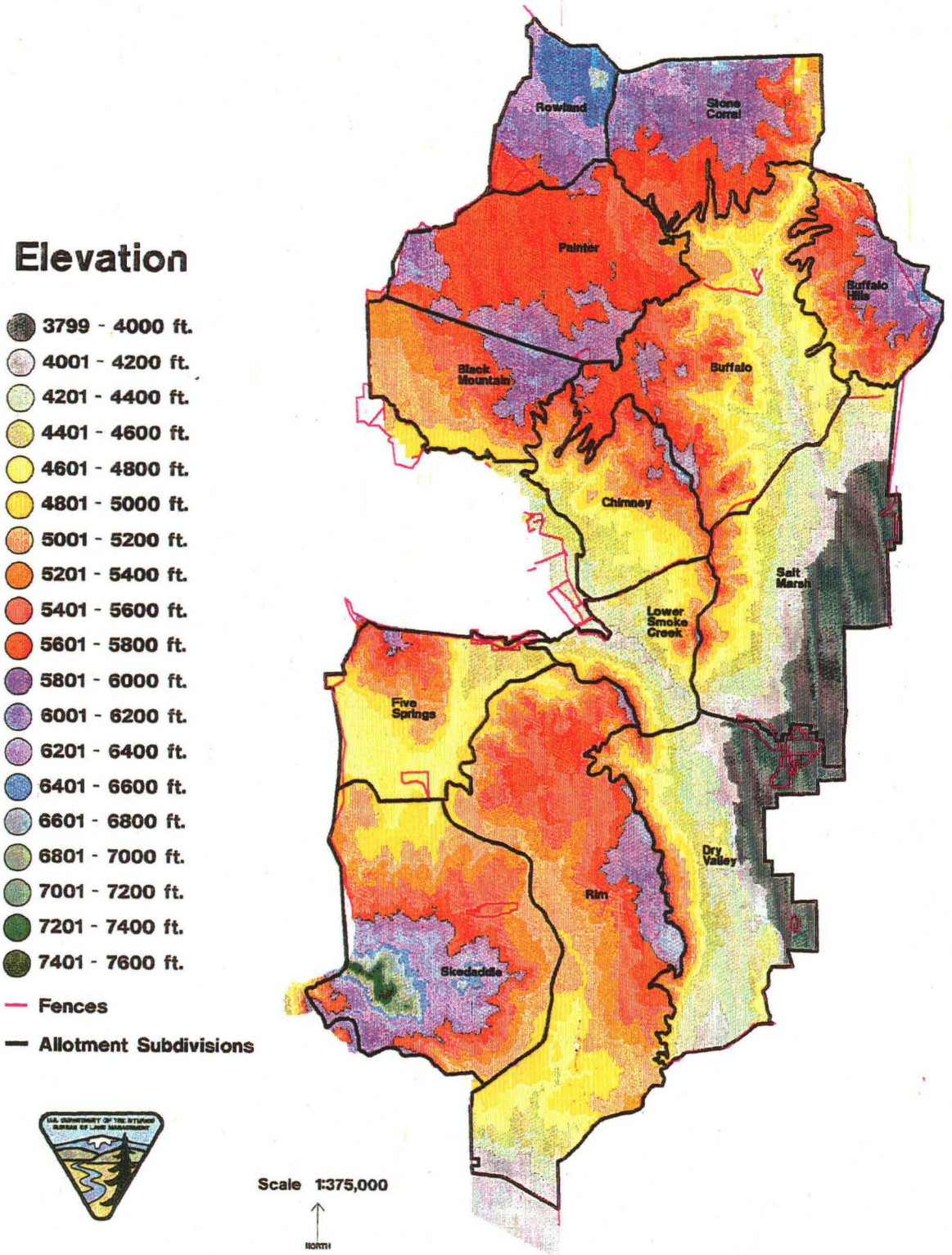
— Allotment Subdivisions

Scale 1:375,000

NORTH

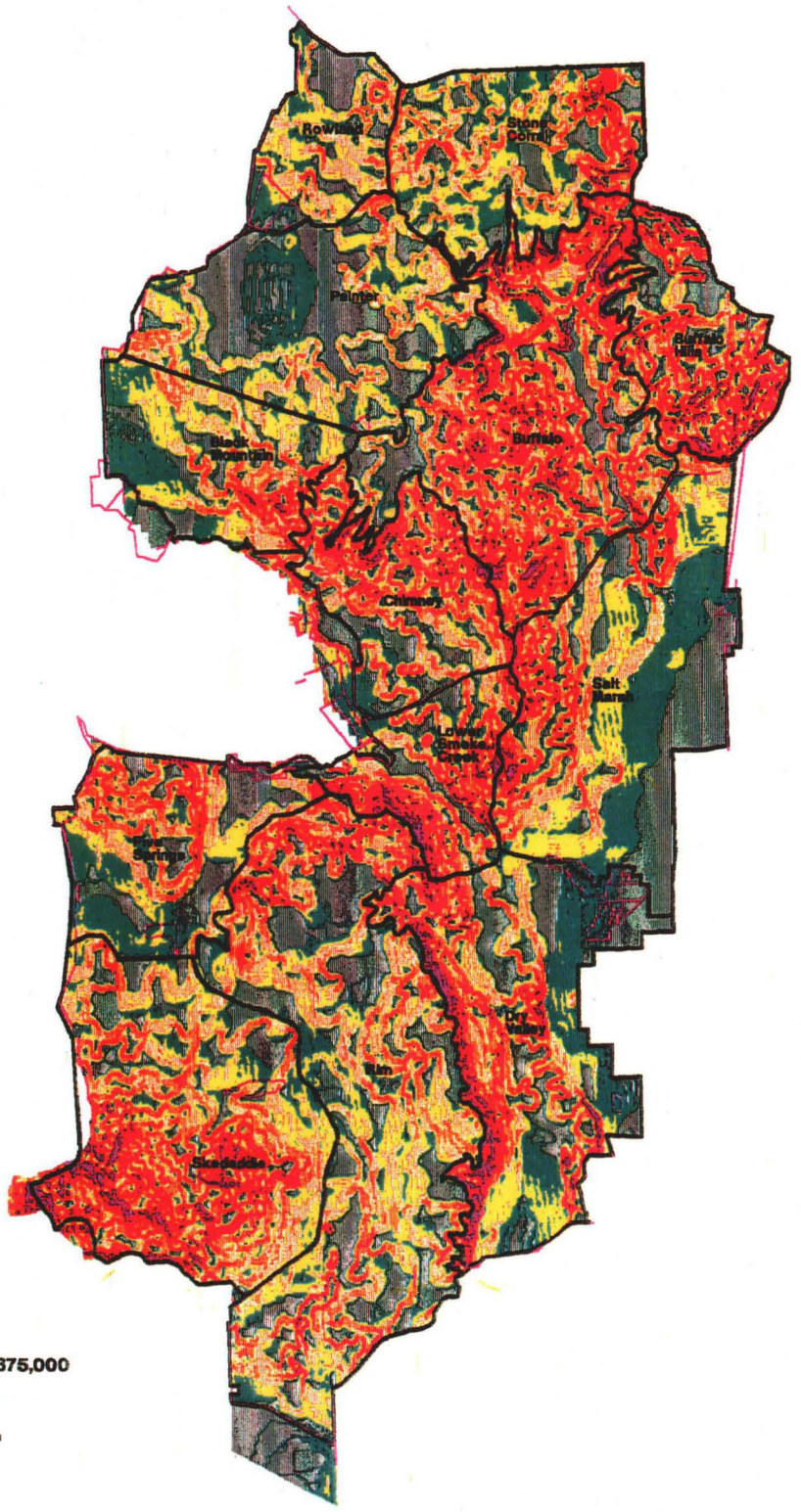
MAP 4

Twin Peaks Allotment



MAP 5

Twin Peaks Allotment



Slope in Percent

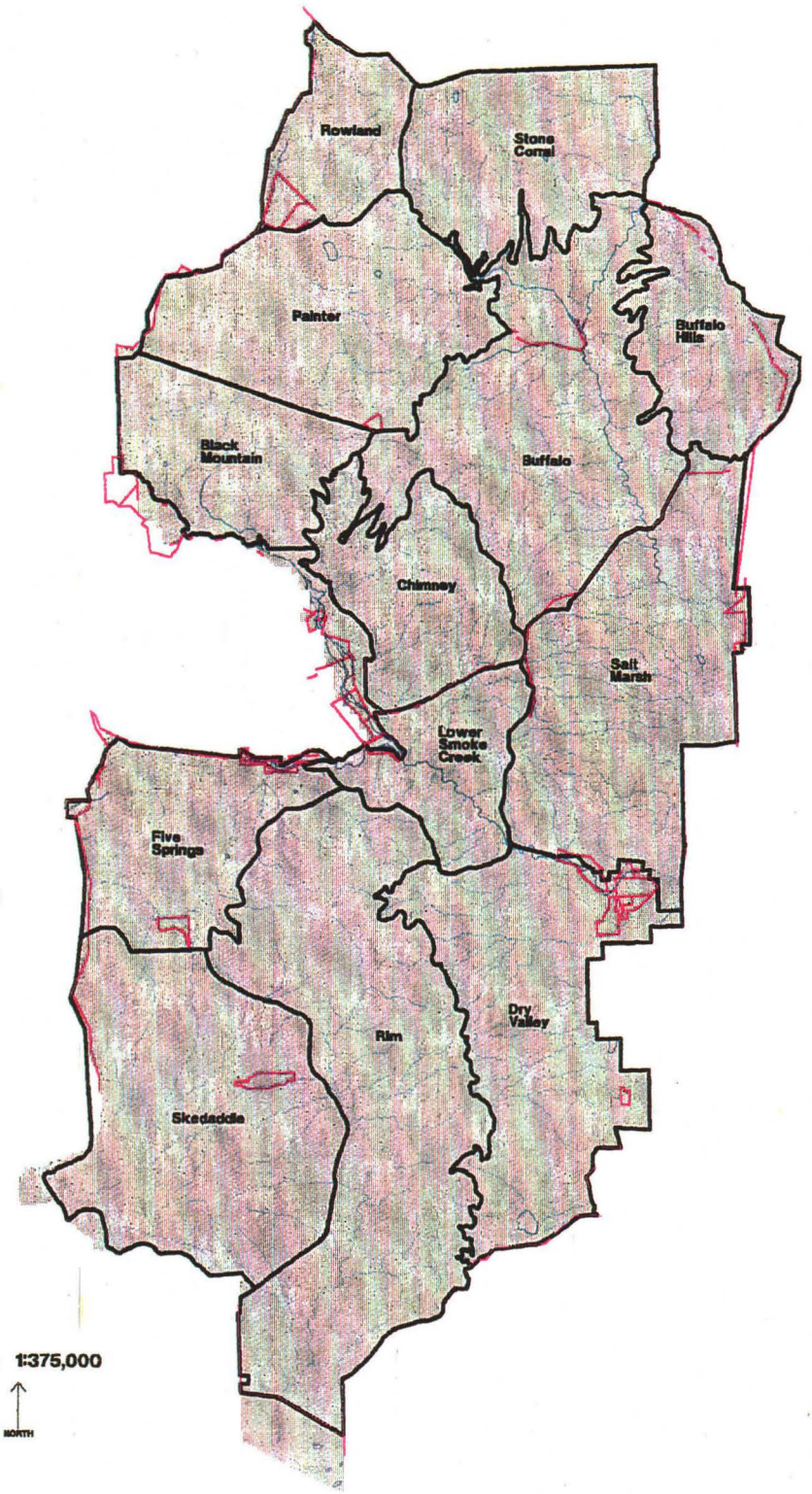
- 0 - 5 percent
- 6 - 15 percent
- 16 - 30 percent
- 31 - 50 percent
- 51 - 70 percent
- 71 - 100 percent
- Greater than 100 percent
- Fences
- Allotment Subdivisions

Scale 1:375,000

NORTH

MAP 6

Twin Peaks Allotment



Perennial and Intermittent Streams

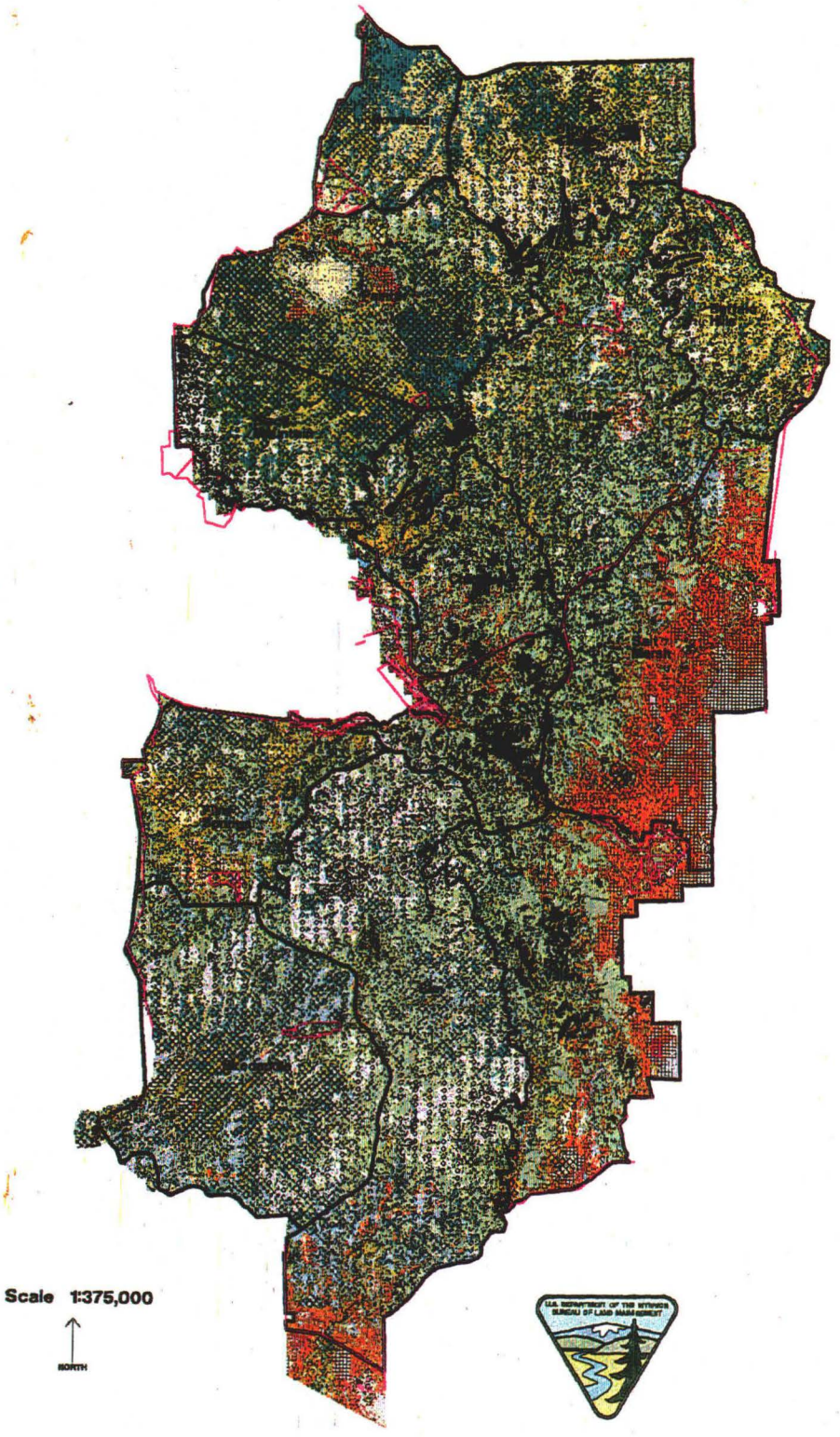
- Perennial Streams and Lakes
- Intermittent Streams
- Fences
- Allotment Subdivisions

Scale 1:375,000

NORTH

MAP 7

Twin Peaks Allotment
Vegetation



Scale 1:375,000

NORTH

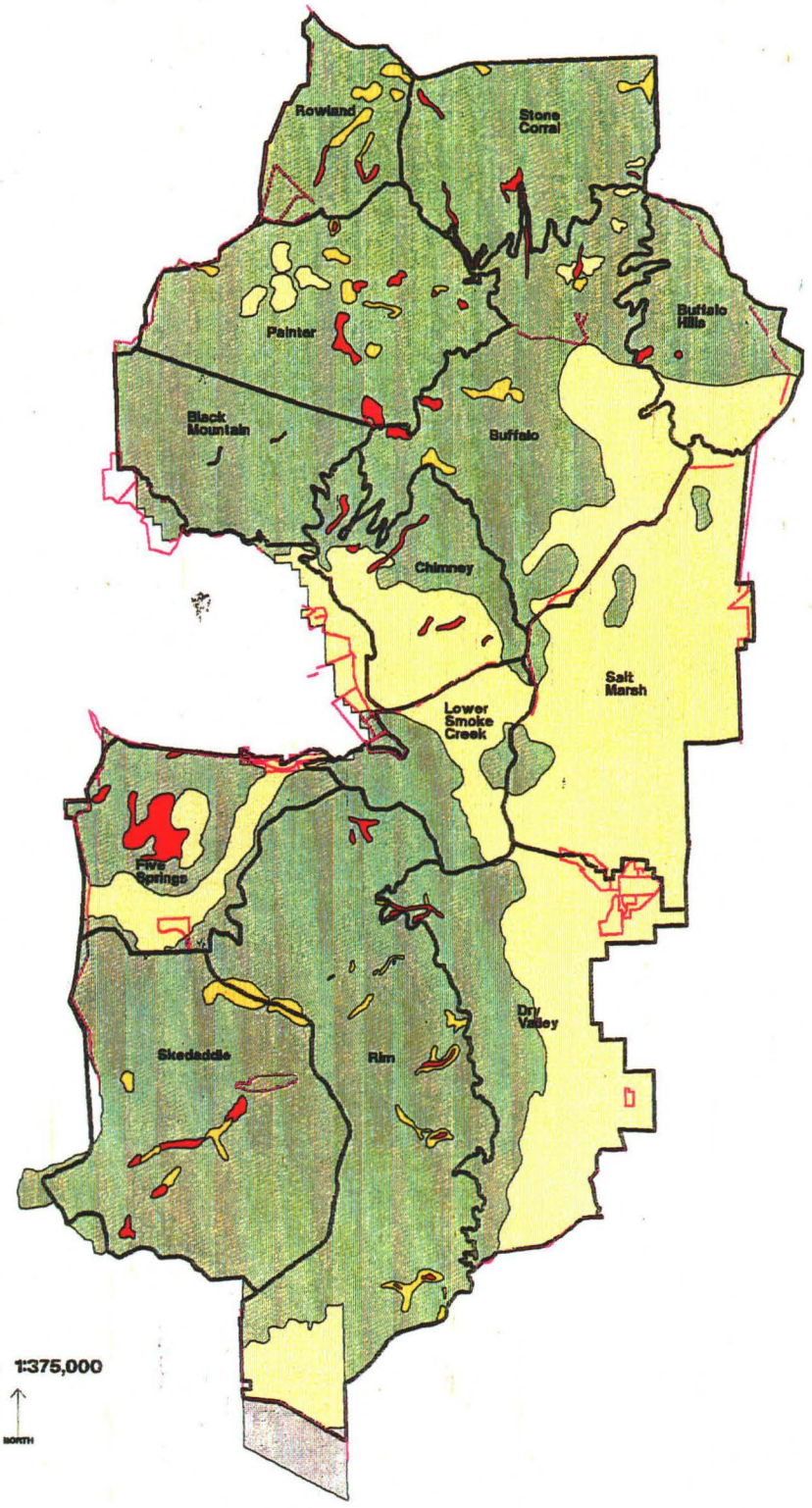
MAP 8

Twin Peaks Allotment
Vegetation Type
Legend

- Aspen Forest
- Willow Scrub
- Mountain Mahogany 40-59% / Mixed Shrub
- Mountain Mahogany 40-59% / Rock
- Mountain Mahogany 60-100%
- Great Basin Juniper Woodland 10-24% / Mixed Shrub / Perennial Grass
- Great Basin Juniper Woodland 10-24% / Low Sage
- Great Basin Juniper Woodland 25-39% / Mountain Mahogany
- Mixed Mountain Shrub 25-39% / Bareground
- Mixed Mountain Shrub 40-59% / Perennial Grass
- Big Sagebrush Scrub 10-24% / Bitterbrush / Perennial Grass
- Big Sagebrush Scrub 10-39% / Bareground
- Big Sagebrush Scrub 10-24% / Rock
- Big Sagebrush Scrub 10-39% / Perennial Grass
- Mixed Great Basin Shrub 10-24% / Perennial Grass / Bareground
- Mixed Great Basin Shrub 10-39% / Rock
- Low Sagebrush Scrub 10-24% / Perennial Grass
- Low Sagebrush Scrub 10-24% / Rock
- Silver Sagebrush Scrub 10-39% / Mixed Shrub
- Rabbitbrush Scrub 0-24% / Bareground
- Greasewood Scrub 10-24% / Mixed Shrub
- Greasewood Scrub 10-24% / Budsage / Saltgrass
- Shadscale Scrub 10-24% / Rock
- Mixed Desert Shrub 10-39%
- Alkali Playa
- Meadow and/or Seep
- Seasonally Dry Meadow
- Pasture / Cropland
- Water
- Rock >90%
- Bareground
- Fences
- Allotment Subdivisions

MAP 8

Twin Peaks Allotment



Grazing Utilization
1992

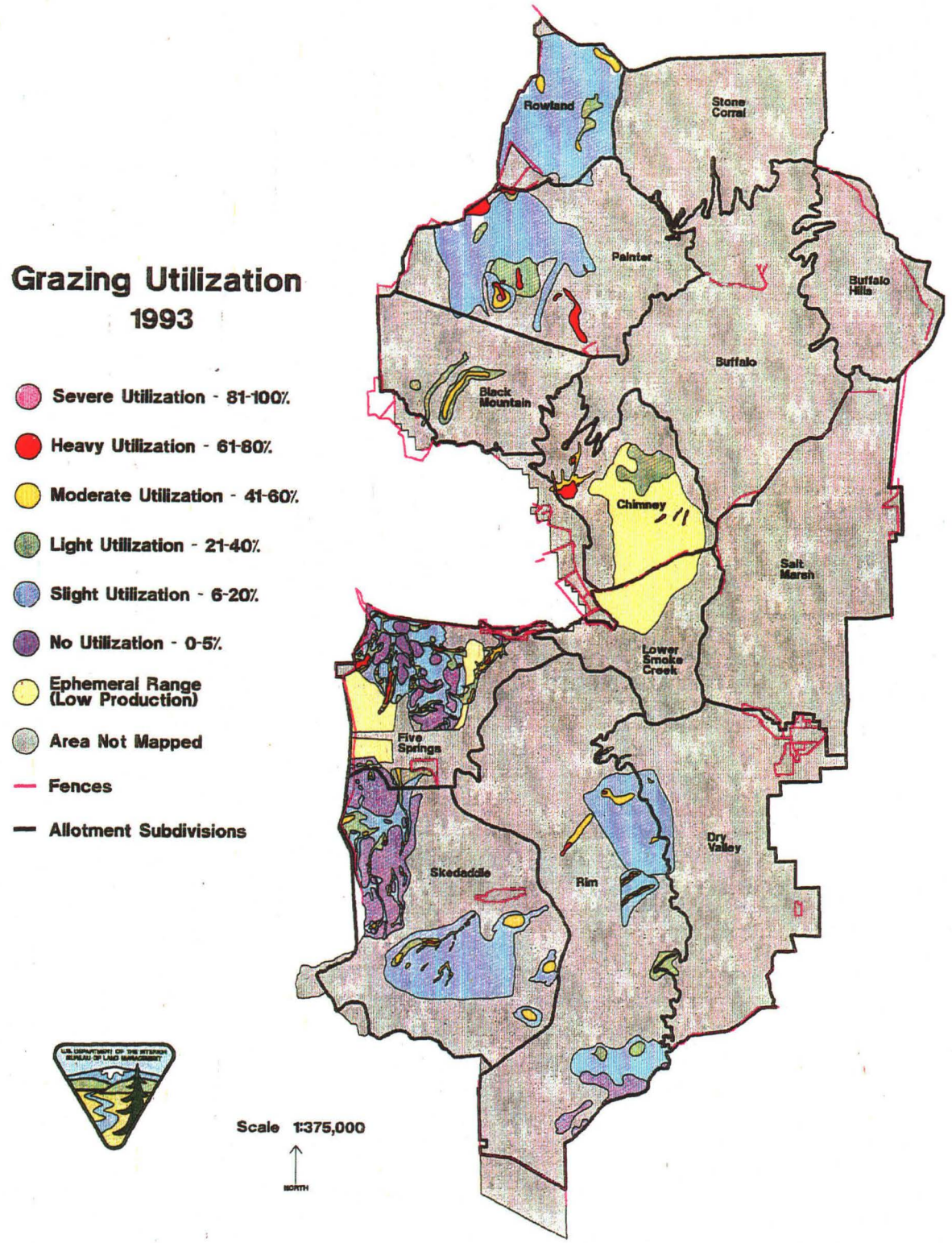
- Heavy Utilization - 61% +
- Moderate Utilization - 41-60%
- Light Utilization - 10-40%
- Ephemeral Range (Low Production)
- Area Not Mapped
- Fences
- Allotment Subdivisions

Scale 1:375,000

NORTH

MAP 9

Twin Peaks Allotment



MAP 10